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

Environmental Study Report

January, 2024

Prepared for:
Municipality of Kincardine

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Project Number:
165630238

FINAL REPORT

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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 and 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.

The Notice of Completion will be issued January 25, 2024 for the start of the 30 day comment period. The Notice will be included on the Municipality of Kincardine website from January 25, 2024 to February 24, 2024.

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.

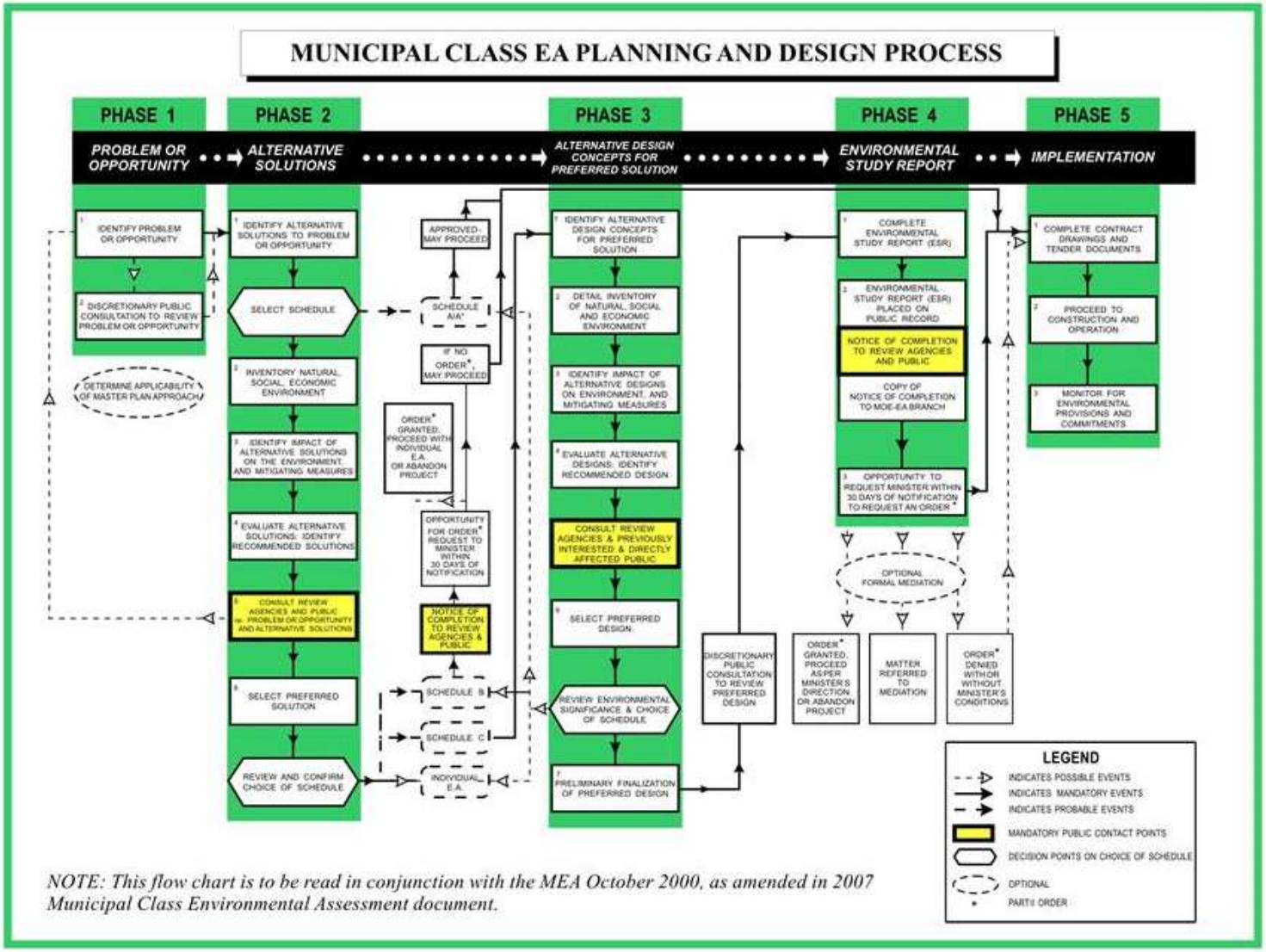


Figure 2: MEA Municipal Class EA Planning and Design Process

2.3 Section 16 Order Process

The Notice of Completion will be issued January 25, 2024 for the start of the 30 day comment period. The Notice will be included on the Municipality of Kincardine website from January 25, 2024 to February 24, 2024.

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>School Boards</u> • Bluewater District School Board • Bruce-Grey Catholic District School Board	<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. <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.

Contact Information	Comment	Action Taken
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
	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.
	Letter December 18, 2023:
	• MECP reviewed the ESR, provided for 30 day review prior to public review. The comments on the various EA sections included edits to the Natural Environment section to capture SAR and SOCC present based on additional MECP records, updates to the sourcewater protection section to capture sourcewater and vulnerability scores, and the inclusion of excess materials mitigation measures.
		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.
		
		Post-MECP comment period:
		• Comments addressed within the ESR. MECP correspondence added to the Appendix C Correspondence.

Contact Information	Comment	Action Taken
Ontario Parks **Greg Wilson** Greg.Wilson2@ontario.ca **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**	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.
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: o 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. o 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: o The relocation of fish outside of the work area, a Licence to Collect Fish for Scientific Purposes will be required. o 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 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.	

Contact Information	Comment	Action Taken

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:
	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
		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
	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 • 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. Email April 17, 2023: • 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.	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. Email August 11, 2023: 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.

Contact Information	Comment	Action Taken
	<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.	

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.
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.

Indigenous Community	Engagement Log
	• 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 address and forwarded internally to their consulting firm Three Fires. • No comments or concerns identified.

Indigenous Community	Engagement Log
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. Mitigation measures incorporated into the Environmental Study Report

Comment Topics	Response Provided and/or Action Taken
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 elsewhere between Kincardine and Bruce Power.	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. Other actions:

Comment Summary	Consideration in the EA
• 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.	• 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 Crescent, and a short extension of the existing watermain.	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 Stoney Island Crescent, and 3) short extension of the existing watermain

Comment Summary	Consideration in the EA
• 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.	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.

The Notice of Completion will be issued January 25, 2024 for the start of the 30 day comment period. The Notice will be included on the Municipality of Kincardine website from January 25, 2024 to February 24, 2024.

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 2020) 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 Infrastructure and Public Service Facilities policies included in Section 1.6.6 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:

1. municipal sewage services and municipal water services; and
2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available or feasible;

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. prepares for the impacts of a changing climate;
3. is feasible and financially viable over their lifecycle; and
4. protects human health and safety, and the natural environment;

c) promote water conservation and water use efficiency;

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

e) be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5. For clarity, where municipal sewage services and municipal water services are not available, planned or feasible, planning authorities have the ability to consider the use of the servicing options set out through policies 1.6.6.3, 1.6.6.4, and 1.6.6.5 provided that the specified conditions are met.

Through the PPS 2020, 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.

This project has utilized existing infrastructure to the extent possible when considering the extension to Bruce Power. The existing WTP is retained as it can be expanded within the existing site to accommodate growth 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 30 records of terrestrial SAR (2 Herptiles, 20 birds, 4 mammals, and 4 plants) and 17 records of terrestrial SOCC (2 insects, 5 herptiles, 9 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)
Herptiles (2)			
Spotted Turtle (*Clemmys guttata*)	S2	Endangered	Endangered
Wood Turtle (*Glyptemys insculpta*)	S2	Endangered	Threatened
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
Lesser Yellowlegs (*Tringa flavipes*)	S3S4B, S5M	Threatened	No Status, No Schedule

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
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 (*Protonotaria citrea*)	S1	Endangered	Endangered
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	S4B	Endangered	Endangered
Short-eared Owl (*Asio flammeus*)	S2N, S4B	Threatened	Special Concern
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)			
American Chestnut (*Castanea dentata*)	S1S2	Endangered	Endangered
American Ginseng (*Panax quinquefolius*)	S2	Endangered	Endangered
Butternut (*Juglans cinerea*)	S2?	Endangered	Endangered
Pitcher's Thistle (*Cirsium pitcher*)	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 triangulum*)	S3	No Status	Special Concern
Eastern Ribbonsnake (*Thamnophis sauritus*)	S3	Special Concern	Special Concern
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

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
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
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
- American Chestnut and American Ginseng: may occur in the woodland habitats and other open natural habitats
- Pitcher's Thistle: may occur in sandy habitats along the Lake Huron shoreline
- Short-eared Owl: may nest in meadows, pastures, and agricultural fieldsBat 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
- SAR migratory birds protected under the SARA and/or the ESA:
    - Bank Swallow may nest in exposed soils associated with soil piles, eroding banks along the Lake Huron shoreline, and/or in exposed faces as part of work occurring in the ROW or elsewhere in the Study Area.
    - 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

<u>Terrestrial SOCC</u>

- 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
- SOCC 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
  - 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

A review of the background databases and correspondence with the MECP (2023) identified three aquatic SAR, American Eel ,Lake Sturgeon and Shortnose Cisco in Lake Huron. American Eel and Lake Sturgeon are protected by the ESA, 2007 and are provincially ranked as Endangered (S1S2) and Threatened (S2), respectively. Shortnose Cisco, is provincially and federally ranked as Endangered (SH) and its habitat includes the entirety of Lake Huron. No in-water work is required within Lake Huron for this project.

American Eel may also occur in the larger watercourses (i.e., Little Sauble River and Tiverton Creek) in the Study Area. If in-water work for is required for these

watercourses, then American Eel should be considered and further consultation with the DFO is required.

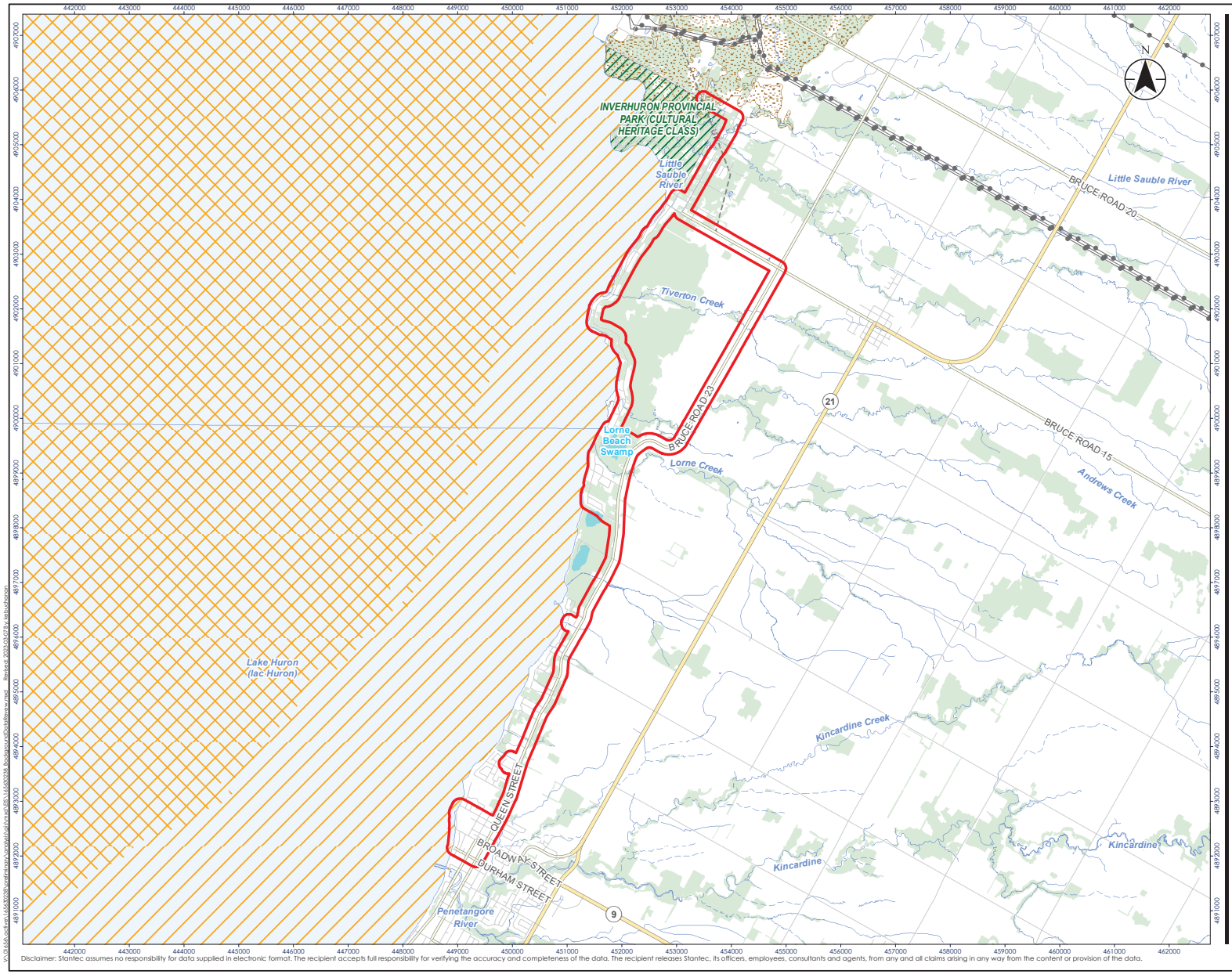
No aquatic SOCC background review records were identified.

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

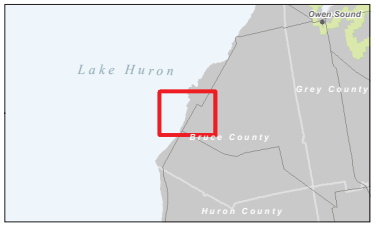
1:70,000 (At original document size of 11x17)

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 and all sources of drinking water. The Municipality of Kincardine relies on groundwater and surface drinking water sources (Lake Huron).

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 (vulnerability score 6.0). IPZ2 includes other areas of the community that are further from the Kincardine WTP (IPZ-2 vulnerability scoring 4.8). 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. Significant Groundwater Recharge Areas (SGRA) do not have a vulnerability score.

An Events-Based Area (EBA) is present for fuel/oil. The areas are mapped in Appendix D. EBAs are determined by modeling with analysis used to identify significant drinking water threats for water intakes. The EBA number represents the minimum volume of a spill where the Events-Based Area Policy Applies. Most of central Kincardine west of Queen Street is identified as EBA- 3000. The Study Area along Queen Street between Golf Links Road and Wickham Cove Lane are part of EBA-5000, while areas beyond this between Wickham Cover Road to Stoney Island Conservation Area are classified as EBA-10000.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**.

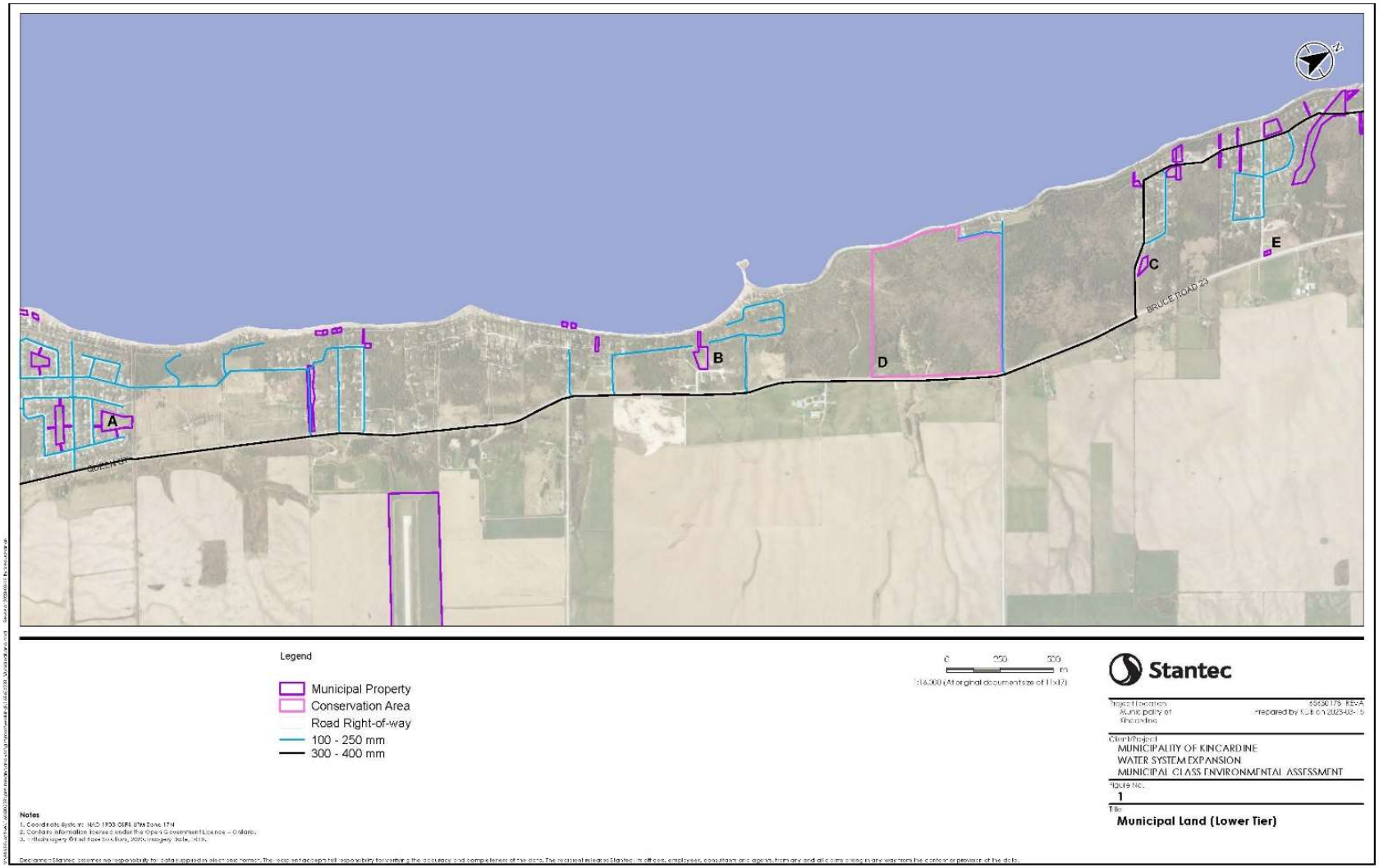


Figure 4: Municipal Land Identifying Booster Pumping Station Locations Evaluated

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**

Location Alternative	Preliminary Screening Description	Carried Forward for Detailed Evaluation?
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. • 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 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 F**.

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**.

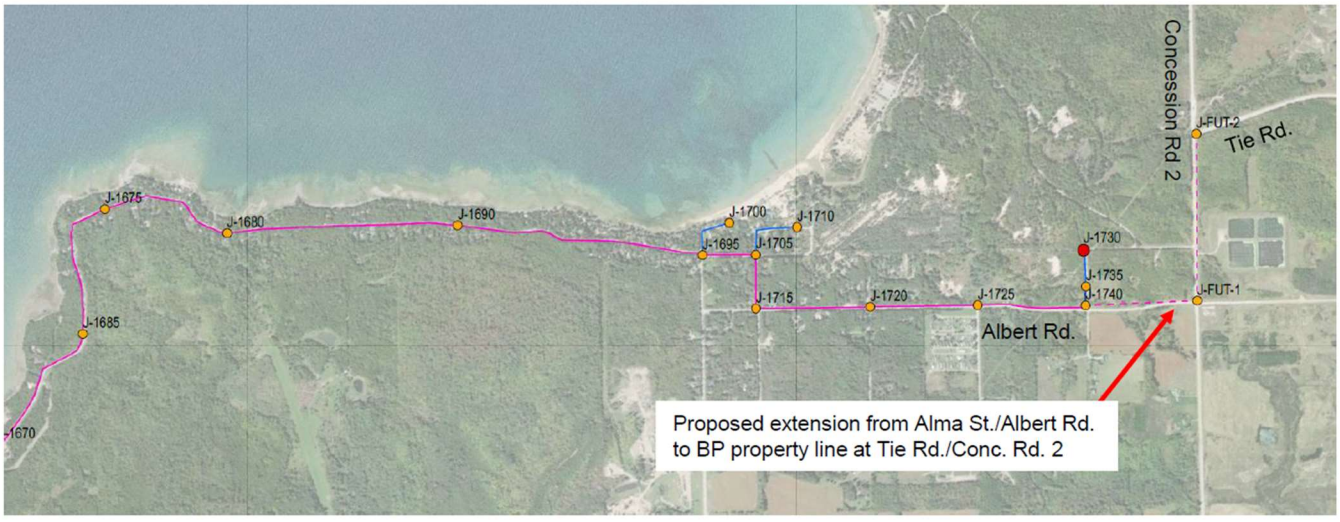


Figure 5: Proposed Watermain Extension to Service Bruce Power Site

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 m^3/day (rated gross capacity of 11,563 m^3/day) to a net capacity upgrade of 15,500 m^3/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.

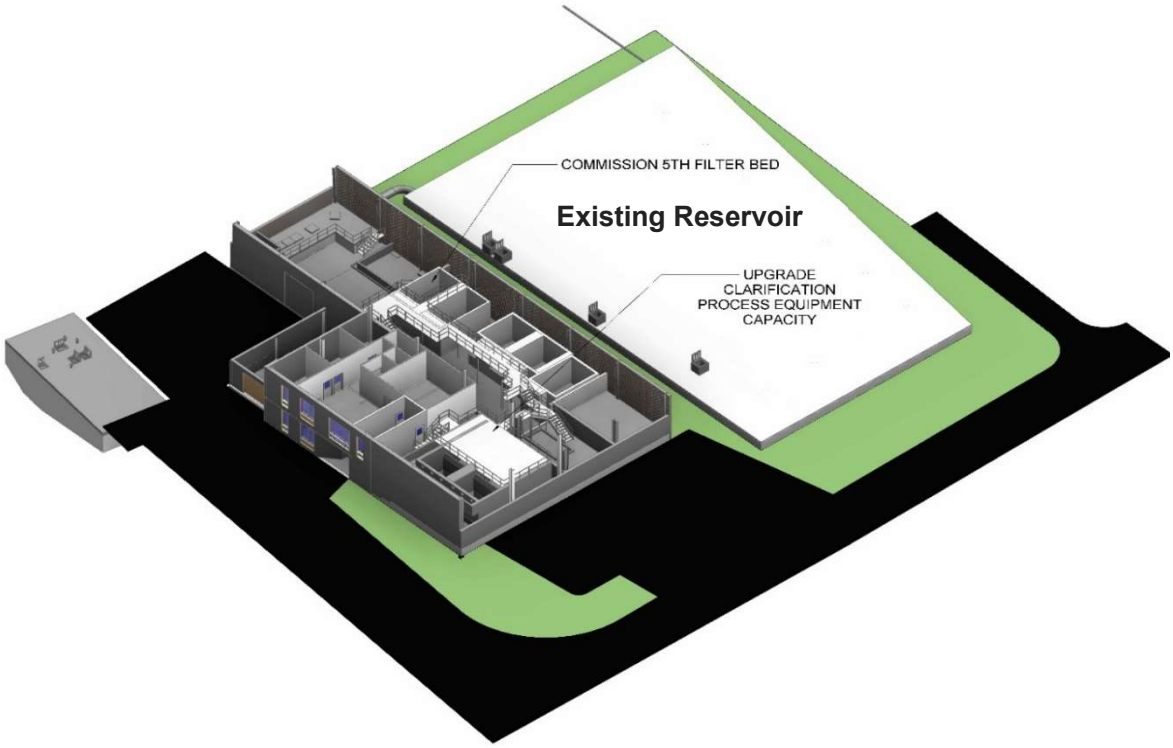


Figure 6: Kincardine WTP Alternative Design 1 - Upgrade with No UV Disinfection

[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.

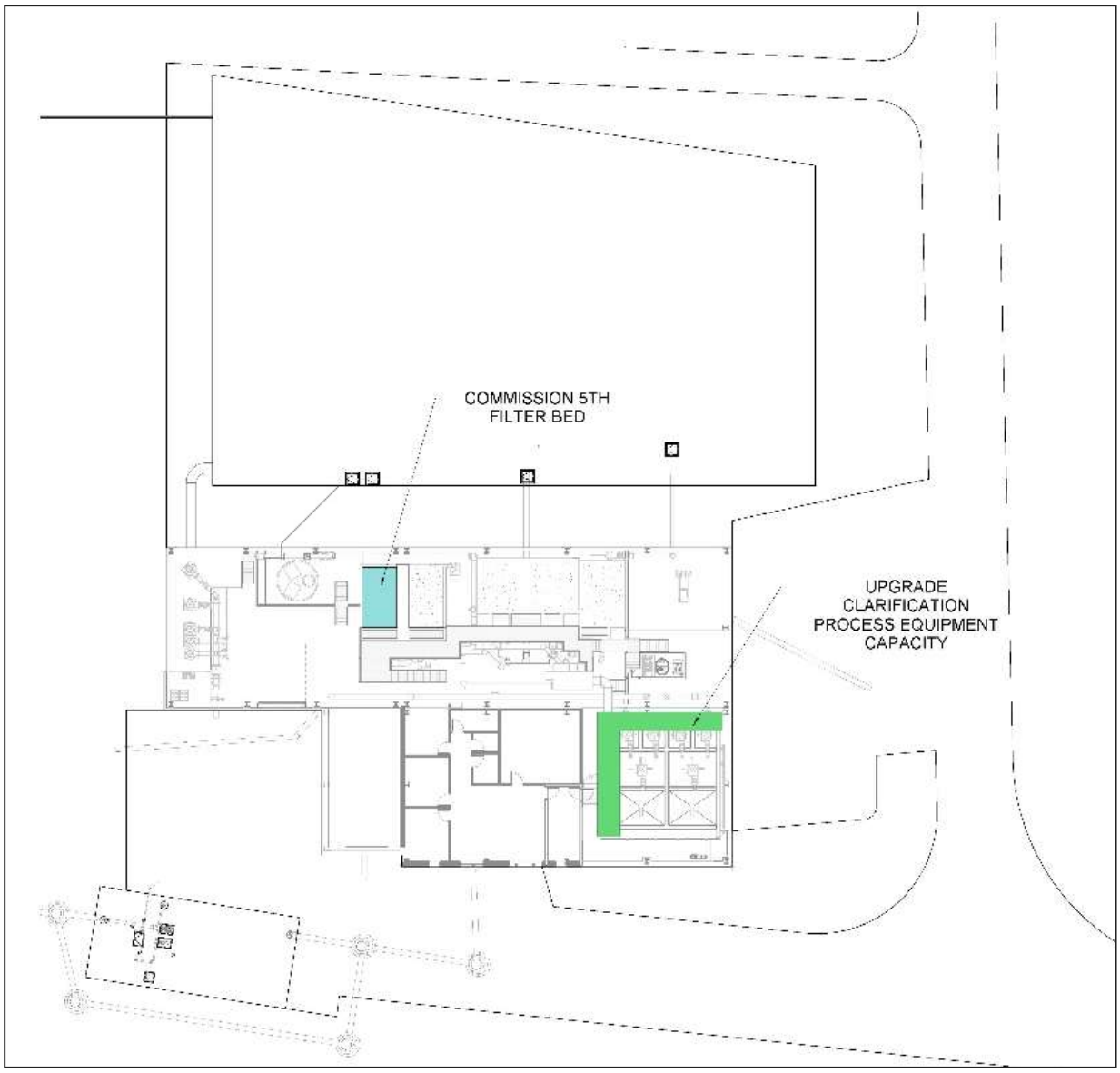


Figure 7: Kincardine WTP Alternative Design 1 - Upgrade with No UV Disinfection - Plan View

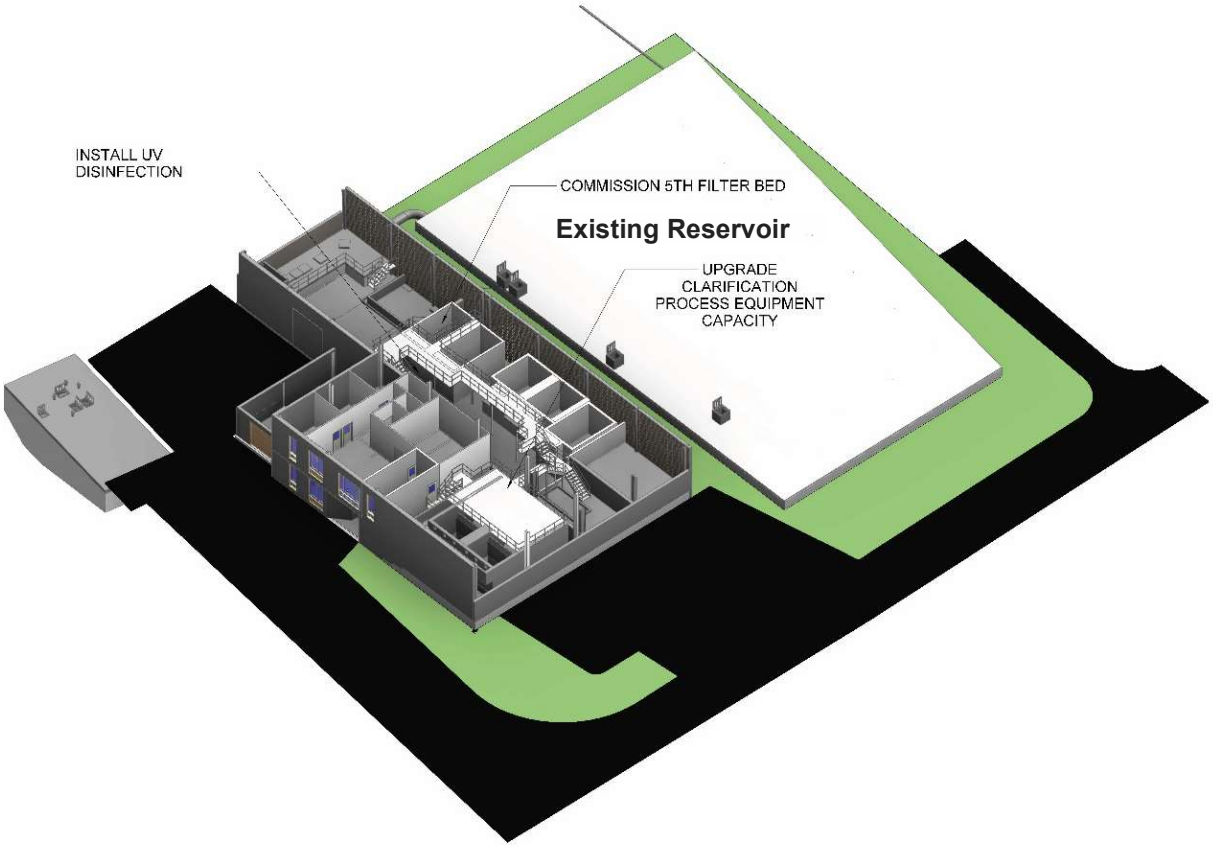


Figure 8: Kincardine WTP Alternative Design 2 - Upgrade with UV Disinfection

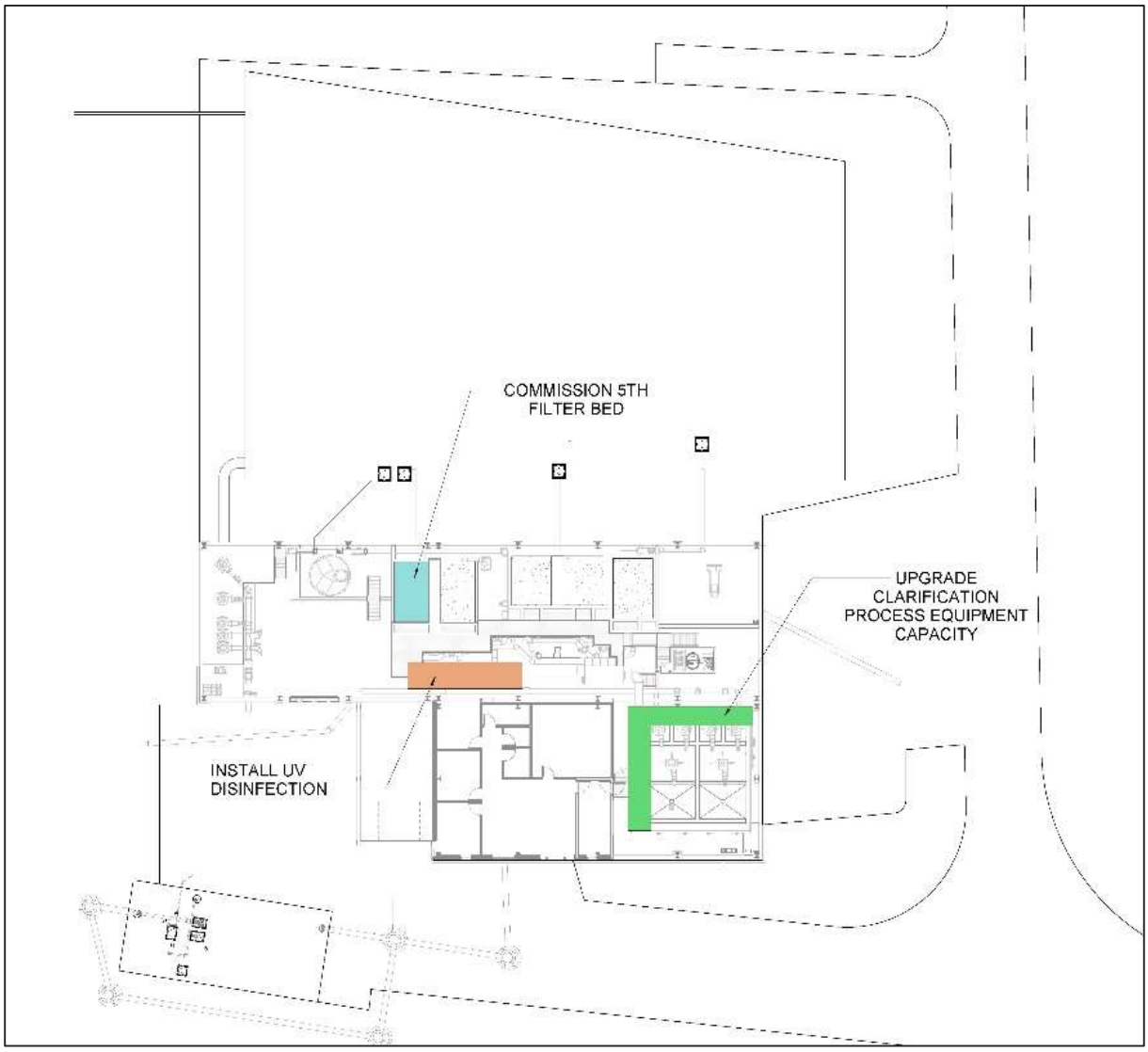


Figure 9: Kincardine WTP Alternative Design 2 - Upgrade with UV Disinfection - Plan View

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 • 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 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
Financial Environment	Most Preferred	Least Preferred	Moderately Preferred

CRITERIA	Alternative 1: In-line booster pumping	Alternative 2: In-ground storage and bps	Alternative 3: On-grade storage and bps
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

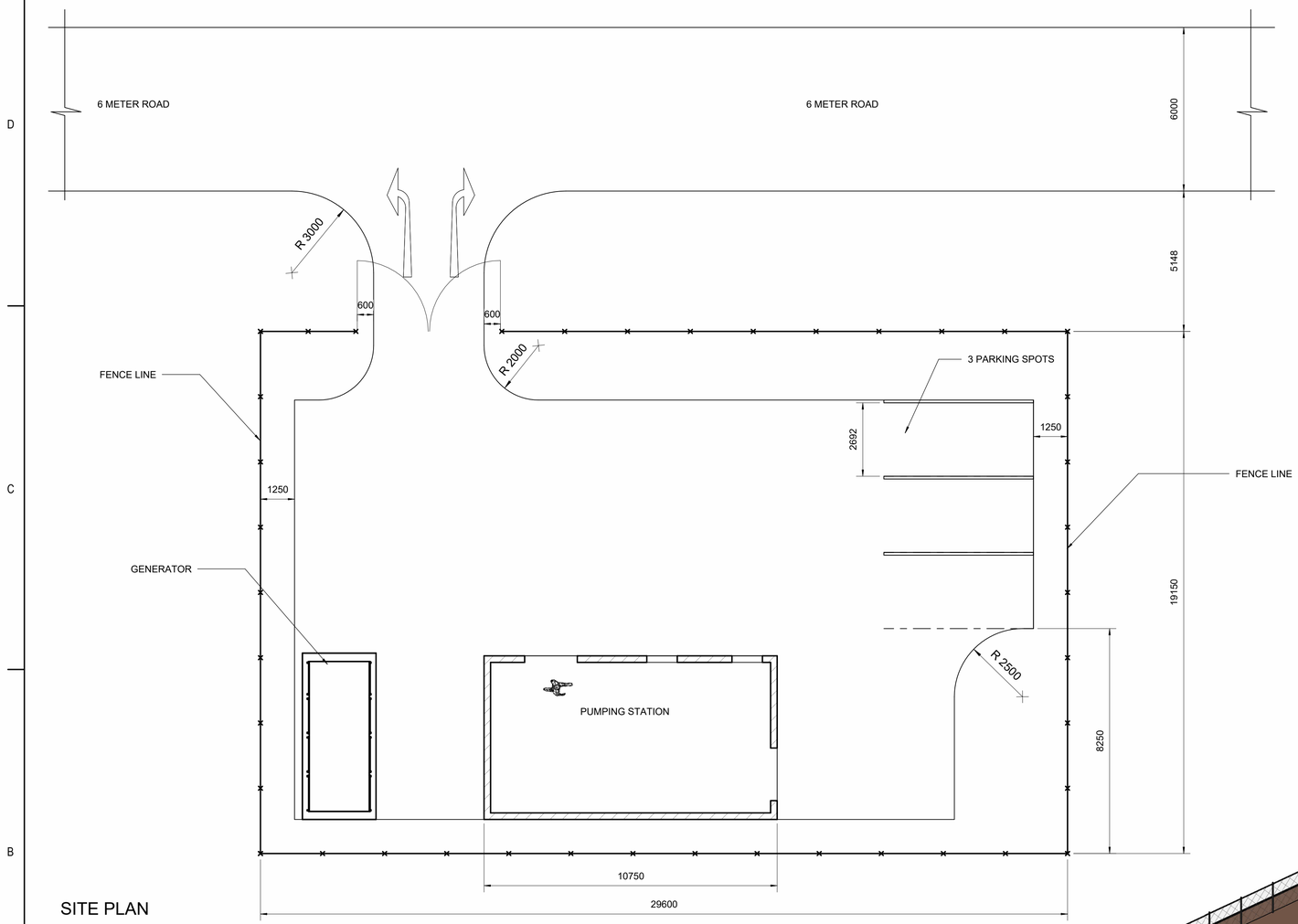
Figure 10 includes the BPS Site Plan Concept, used to determine potential property requirements and preliminary sizing. Details would be refined further in detailed design.

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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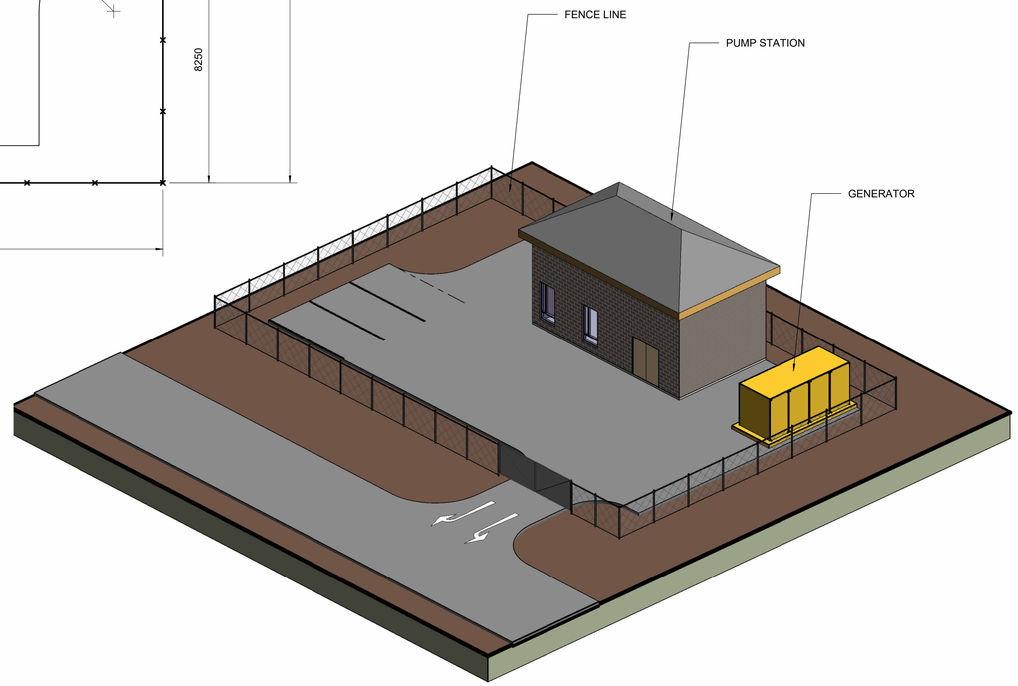

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Notes

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

Client/Project Logo

Client/Project

MUNICIPALITY OF KINCARDINE

Kincardine Water Supply EA

Kincardine, ON

Title

BOOSTER PUMP STATION - SITE PLAN

Project No.	Scale
165630238	1 : 100

Revision

Drawing No. -C101

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**.

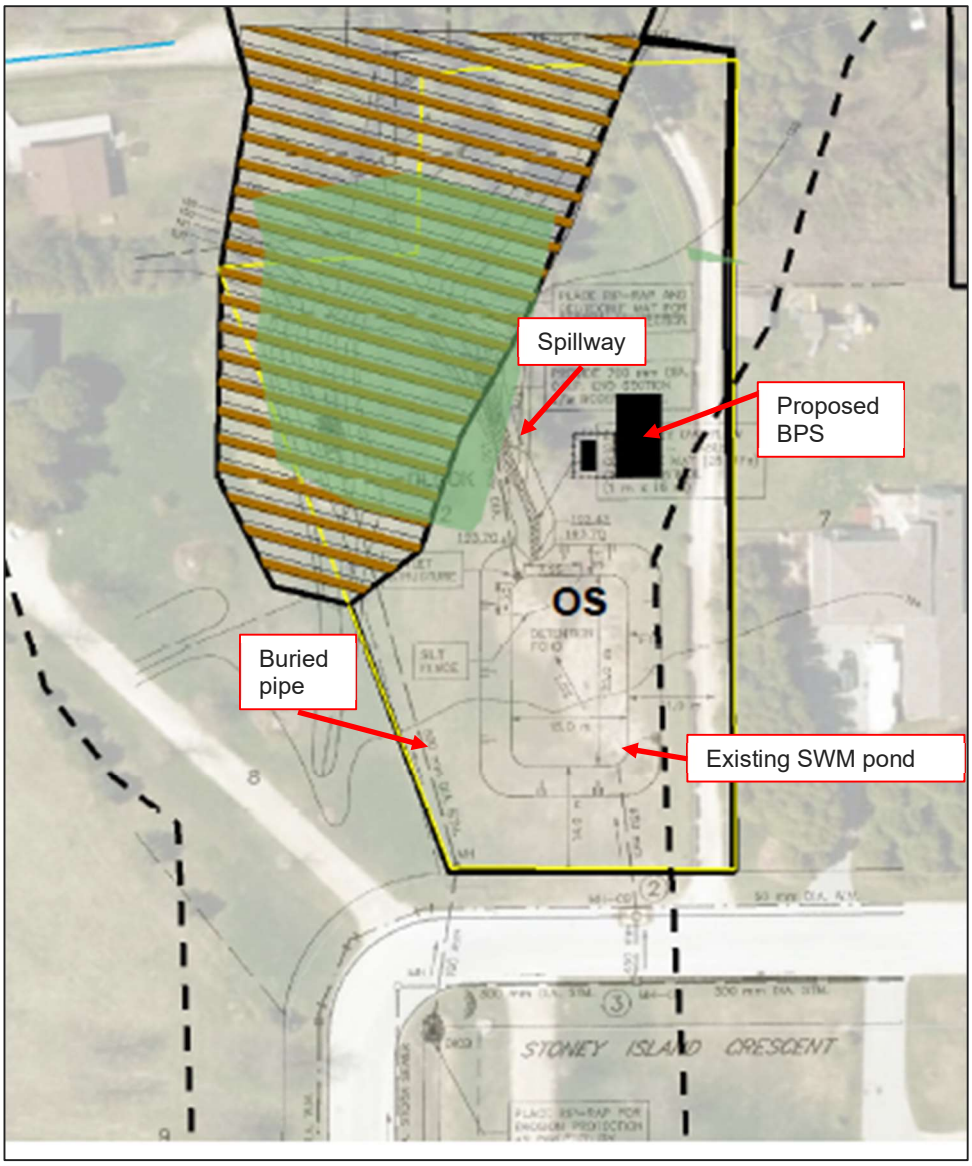
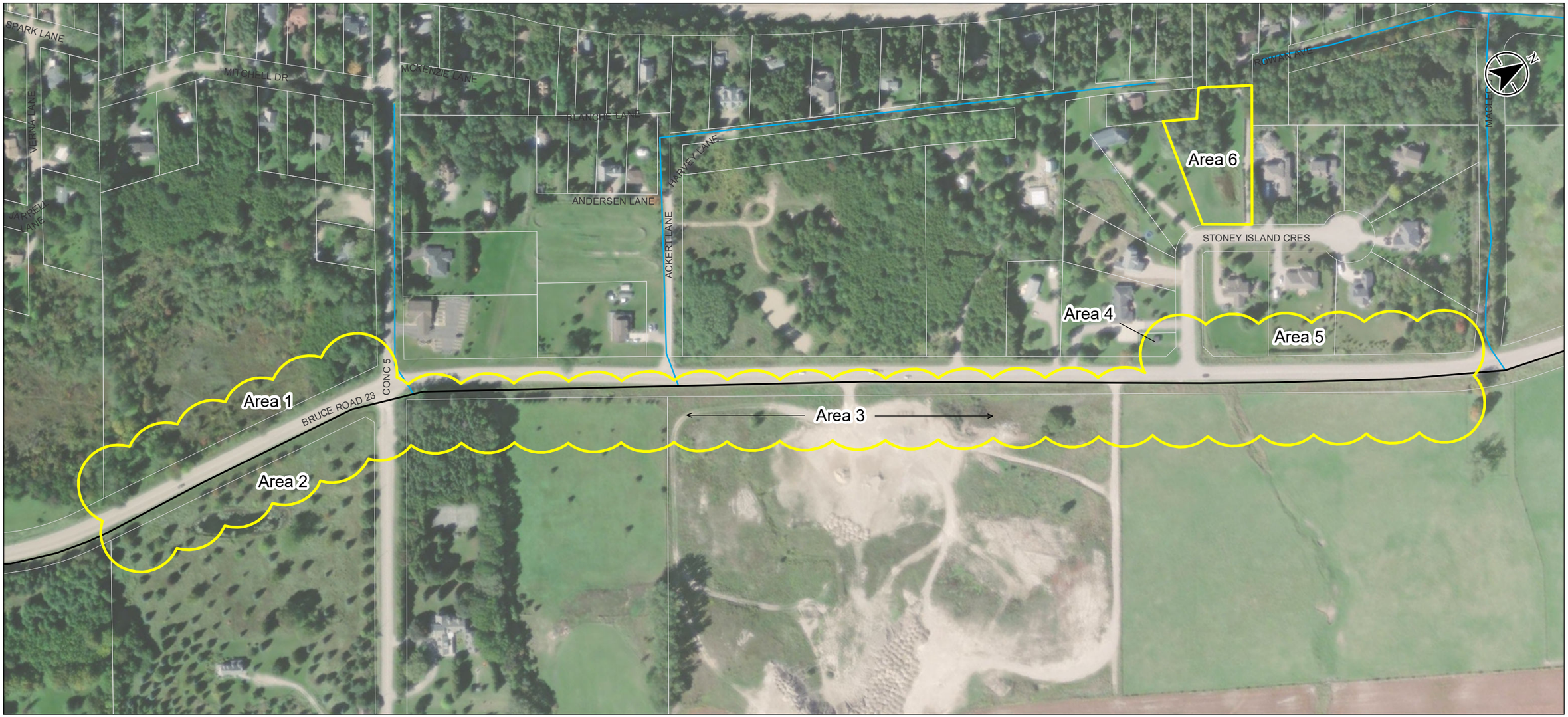


Figure 11: Conceptual Revised Location of a BPS located on the SWM Pond site (as presented at PIC2)



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

Stantec

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.
1

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 provide 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.

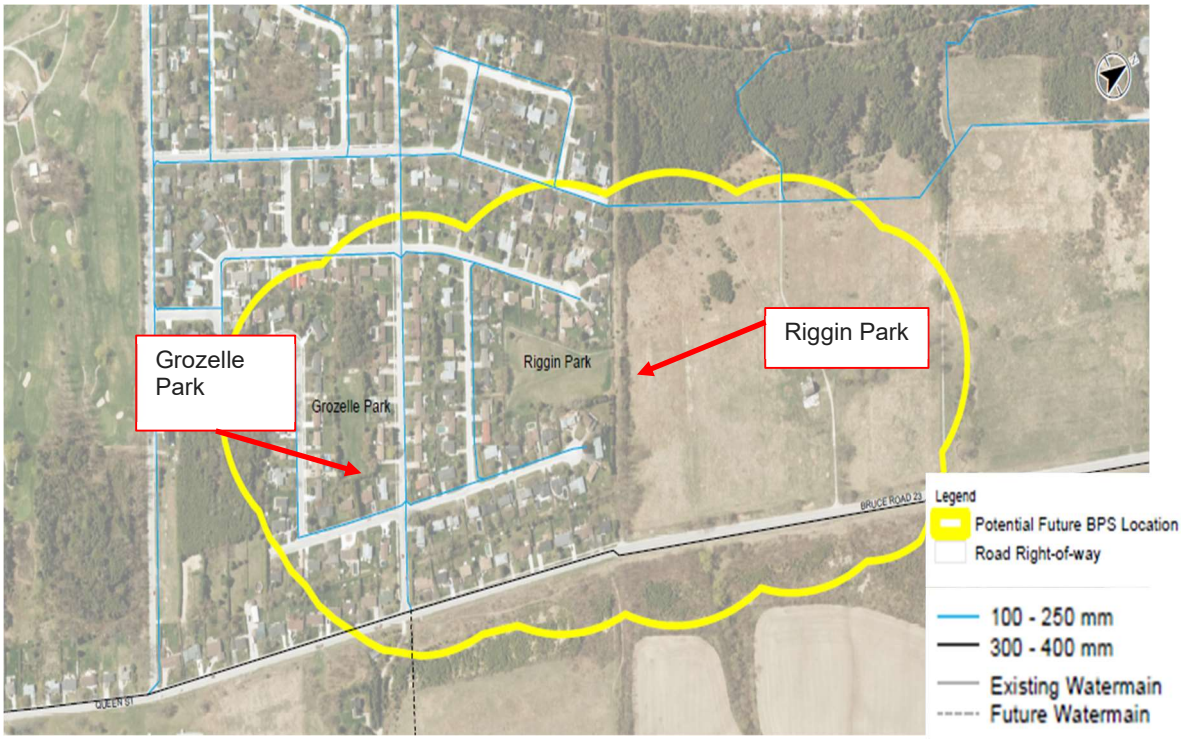

Figure 13: Future Phasing Opportunities - Phase 2 Future Growth

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.

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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.

Bank Swallow may nest in exposed soils associated with soil piles, eroding banks along the Lake Huron shoreline, and/or in exposed faces as part of work occurring in the ROW or elsewhere in the Study Area.

To reduce the risk of Bank Swallows nesting in these locations, construction activities should occur outside of the primary nesting period (April 1 – August 31). If construction activities are unavoidable during this window, the following management practices should be implemented to reduce and avoid impacts to Bank Swallows and their nests:

- Vertical faces of soil piles should be eliminated by reducing the slope to 70 degrees or less. Reducing the slope may be achieved by bulldozing; piling material on the face, or/and using an excavator to create the desired slopes (MNFR, 2017).
- Geotextile, plastic covers, tarping, or yellow strips of fabric may be placed over exposed faces or soil piles to prevent nesting. These barriers should be well-secured to prevent access to Bank Swallows (MNRF, 2017).
- One or more plastic Great Horned Owls may be installed near soil piles and exposed faces. The owl deterrent should be moved regularly to reduce the likelihood of swallows becoming habituated (MNRF, 2017).

Any deterrents or exclusion measures must be installed prior to the breeding season (i.e., before April) and should remain present until the end of the breeding period (i.e., August 31). If deterrents are not installed prior to the breeding season or are ineffective at excluding Bank Swallows, construction activities must stop immediately; destroying Bank Swallow nests will require a permit and may require mitigation measures to 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 test pits) 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 EXCESS SOIL AND WASTE

During construction, the Contractor will be required to adhere to regulations with respect to the use and management of Excess Soil, including a regulation under the Environmental Protection Act, titled On-Site and Excess Soil Management (O. Reg. 406/19) to support improved management of excess construction soil.

Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014) and "Rules for Soil Management and Excess Soil Quality Standards" (2022). All waste generated during construction must be disposed of in accordance with ministry requirements.

9.3.5 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, American Eel, or Lake Sturgeon).

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*.

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.

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

Category	Mitigation
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 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.
Excess Soils	• The Contractor must adhere to requirements for excess soils, including but not limited to the regulation under the Environmental Protection Act titled “On Site and Excess Soil Management (O.Reg. 406/19), and the MECP’s current guidance document titled “Management of Excess Soil – A Guide for Best Management Practices” (2014) and “Rules for Soil Management and Excess Soil Quality Standards” (2022). • All waste generated during construction must be disposed of in accordance with MECP requirements
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 A

Project Notification Materials

NOTICE OF STUDY COMMENCEMENT

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

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 existing plant, and the study area, are shown on the key map.

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. Expansion alternatives will be developed for anticipated community growth and to consider possible servicing requirements to extend supply to the Bruce Power site.

THE PROCESS

This study is being undertaken in accordance with the requirements of Schedule 'C' projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015). The study will be completed concurrently with the Water and Wastewater Servicing Master Plan Update. Information from the Master Plan will inform and be used in this Class EA Study.

PUBLIC INVOLVEMENT

Details regarding opportunities for engagement, including Public Information Centres (PICs) will be advertised as the study progresses on Kincardine's website: www.kincardine.ca/ Upon completion of the study, an Environmental Study Report (ESR) will be prepared and placed on the public record for a minimum 30-day review period.

If you wish to provide comments, have your name added to the study mailing list, or if you have questions about this project, please contact one of the Project Team members listed below.

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If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

MUNICIPALITY OF KINCARDINE

Expansion of the Kincardine Water System and Treatment Plant
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Kincardine Water System and Treatment Plant
Municipal Class Environmental Assessment
Mailing List
August 2023

First Name	Last Name	Title	Organization	Address 1	Address 2	City	Province	Postal Code	Telephone	Email
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Send email and project notification form to eanotification.swregion@ontario.ca		Southwest Region	Ministry of the Environment, Conservation and Parks							eanotification.swregion@ontario.ca
Mark	Badali	Regional Environmental Planner - Southwest Region	Ministry of the Environment, Conservation and Parks							mark.badali1@ontario.ca
Erik	Downing	Manager, Environmental Planning and Regulations	Saugeen Valley Conservation Authority (SVCA)	1078 Bruce Road 12	Box 150	Formosa	ON	N0G 1W0	519-367-3040, ext. 241	publicinfo@svca.on.ca; e.downing@svca.on.ca
Michael	Oberle	Environmental Planning Coordinator	Saugeen Valley Conservation Authority (SVCA)	1078 Bruce Road 12	Box 150	Formosa	ON	N0G 1W0	519-373-4175	m.oberle@SVCA.ON.CA
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Municipal										
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Joint Chiefs and Councils of the Saugeen Ojibway Nation		Environmental Office		10129 Highway 6		Georgian Bluffs	ON	N0H 2T0	519-534-5507	environmentoffice@saugeenoji8waynation.ca
Kimberly	Bressette	Chief	Kettle and Stony Point First Nation	6247 Indian Lane		Lambton Shores	ON	N0N 1J1	519-786-2125	fdesk@kettlepoint.org; consultation@kettlepoint.org;
Sir/Madam			Metis Nation of Ontario c/o Lands and Resources Department Region 7							consultations@metisnation.org
EMS, Fire, Police										
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Local Utilities										
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Sir/Madam			Westario Power Inc.	24 Eastridge Rd	RR2	Walkerton	ON	N0G 2V0	866-978-2746	operations@westariopower.com; engineering@westariopower.com;
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Sir/Madam			Kincardine Cable TV	RPO Meadowlands Mall	P.O. Box 10209	Ancaster	ON	L9K 1P3	1 (800) 265- 3064	kctv@tnt21.com
Sir/Madam			EPCOR Natural Gas						1-888-765-2256	gas@epcor.com
Stakeholder Groups										
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Public Additions										
Included on mailing list										

From:	Kielstra, David
Cc:	Oliveira, Nelson; Adam Weishar
Bcc:	"karla.barboza@ontario.ca"; "dan.l.thompson@ontario.ca"; "NoticeReview@infrastructureontario.ca"; "publicinfo@svca.on.ca"; "e.downing@svca.on.ca"; "kcraig@kincardine.ca"; "schambers@kincardine.ca"; "aweber@kincardine.ca"; "jlawrie@kincardine.ca"; "aweishar@kincardine.ca"; "jjagelewski@kincardine.ca"; "mbarr@kincardine.ca"; "dthomson@brucecounty.on.ca"; "transportationinfo@brucecounty.on.ca"; "bcplpe@brucecounty.on.ca"; "OPP.South.Bruce@opp.ca"; "kinfire@kincardine.ca"; "info@brucecounty.on.ca"; "SecondaryLandUse@HydroOne.com"; "utility@kincardine.ca"; "operations@westariopower.com"; "engineering@westariopower.com"; "business@brucetelecom.com"; "admin@brucetelecom.com"; "customerservice@hurontel.on.ca"; "kctv@tnt21.com"; "gas@epcor.com"; "contact@stscgb.ca"; "information@kincardinetrails.net"; "director@kincardinechamber.com"; "tourism@kincardine.ca"; "info@explorethebruce.com"; "communications@bwdsb.on.ca"; "info@brucepower.com"; "phoenixamginc@gmail.com"; "madison.curry@sbghc.on.ca"; "bruce_grey@bgcdsb.org"; "lambeau@kincardine.ca"; "nancy.green@brucepower.com"; "agarland@bmross.net"; Badali, Mark (MECP)
Subject:	Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Date:	Thursday, November 24, 2022 11:50:00 AM
Attachments:	ad_NOSC - kincardine_Water_System_Expansion_Class_EA_fnl.pdf

Hello,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

What to do:
Step 1: Look for the type of EA project in column B that applies to you.
Step 2: Complete columns C to J for that project.
Step 3: Send this form in Excel format to the MECP regional office email address where the project is located.
MECP regional office email addresses are listed at
www.ontario.ca/page/preparing-environmental-assessments

	Class EA/Streamlined EA	Proponent Name	Proponent Contact	Project Name	Project Schedule	Project Type	Project Location	MOECC Region	Project Initiation Date
1	CO - Remedial flood and erosion control projects								
2	GO Transit - Class EA								
3	Hydro One - Minor transmission facilities								
4	MEA - Class EA for municipal infrastructure projects	Municipality of Kincardine	Adam Weishar, 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	Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment Study	Schedule C	Municipal water and wastewater projects	Kincardine, Municipality of	Southwestern	11/24/2022
5	Ministry of Infrastructure - Public work								
6	MNDM - Activities of the Ministry of Northern Development and Mines under the Mining Act								
7	MNRF - Provincial parks and conservation reserves								
8	MNRF - Resource stewardship and facility development projects								
9	MTO - Provincial transportation facilities								
10	O. Reg. 101/07 - Waste management projects								
11	O. Reg. 116/01 - Electricity projects								
12	OWA - Waterpower projects								
		Enter the proponent's name.	Enter the name and email address of the person who the MECP should contact about your project. This should be the same contact person who is listed on the notice.	Enter the project name as it appears on the notice.	Select the project schedule from the drop-down menu.	Select the project type from the drop-down menu.	Select the name of the municipality or unorganized/unsurveyed areawhere your project is located from the drop-down menu.	Select the MECP region from the drop-down menu. Read the "MECP regions" worksheet to find the MECP region where your project is located.	Enter the date that the streamlined EA process was initiated (e.g. notice of commencement). This date may be when the project notice was first published.

NOTICE OF PUBLIC INFORMATION CENTRE

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site. See study area map.

This study is being undertaken in accordance with the requirements of Schedule C projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015) which is approved under the Ontario *Environmental Assessment Act*.

HOW CAN I PARTICIPATE IN THE STUDY?

A virtual Public Information Centre (PIC) is being 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 will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer/)

Please contact a member of the project team below by **April 28, 2023** to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

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

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: 905-381-3247

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

MUNICIPALITY OF KINCARDINE

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

NOTICE OF PUBLIC INFORMATION CENTRE

THE STUDY:

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site. See study area map.

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Please contact a member of the project team below by **April 28, 2023** to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

Adam Weishar, C.E.T.
Director of Infrastructure and Development
Municipality of Kincardine
1475 Concession 5, R.R. #5
Kincardine, ON N2Z 2X6
E-mail: aweishar@kincardine.ca
Phone: 519-396-3468 ext. 7121

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek, ON L8J 0B4
E-mail: david.kielstra@stantec.com
Phone: 905-381-3247

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MUNICIPALITY OF KINCARDINE

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

NOTICE OF PUBLIC INFORMATION CENTRE

THE STUDY:

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This study is being undertaken in accordance with the requirements of Schedule C projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015) which is approved under the Ontario *Environmental Assessment Act*.

HOW CAN I PARTICIPATE IN THE STUDY?

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Presentation materials will also available to review on the Municipality's website (https://www.kincardine.ca/Water-And-Sewer/)

Please contact a member of the project team below by **April 28, 2023** to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

Adam Weishar, C.E.T.
Director of Infrastructure and Development
Municipality of Kincardine
1475 Concession 5, R.R. #5
Kincardine, ON N2Z 2X6
E-mail: aweishar@kincardine.ca
Phone: 519-396-3468 ext. 7121

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
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E-mail: david.kielstra@stantec.com
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If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

From:	Kielstra, David
Cc:	Adam Weishar; Oliveira, Nelson
Bcc:	karla.barboza@ontario.ca; joseph.harvey@ontario.ca; dan.l.thompson@ontario.ca; NoticeReview@infrastructureontario.ca; mark.badali1@ontario.ca; publicinfo@svca.on.ca; e.downing@svca.on.ca; m.oberle@SVCA.ON.CA; kcraig@kincardine.ca; jBellchamber-Glazier@kincardine.ca; aweber@kincardine.ca; arogers@kincardine.ca; jlawrie@kincardine.ca; aweishar@kincardine.ca; jjagelewski@kincardine.ca; lambeau@kincardine.ca; dmcnab@kincardine.ca; dthomson@brucecounty.on.ca; transportationinfo@brucecounty.on.ca; astanley@brucecounty.on.ca; bcplpe@brucecounty.on.ca; AFroese@brucecounty.on.ca; JHaan@brucecounty.on.ca; ClDodds@brucecounty.on.ca; hyoung@brucecounty.on.ca; OPP.South.Bruce@opp.ca; kinfire@kincardine.ca; info@brucecounty.on.ca; SecondaryLandUse@HydroOne.com; Susan.sun@hydroone.com; utility@kincardine.ca; operations@westariopower.com; engineering@westariopower.com; business@brucetelecom.com; admin@brucetelecom.com; customerservice@hurontel.on.ca; kctv@tnt21.com; gas@epcor.com; contact@stscgb.ca; info@kincardinetrails.net; director@kincardinechamber.com; tourism@kincardine.ca; info@explorethebruce.com; info@bwdsb.on.ca; Shelley_crummer@bwdsb.on.ca; John_Bumstead@bwdsb.on.ca; info@brucepower.com; nancy.green@brucepower.com; phoenixamginc@gmail.com; madison.curry@sbghc.on.ca; bruce_grey@bgcdsb.org; agarland@bmross.net; lcourtney@bmross.net; sburns@bmross.net; helga.michelbach@canadian-agra.com; helmut.sieber@bruceenergycentre.com; nancy.michie@bruceenergycentre.com; Hohner, Paula; Horsley, Simon
Subject:	Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, March 22, 2023 4:20:00 PM
Attachments:	Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hello,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Wilson, Greg (MECP)
To:	Kielstra, David
Cc:	Oliveira, Nelson; Adam Weishar; Howard, Katie (MECP); Davidson, Scott (MECP); Aldworth, James (MECP)
Subject:	FW: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant
Date:	Monday, March 27, 2023 11:40:40 AM
Attachments:	image001.png Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hi David,

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.

Sincerely,
Greg

Greg Wilson | Zone Manager – Southwest Zone
659 Exeter Road, London, Ontario, N6E 1L3
P: 519-873-4616 **W**: OntarioParks.com

Ministry of the Environment, Conservation and Parks
Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: March 27, 2023 11:32 AM
To: Aldworth, James (MECP) <James.Aldworth@ontario.ca>; Wilson, Greg (MECP) <Greg.Wilson2@ontario.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Good morning,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

The existing municipal watermain currently ends near Inverhuron Provincial Park and a proposed extension of the watermain is being considered to Bruce Power. The route of the watermain extension

has not been confirmed, although it would be anticipated to be constructed in a road right of way outside of the Provincial Park. Please let me know if any other individuals from Ontario Parks or Inverhuron Provincial Park should be included on our contact list as the EA continues.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, March 23, 2023 3:02 PM
To: information@kincardinetrails.net
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant
Attachments: Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hello,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
Cc:	Oliveira, Nelson; Adam Weishar
Bcc:	"karla.barboza@ontario.ca"; "joseph.harvey@ontario.ca"; "dan.l.thompson@ontario.ca"; "NoticeReview@infrastructureontario.ca"; "publicinfo@svca.on.ca"; "e.downing@svca.on.ca"; "greg.wilson2@ontario.ca"; "Katie.Howard@ontario.ca"; "m.oberle@SVCA.ON.CA"; "Scott.Davidson1@ontario.ca"; "James.Aldworth@ontario.ca"; "explore@greysauble.on.ca"; "planningpermits@greysauble.on.ca"; "kcraig@kincardine.ca"; "jBellchamber-Glazier@kincardine.ca"; "kvickery@kincardine.ca"; "arogers@kincardine.ca"; "jlawrie@kincardine.ca"; "aweishar@kincardine.ca"; "jjagelewski@kincardine.ca"; "lambeau@kincardine.ca"; "dmcnab@kincardine.ca"; "moleary@kincardine.ca"; "OPP.South.Bruce@opp.ca"; "kinfire@kincardine.ca"; "info@brucecounty.on.ca"; "SecondaryLandUse@HydroOne.com"; "Susan.sun@hydroone.com"; "utility@kincardine.ca"; "operations@westariopower.com"; "engineering@westariopower.com"; "business@brucetelecom.com"; "admin@brucetelecom.com"; "customerservice@hurontel.on.ca"; "kctv@tnt21.com"; "gas@epcor.com"; "contact@stscgb.ca"; "information@kincardinetrails.net"; "director@kincardinechamber.com"; "tourism@kincardine.ca"; "info@explorethebruce.com"; "info@bwdsb.on.ca"; "Shelley_crummer@bwdsb.on.ca"; "John_Bumstead@bwdsb.on.ca"; "info@brucepower.com"; "nancy.green@brucepower.com"; "phoenixamginc@gmail.com"; "madison.curry@sbghc.on.ca"; "bruce_grey@bgcdsb.org"; "agarland@bmross.net"; "lcourtney@bmross.net"; "sburns@bmross.net"; "helga.michelbach@canadian-agra.com"; "helmut.sieber@bruceenergycentre.com"; "nancy.michie@bruceenergycentre.com"; "bcplpe@brucecounty.on.ca"; "AFroese@brucecounty.on.ca"; "JHaan@brucecounty.on.ca"; "ClDodds@brucecounty.on.ca"; "hyoung@brucecounty.on.ca"; "transportationinfo@brucecounty.on.ca"; "astanley@brucecounty.on.ca"; "info@kincardinetrails.net"; "mark.badali1@ontario.ca"
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:31:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC #2) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have.

Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Wednesday, July 12, 2023 3:05 PM
Cc: Oliveira, Nelson; Adam Weishar
Subject: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Attachments: Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC #2) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have.

Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

NOTICE OF PUBLIC INFORMATION CENTRE #2

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street, address potential community growth in the study area, and consider a possible extension to Bruce Power. See study area map.

Expansion alternatives presented at the first Public Information Centre (PIC #1) identified that the preferred solution includes:

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

A second PIC (PIC #2) is being held to provide an update on study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

HOW CAN I PARTICIPATE IN THE STUDY?

PIC #2 will be held in-person using a drop-in format, with project team members and Municipality staff available to discuss the project and any questions.

Date: Monday July 24, 2023
Location: Municipality of Kincardine Council Chambers
1475 Concession 5, RR #5, Kincardine ON N2Z 2X6
Time: 6:00 pm - 8:00 pm

Presentation materials will also be available on the Municipality's website following the PIC. Comments are requested by **August 8, 2023.** (https://www.kincardine.ca/Water-and-Sewer/).

This study is being undertaken in accordance with the requirements of Schedule C projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015) which is approved under the Ontario *Environmental Assessment Act*. Near the end of the project, an Environmental Study Report (ESR) will be prepared to document the EA process, consultation activities, and the evaluation. The ESR will be presented for a 30 day public review at that time.

Please contact a member of the project team below to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

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. 7121

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: 905-381-3247

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

Kincardine Public Mailing - Nearby Property Owners
Public Information Centre #2 - July 2023

Name	Mailing Address
Stoney Island Crescent Area	
Owner/Occupant	3 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	5 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	7 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	9 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	11 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	16 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	19 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	20 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	21 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	22 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	23 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	25 Stoney Island Crescent, Kincardine, ON, N2Z 2X6
Owner/Occupant	363 Bruce Road 23, Kincardine, ON, N2Z 2X6
Owner/Occupant	365 Bruce Road 23, Kincardine, ON, N2Z 2X6
Owner/Occupant	29 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	35 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	36 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	37 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	39 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	38 Harvey Lane, Kincardine, ON, N2Z 2X6
Owner/Occupant	36 Rowan Avenue, Kincardine, ON N2Z 2X6
Owner/Occupant	34 Rowan Avenue, Kincardine, ON N2Z 2X6
Owner/Occupant	32 Rowan Avenue, Kincardine, ON N2Z 2X6
Owner/Occupant	28 Rowan Avenue, Kincardine, ON N2Z 2X6
Owner/Occupant	26 Rowan Avenue, Kincardine, ON N2Z 2X6
Owner/Occupant	360 Bruce Road 23, Kincardine, ON, N2Z 2X6
Owner/Occupant	396 Bruce Road 23, Kincardine, ON, N2Z 2X6
Watermain Extension Area	
Owner/Occupant	2 Alma Street, Kincardine, ON, N2Z 2X6
Owner/Occupant	24 Jordan Road, Kincardine, ON, N0G 2T0
Owner/Occupant	37 Alma Street, Tiverton, ON, N0G 2T0
Owner/Occupant	199 Albert Road, Tiverton, ON N0G 2T0
Owner/Occupant	1842 Concession Road 2, Tiverton, ON N0G 2T0
Kincardine WTP	
Owner/Occupant	894 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	900 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	902 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	910 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	914 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	875 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	879 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	885 Saugeen Street, Kincardine, ON, N2Z 1A5

Owner/Occupant	893 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	897 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	899 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	847 Saugeen Street, Kincardine, ON, N2Z 1A5
Owner/Occupant	156 Durham Street, Kincardine, ON, N2Z 2X9
Owner/Occupant	177 Durham Street, Kincardine, ON, N2Z 1A4
Owner/Occupant	193 Durham Street, Kincardine, ON, N2Z 1A4
Owner/Occupant	203 Durham Street, Kincardine, ON, N2Z 2X9
Owner/Occupant	208 Durham Street, Kincardine, ON, N2Z 2X9
Owner/Occupant	880 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	890 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	896 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	898 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	869 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	875 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	887 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	891 McDonald Avenue, Kincardine, ON, N2Z 1A4
Owner/Occupant	897 McDonald Avenue, Kincardine, ON, N2Z 1A4

APPENDIX B

Public Information Centre Displays

Welcome!

Welcome to the first virtual Public Information Centre (PIC) for the Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment (EA) study. After reviewing the information, we would appreciate your comments and feedback. Your input is important to us!

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment

Virtual Public Information Centre #1

March 30 to April 28, 2023

The purpose of the virtual PIC is to:

- Provide an overview of the Kincardine Water Treatment Plant (WTP) study
- Present a review of the Alternative Solutions and next steps
- Provide an opportunity for you to learn about the project and how to get involved

Project Overview

What are we doing?

- The Municipality of Kincardine is developing options for expansion of the Kincardine Water System and Water Treatment Plant at 155 Durham Street.
- The project team is providing information regarding the proposed work.

Why are we doing it?

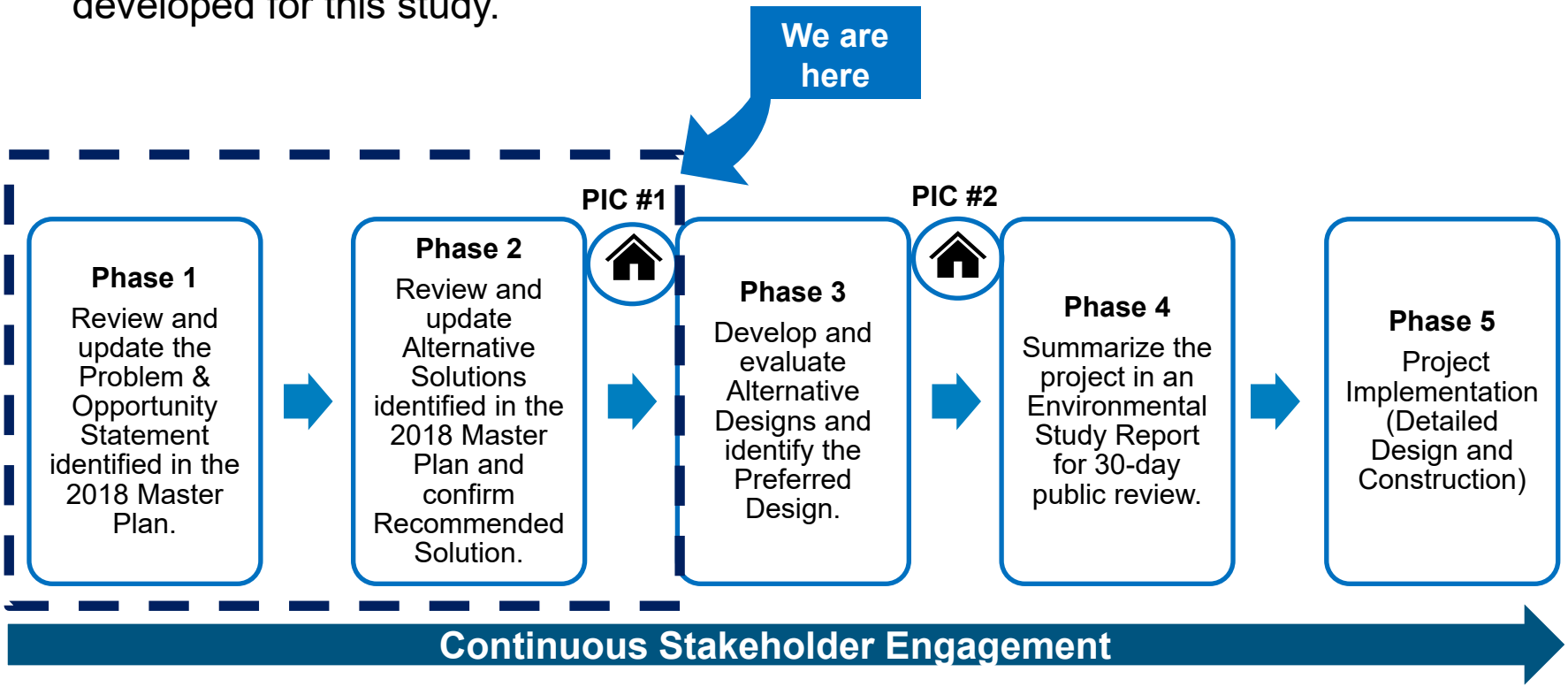
- The purpose of this Schedule C EA study is to review expansion alternatives for the existing WTP to service anticipated community growth.
- Specifically, the project will consider servicing requirements to extend water supply to the Bruce Power site.

What does the Study Area include?

- The study area includes the Kincardine WTP, the existing watermain on Bruce Road 23, and nearby areas that could possibly be serviced or impacted by a water supply extension.

Municipal Class EA Process

- A Schedule C Municipal Class EA study includes Phase 1 through Phase 4 of the EA process, as illustrated below.
- The 2018 Kincardine Water and Wastewater Servicing Master Plan completed Phases 1 and 2 of the Municipal Class EA process and the recommendations were carried forward for review based on the Problem & Opportunity Statement developed for this study.



Phase 1 - Problem & Opportunity Statement

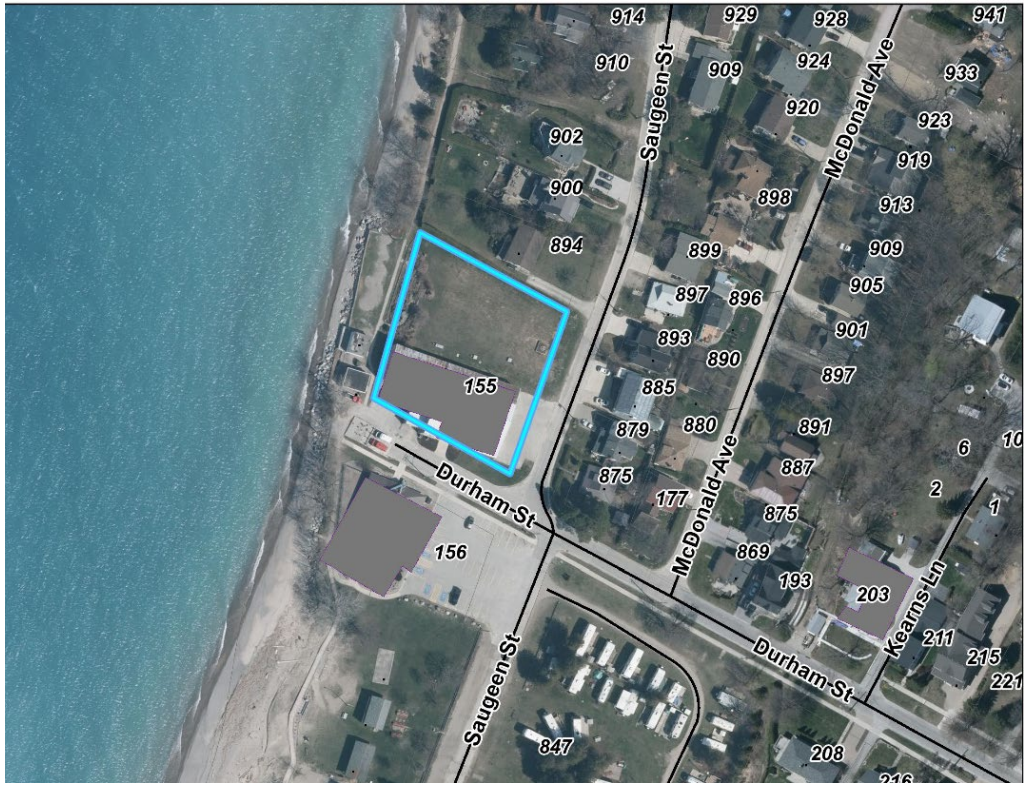
The Municipality of Kincardine is experiencing community growth and is considering the potential to add Bruce Power as a water customer by providing potable water to the site.

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 current 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.

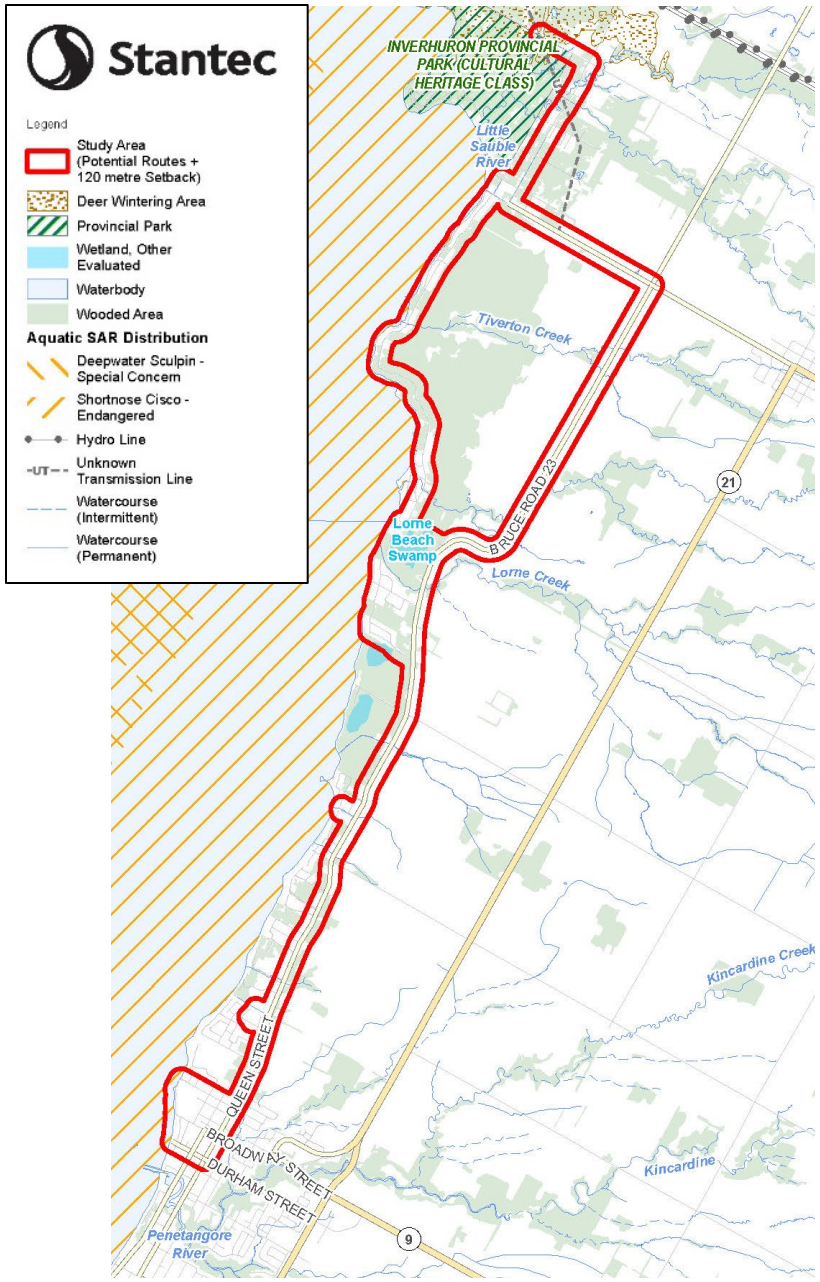
Existing Conditions - Kincardine Drinking Water System

- The Kincardine Drinking Water System consists of the Kincardine WTP, water storage and the drinking water distribution system.
- The system provides clean drinking water to the community with approximately 3,300 connections.
- Water is drawn from an intake pipe in Lake Huron and is treated and stored on site.
- Water is distributed to the community through a system of underground pipes.
- A “standpipe” provides for additional water storage to address pressure and fire protection needs.
- One booster station (to increase water pressure) within the system provides the ability to service lands north of Gary Street.



Kincardine Water Treatment Plant located at 155 Durham Street

Existing Conditions – Natural Environment



The following Natural Heritage features are present within the study area:

- 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
- Lake Huron as well as four watercourses where fish habitat may occur: Little Sauble River, Tiverton Creek, Andrews Creek, and Lorne Creek
- Inverhuron Provincial Park and Stoney Island Conservation Area
- SVCA Regulation Limits are present and associated with wetlands, watercourses, Stoney Island Conservation Area, and Lake Huron shoreline
- Potential habitat for 24 terrestrial SAR (18 birds, 4 mammals, and 2 plants) and 18 Species of Conservation Concern (2 insects, 5 herptiles, 10 birds, and 1 plant) overlap with the study area

Site-specific environmental investigations will be completed in Phase 3 of the Class EA study as required for the Recommended Alternative.

Phase 2 - Review of Alternative Solutions

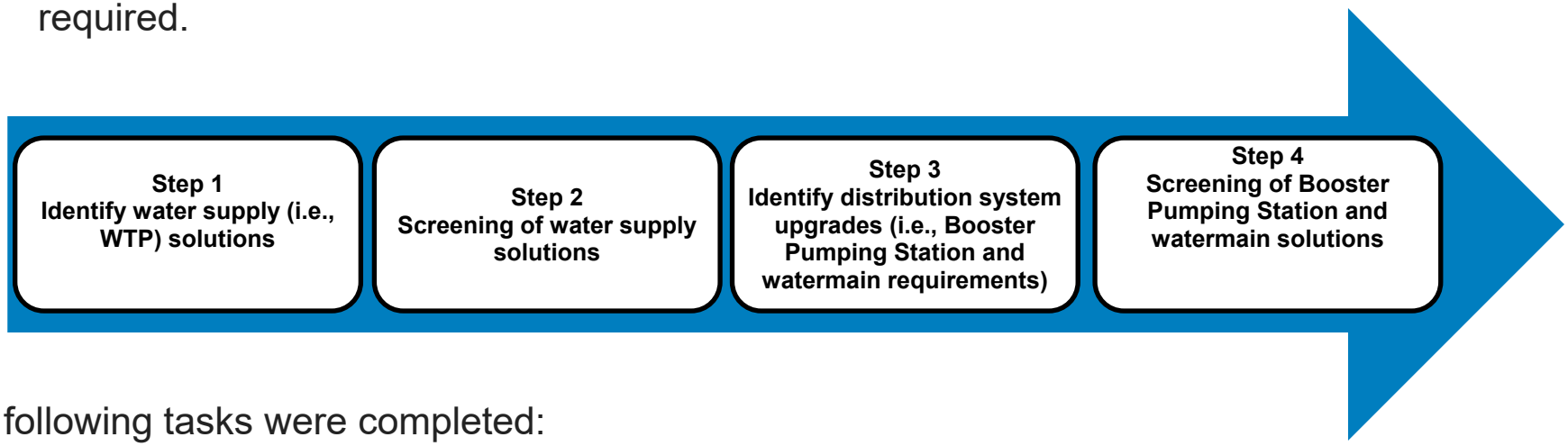
- The Kincardine Water and Wastewater Servicing Master Plan (2018) identified three alternative solutions to address future water servicing needs, including:
  - A new WTP at the north end of the municipality
  - Expansion of the existing Kincardine WTP
  - Do nothing
- The Master Plan concluded that 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.
- A review of costs associated with construction of a new north end WTP were prepared following the Master Plan, indicating costs would be significant and prompting further review of expansion to the existing WTP.
- In 2021, a Comprehensive Performance Evaluation (CPE) was completed to further evaluate WTP expansion options for the existing Kincardine WTP.
- The CPE concluded the existing WTP could be expanded to provide sufficient treatment capacity.

The purpose of this Schedule C Class EA study is to consider alternatives to provide water treatment capacity via expansion of the existing WTP facility including potential connection with Bruce Power. The 2018 Water and Wastewater Servicing Master Plan is being updated concurrently with this Class EA study for the WTP expansion.

Development of Water System and WTP Solutions

A staged approach was used to further develop the preferred solution of WTP expansion and supply, including:

- Confirming the “availability of supply” as it relates to the WTP.
- Determining how to get the water to the customer (including Bruce Power) through the water distribution system, recognizing that distribution system upgrades will be required.



The following tasks were completed:

1. **Analyze the Kincardine Water Treatment Plant (WTP) and distribution and storage systems:** building on previous work, such as the CPE and system modelling.
2. **Review updated population and flow projections:** provided through the parallel Master Plan update process being completed by the Municipality.
3. **Develop water treatment and distribution system solutions:** must meet the Problem/Opportunity Statement.
4. **Select preferred treatment and distribution solutions:** based on technical processes and input from agency, Indigenous community, First Nation and public engagement.

Phase 2 - Review of Alternative Solutions

Alternative solutions presented in the 2018 Master Plan were reviewed, augmented and screened based on their ability to address the current Schedule C EA Problem and Opportunity Statement:

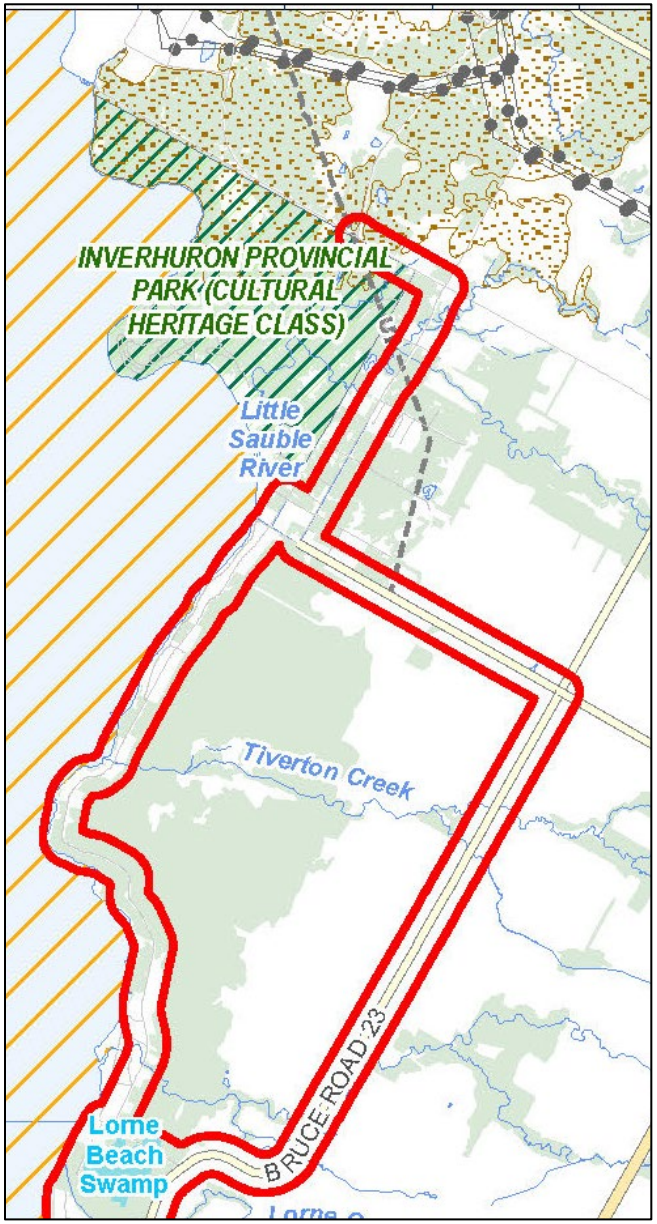
Alternative Solution	Recommendation
Do Nothing (comparison only for EA) • Maintain status quo and do not provide additional water treatment capacity at the Kincardine WTP.	Do not carry forward for further consideration
Limit Community Growth • Maintain current water treatment capacity at the Kincardine WTP and limit community growth to available production. Does not address the Problem/Opportunity Statement, since this approach limits planned community growth and does not support a watermain extension to the north.	Do not carry forward for further consideration
Expansion of the Kincardine WTP within the existing building and site footprint • The evaluation in the CPE found that there is potential to expand the existing WTP to provide sufficient treatment capacity, depending on the rate of community growth. • Preliminary evaluations identified that alternatives exist to obtain the desired treatment capacity within the existing Kincardine WTP site, and no further property expansion is deemed necessary.	**Preferred Alternative Solution and carried forward to Phase 3 for identification of Design Alternatives (i.e., process alternatives) within the existing building & site footprint**
Expansion of the Kincardine WTP, including an expansion of the building and site footprint • The CPE determined that other options are available to increase capacity within the existing building and site footprint. • Minimal land available near the existing Kincardine WTP and options for physical expansion of the site is limited. The existing WTP is located in a residential neighbourhood with limited land available. Surplus municipal land is unavailable and property acquisition costs may be costly.	Do not carry forward for further consideration

Preferred Alternative Solution

Watermain Extension to Bruce Power

Bruce Power has expressed interest in a connection to the municipal water system. The water connection is required for drinking water, washrooms, cleaning, and other non-nuclear plant uses. Some key considerations were assessed:

- Local customers and level of service – The amount of capacity available in the system must consider existing levels of service so that users are not adversely impacted. This includes pressure, flow, and storage needs which impacts where a BPS can be located.
- Water supply pressure to service Bruce Power – Additional pumping stations may be required if existing infrastructure is insufficient and/or topography issues constrain the ability to provide Bruce Power with water at sufficient pressure.
- Available land – The Municipality is examining potential municipal-owned land for possible booster station locations. If suitable municipal land is not available, it may increase costs.
- Conveyance Impacts – Preference is to utilize existing municipal infrastructure, with siting of the BPS close to primary supply mains.

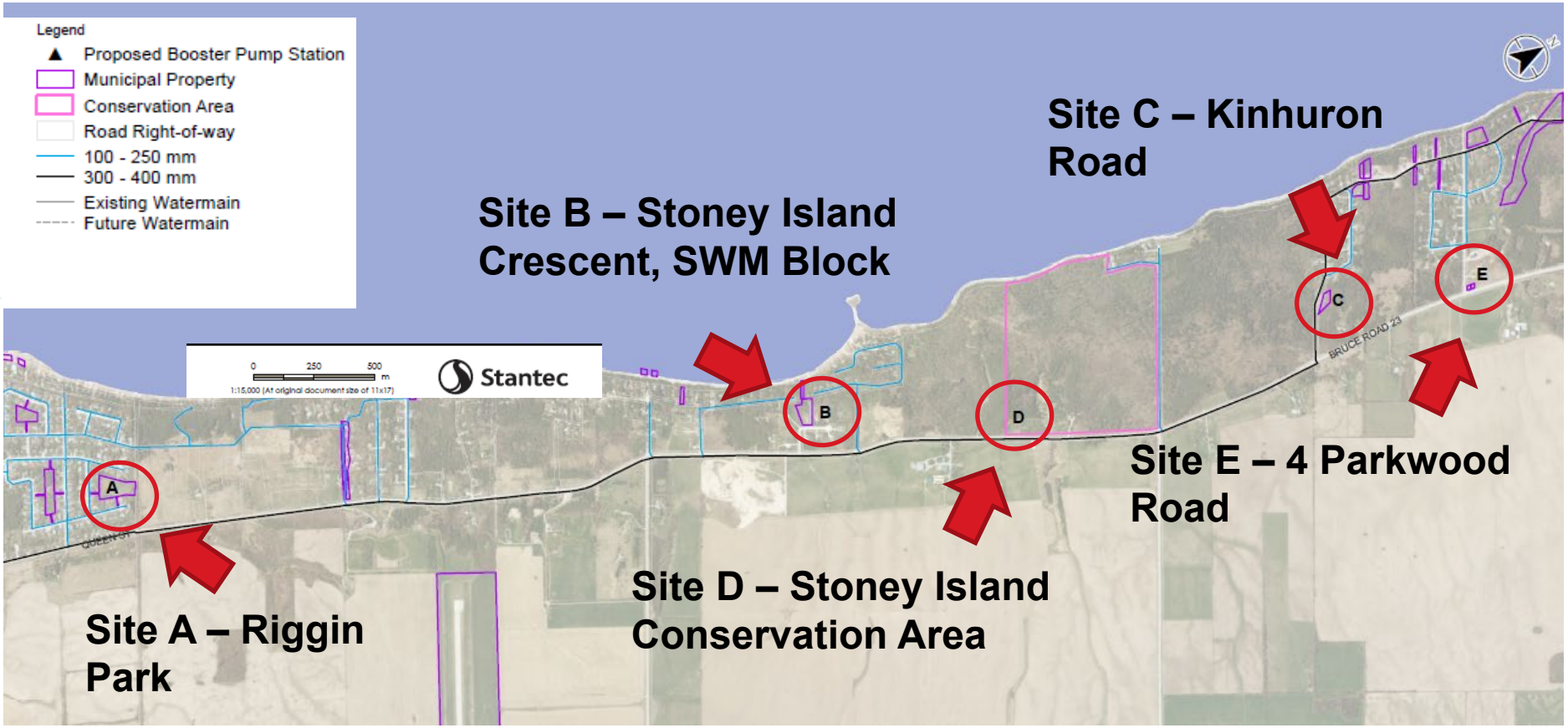


Alternative watermain extension routes under consideration and subject to the BPS location and hydraulics review.

Booster Pumping Station – Location Alternatives

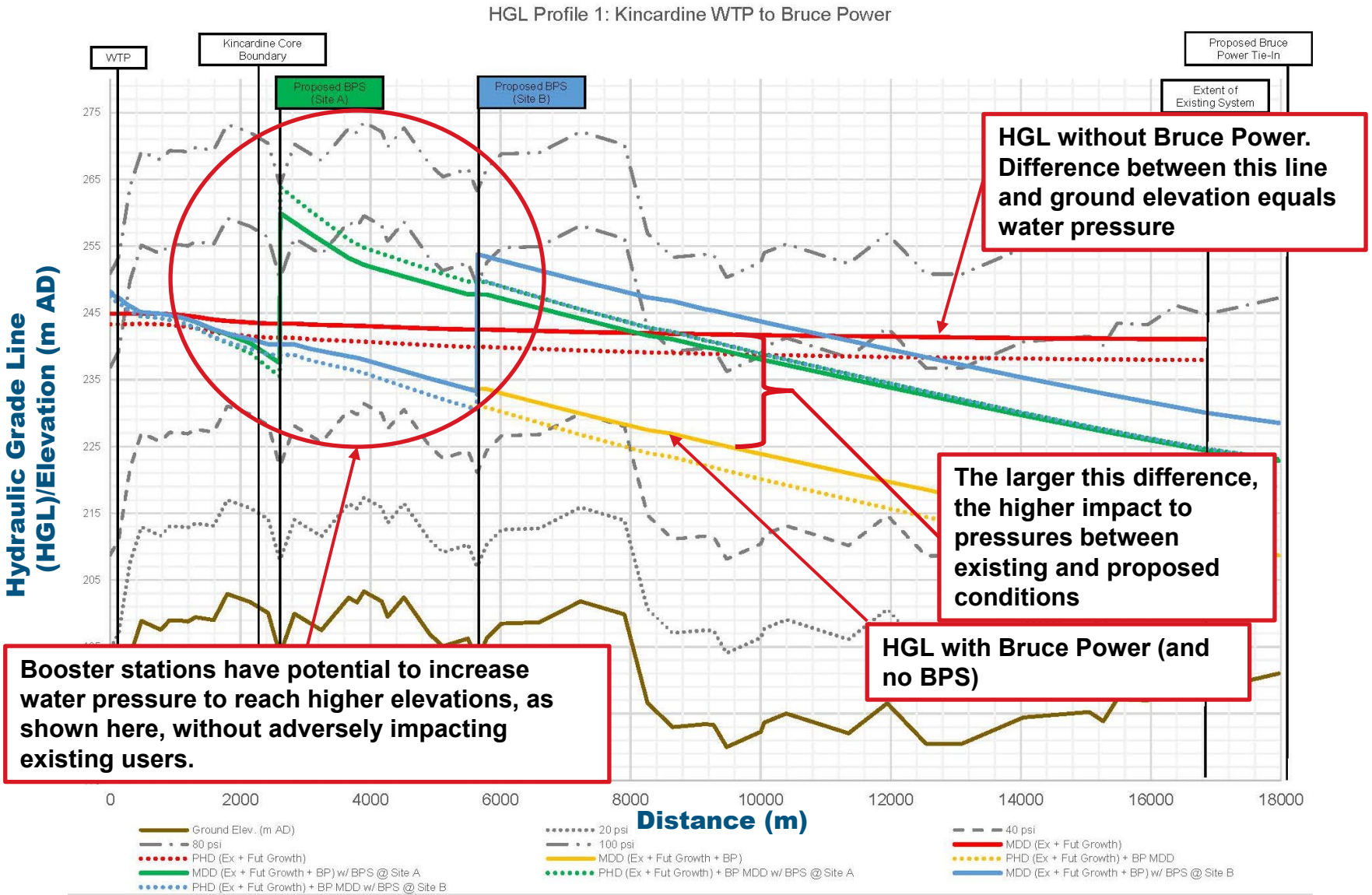
A Booster Pumping Station (BPS) is required for a proposed extension to service Bruce Power due to elevation changes and pressure losses between the Kincardine WTP and the Bruce Power facility. These elevation changes require additional water pressure to enable water to overcome these changes, while not impacting the end users or those along the route.

The following location alternatives are under review as part of this Class EA study:



Watermain Pressure and Elevation Considerations

This Hydraulic Grade Line (HGL) chart shows how a proposed BPS would affect watermain pressures between the Kincardine WTP and Bruce Power. A BPS closer to the Kincardine WTP (site A or B) has a better ability to overcome elevation changes and pressure losses in the water system.



BPS Location Alternatives - Preliminary Screening

The long list of location alternatives was screened based on the ability to provide appropriate pressure upstream and downstream of the BPS, given the elevation changes in the system; and the proximity to the existing 300 mm watermain.

Location Alternative	Description and Summary of Assessment	Carry forward for detailed evaluation?
Site A Riggin Park	Site consists of a municipal park located along Inverlyn Crescent North and near the Blue Trail. A BPS would be anticipated to be located at the north end of the site. Sufficient land available to construct new BPS. Potential to use Blue Trail for access. Preliminary modelling suggests that location could work within upstream and downstream pressure boundaries.	**Carried forward for detailed evaluation.**
Site B Stoney Island Crescent, SWM Block	Site consists of a Stormwater Management Facility surrounded by residential property. Sufficient land available to construct new BPS and infrastructure. Preliminary modelling suggests that location could work within upstream and downstream pressure boundaries.	**Carried forward for detailed evaluation.**
Site C Kinhuron Road	Site is located on the north side of Kinhuron Road and features a small open grassed area. The road provides access to North Cedar Lane and South Cedar Lane. Site size is limited and close to a roadway and steeper slope. Tree removal would be required to widen the site for new BPS and site works due the narrow site. Preliminary modelling 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 D Stoney Island Conservation Area	Site is located at the southeast corner of Stoney Island Conservation Area on Bruce Road 23. Site size is limited and is located close to the roadway and steeper slope. Tree removal would be required to widen site for new BPS and site works. Preliminary modelling 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 previously consisted of two structures including a Bruce Telecom building which has since been demolished. Site size is limited and close to roadway and on steeper slope. Tree removal would be required to widen site for new BPS and site works. Preliminary modelling 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.

BPS Location Alternatives – Detailed Assessment

The preliminary screening of BPS location alternatives resulted in two sites carried forward for detailed assessment, as summarized below:

CRITERIA	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
Social Environment	Moderately preferred	Most preferred
Cultural Environment	Moderately Preferred – no difference	Moderately Preferred – no difference
Natural Environment	Moderately Preferred	Moderately Preferred
Technical Environment	Moderately Preferred	Most Preferred
Financial Environment	Moderately Preferred	Most Preferred
SUMMARY	MODERATELY PREFERRED	MOST PREFERRED

Stoney Island Crescent is the preliminary preferred site for the BPS for the following reasons:

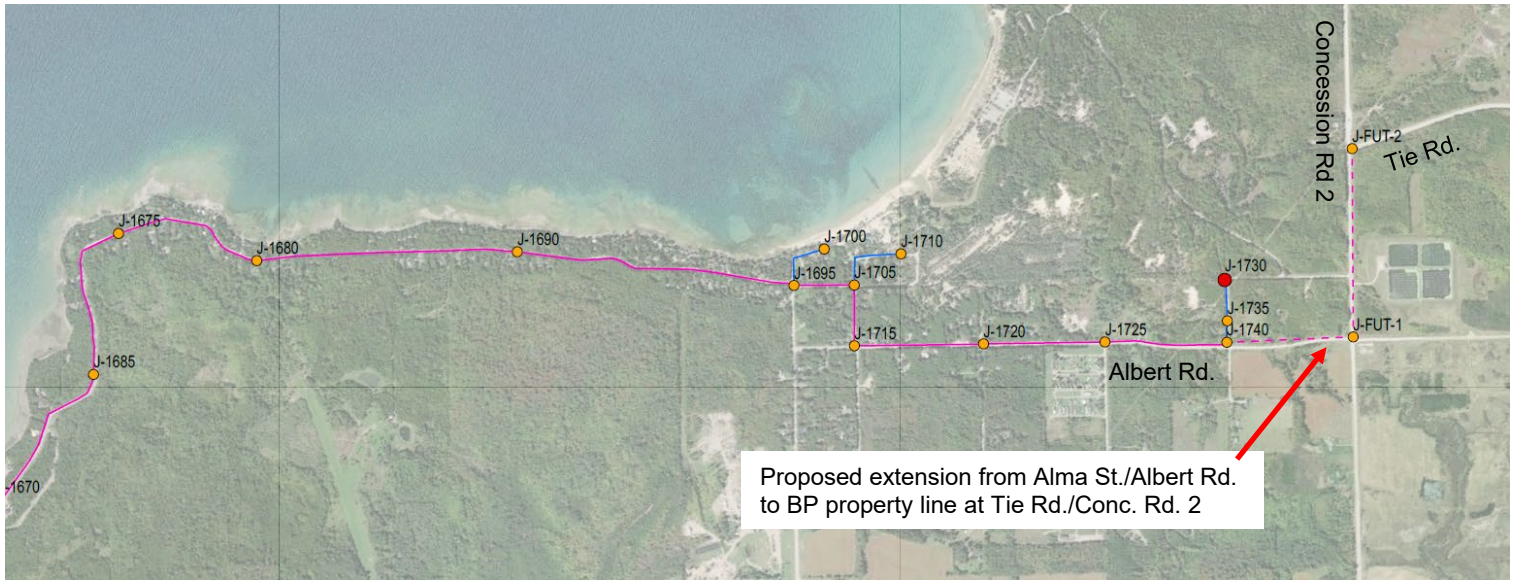
- Best addresses technical requirements
- Lower total project costs
- Mitigates the need for pressure zone chambers along additional roadways or disruption along Blue Trail
- Ability to avoid sensitive environmental features; water crossings required for the watermain route are assumed to be completed by means of trenchless methods to mitigate impacts
- Can be sized to best manage pressure impacts on the upstream and downstream system

Preliminary Preferred Solution

The preliminary preferred solution for the expansion of the Kincardine water system consists of:

- The expansion of the Kincardine WTP within the existing building and site footprint
- A new BPS to be constructed at Stoney Island Crescent. The BPS will interconnect to the existing watermain. A short watermain extension to the Bruce Power site will be required along Albert Street, from Alma Street to Concession Road 2 and west along Concession Road 2 to Tie Road.

The next phase of the study will develop and evaluate alternative designs for the WTP expansion and new BPS.



Preliminary Preferred Solution – Stoney Island Crescent BPS

Phase 3 – Alternative Designs Evaluation Criteria

The Alternative Designs developed during Phase 3 of the Class EA study will be evaluated using the criteria below:

Socio-Economic Environment

- Consistency with Land Use Plans and Policies
- Supports existing and future planned growth
- Potential property requirements
- Impacts to residents and business operations
- Noise and Air Quality

Natural Environment

- Designated natural features and environmentally sensitive areas
- Potential impacts to terrestrial and aquatic species and habitats (including opportunity for mitigation)
- Potential impacts to Species at Risk and their habitat

Technical

- Provides reliable service – operations and maintenance & treatment complexity
- Meets MECP standards, permits, and approvals
- Meets existing and future water supply infrastructure needs
- Constructability/system redundancy

Cultural Environment

- Archeological Resources
- Cultural Heritage Resources

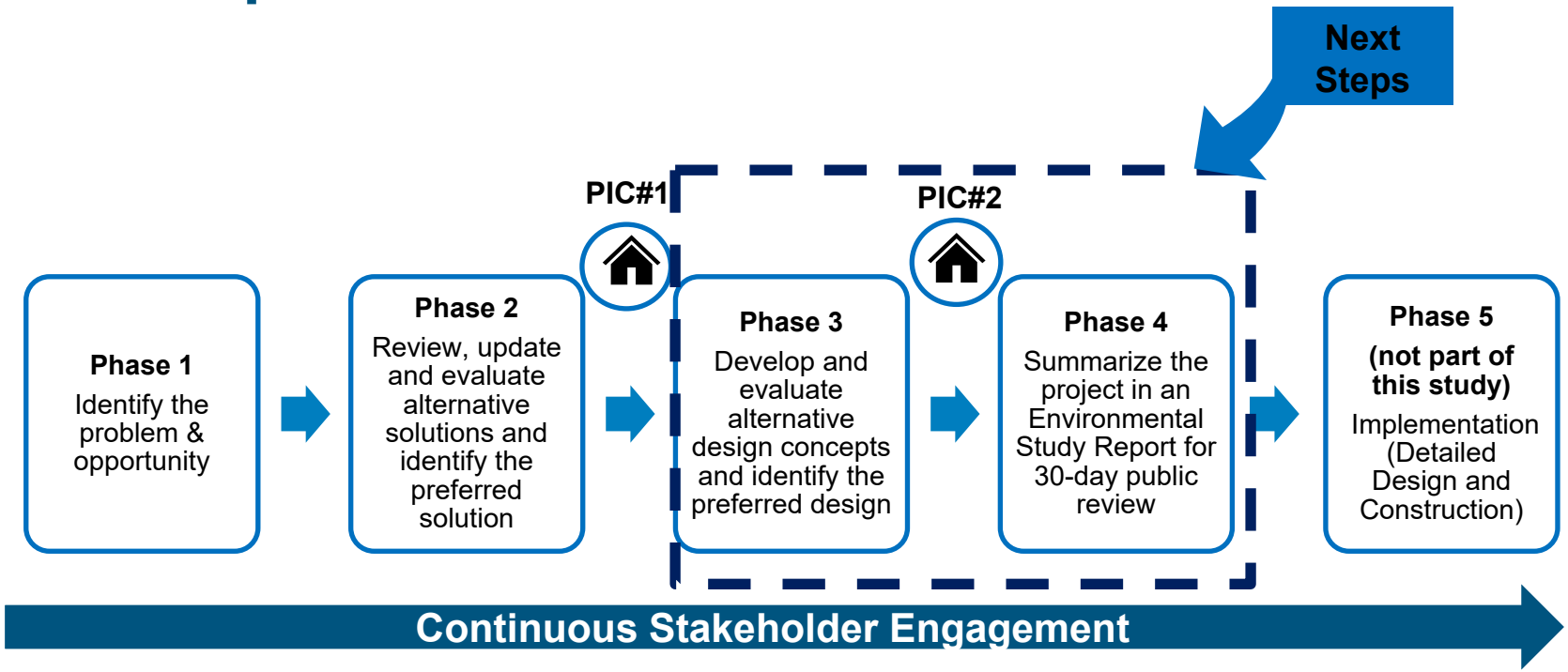
Surface Water and Groundwater

- Potential impacts to Lake Huron or local creeks and tributaries
- Protection of groundwater resources
- Considers climate change impacts

Preliminary Cost Estimate

- High level cost estimate for comparative purposes only
- Provides low lifecycle, capital, property acquisition, and operation & maintenance costs

Next Steps & Schedule



- Review feedback received from this PIC and confirm the Preferred Alternative Solution – Spring 2023
- Complete required environmental investigations – Spring/Summer 2023
- Develop and evaluate Alternative Designs – Summer 2023
- Present the findings at PIC #2 – Summer 2023
- Publish the Environmental Study Report for public review (Phase 4) – Summer 2023

Thank you joining us today!

If you have any questions or comments, please let our team know. We would appreciate your comments by **April 28, 2023.**

You can also request to be added to our study contact list for future updates regarding the project.

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Welcome!

Welcome to the second Public Information Centre (PIC) for the Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment (EA) study. After reviewing the information, we would appreciate your comments and feedback. Your input is important to us!

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment

Public Information Centre #2

July 24, 2023

The purpose of this PIC is to:

- Provide an update for the Kincardine Water Treatment Plant (WTP) study
- Present a review of the Alternative Designs (Phase 3 of the EA) and next steps
- Provide an opportunity for you to learn about the project and how to get involved

Project Overview

What are we doing?

- The Municipality of Kincardine is developing options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street
- The project team is providing information regarding the proposed work

Why are we doing it?

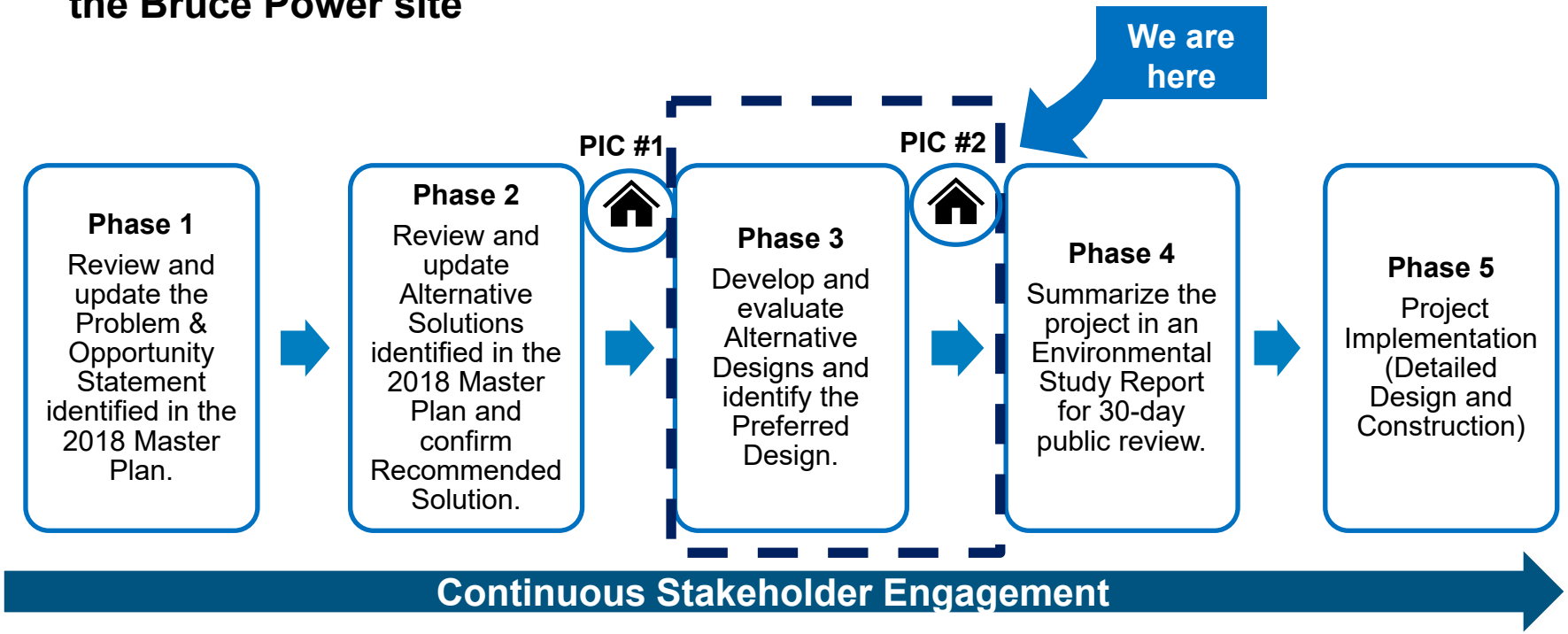
- The purpose of this Schedule C EA study is to review expansion alternatives for the existing WTP and supply system to service anticipated community growth
- Specifically, the project will consider servicing requirements to extend water supply to the Bruce Power site

What does the Study Area include?

- The study area includes the Kincardine WTP, the existing watermain on Bruce Road 23, and nearby areas that could possibly be serviced or impacted by a water supply extension

Municipal Class EA Process

- A Schedule C Municipal Class EA study includes Phase 1 through Phase 4 of the EA process, as illustrated below
- Phases 1 and 2 were summarized in the PIC held in April (PIC#1)
- The project is now in Phase 3, where Alternative Designs are evaluated towards implementing the preferred alternative: **Upgrades to the existing Kincardine WTP and adding a booster pumping station to enable a water supply extension to the Bruce Power site**



Phase 1 - Problem & Opportunity Statement

The Problem & Opportunity Statement was developed and presented in the previous PIC. Alternative Solutions were developed to meet the requirements of this statement:

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 current Master Plan Update to identify preferred alternatives for upgrades at the Kincardine Water Treatment Plant and distribution system.

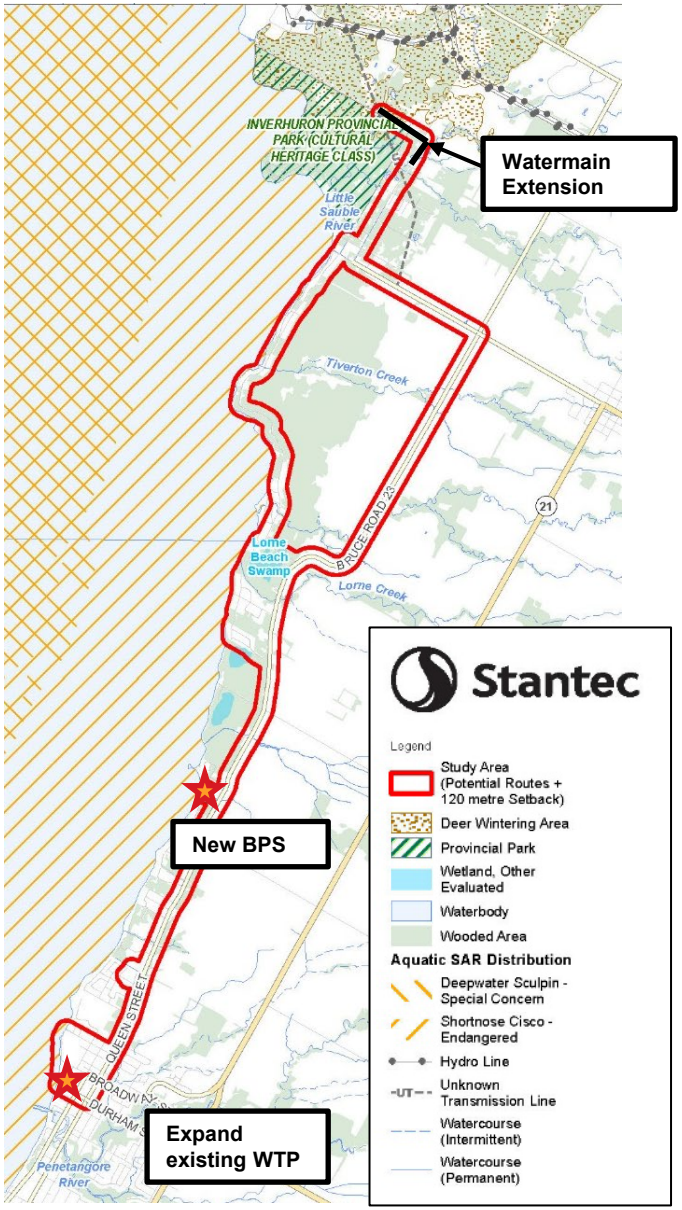
A preferred alternative will be identified to address current and future water treatment and supply needs, the ability to boost required water flows where needed, and to enable future system expansion. A preferred solution will be identified that will seek to avoid significant adverse impacts on the natural, social, and cultural environments.

Phase 2 Summary: PIC #1 Preferred Solution

The preliminary preferred solution for the expansion of the Kincardine water system presented at PIC #1 consists of:

- The expansion of the Kincardine WTP within the existing building and site footprint
- A new booster pump station (BPS) to be constructed at 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 Street, from Alma Street to Concession Road 2 and west along Concession Road 2 to Tie Road

The current PIC presents the development and evaluation of Alternative Designs (Phase 3 of the EA) for the WTP expansion and new BPS to address servicing of the Bruce Power site



Stoney Island Crescent Booster Pumping Station

- In PIC #1, hydraulic analysis confirmed that a BPS is required in the general area of Stoney Island Crescent. The Stoney Island Crescent area:
  - Best addresses technical requirements - addresses elevation changes and pressure losses between the WTP and the Bruce Power site
  - Mitigates the immediate need for pressure zone chambers along additional roadways
  - Can be sized to best manage pressure impacts on the upstream and downstream system
- Site selection for the BPS must consider how to mitigate servicing impacts to existing customers. A stormwater management (SWM) pond site was identified as potentially available municipal land on a preliminary basis

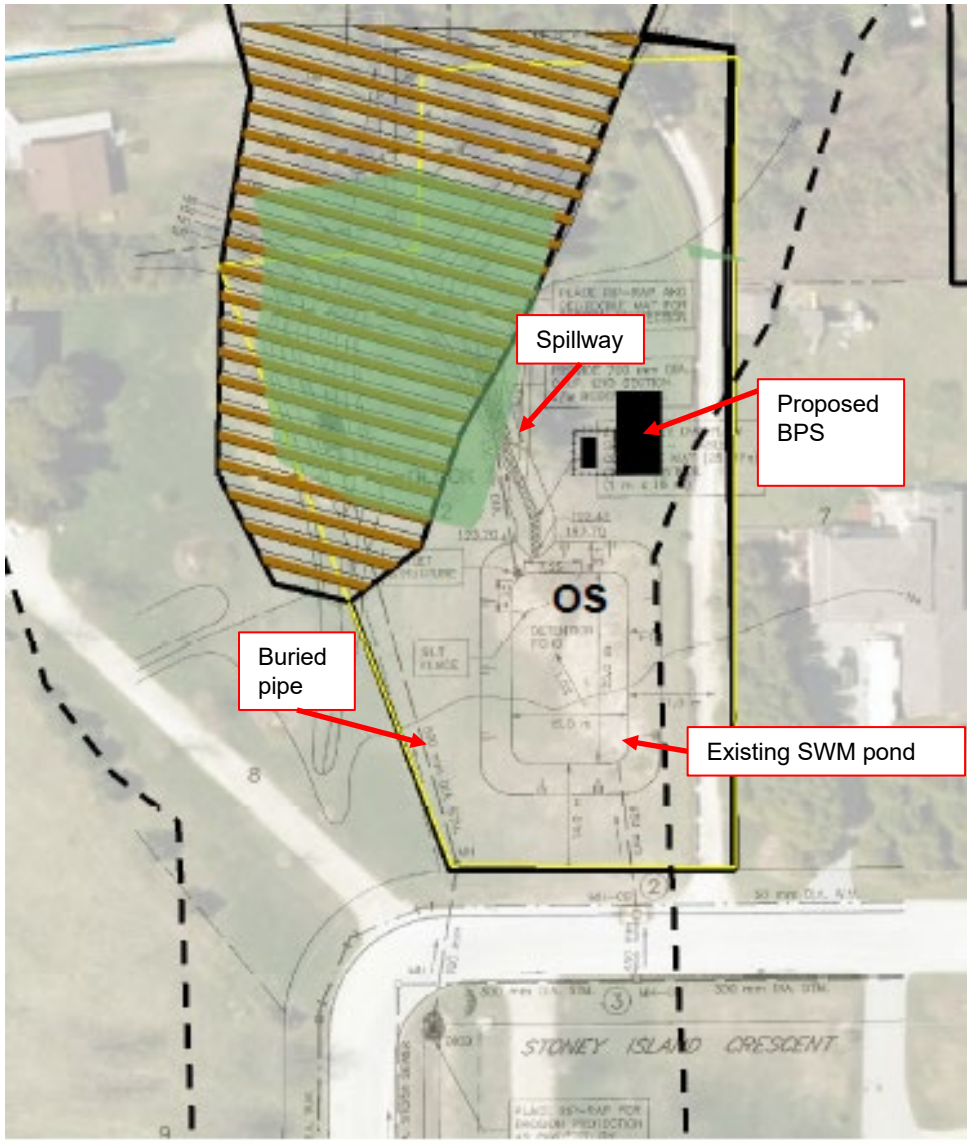
What We Heard in PIC1?

- Consider local drainage conditions at the proposed site of the BPS – some localized flooding concerns at the Stoney Island Crescent location
- Seek to avoid loss of open space and access to natural or beach areas
- Consider potential sensitive environmental features at the SWM pond site
- Concerns about traffic and construction disruptions
- Municipality should consider other parcels, including former well house site

Booster Pump Station

Modifications/Considerations Made

- Location of the BPS to:
  - Consider local drainage conditions – mitigate impacts to overland flow routes
  - Seek to avoid conflicts with underground infrastructure, such as storm inlets and outlets
  - Locate outside of the flood storage area of SWM pond
- Reviewed existing SWM design – original design intent and location of infrastructure
- Based on above, BPS could be located behind the SWM pond and off Rowan Ave



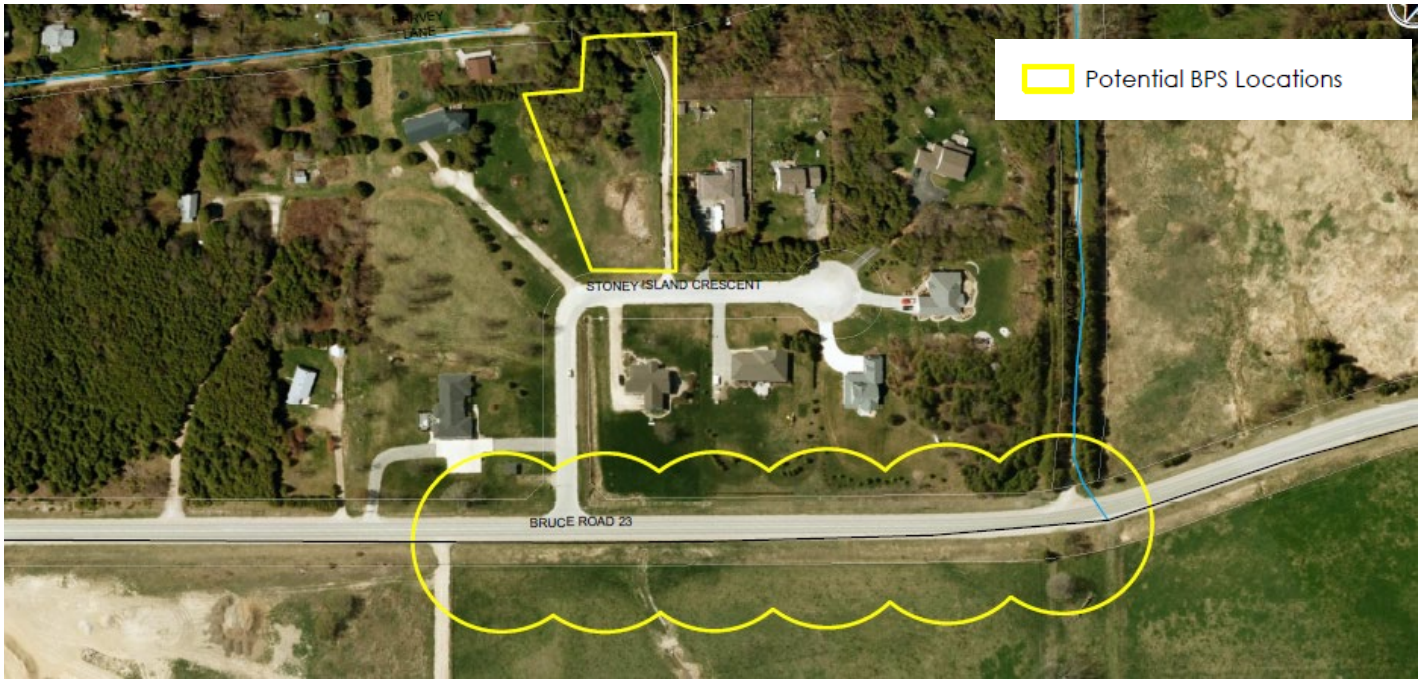
Overlay of original SWM pond construction drawings on property boundaries and environmental mapping

Modifications/Considerations Made – Cont'd

- Consider other potential lands within the area that meet the requirements
- Traffic and construction impacts to be mitigated through standard practices (i.e., traffic management plan during construction, maintaining access to residences, etc.)
- Site access during operation of facility would be minimal

Final site selection could consider other properties in the general vicinity to this site and Bruce Road 23, offering:

- **Equal hydraulic performance benefits**
- **Access to the existing 300 mm watermain**



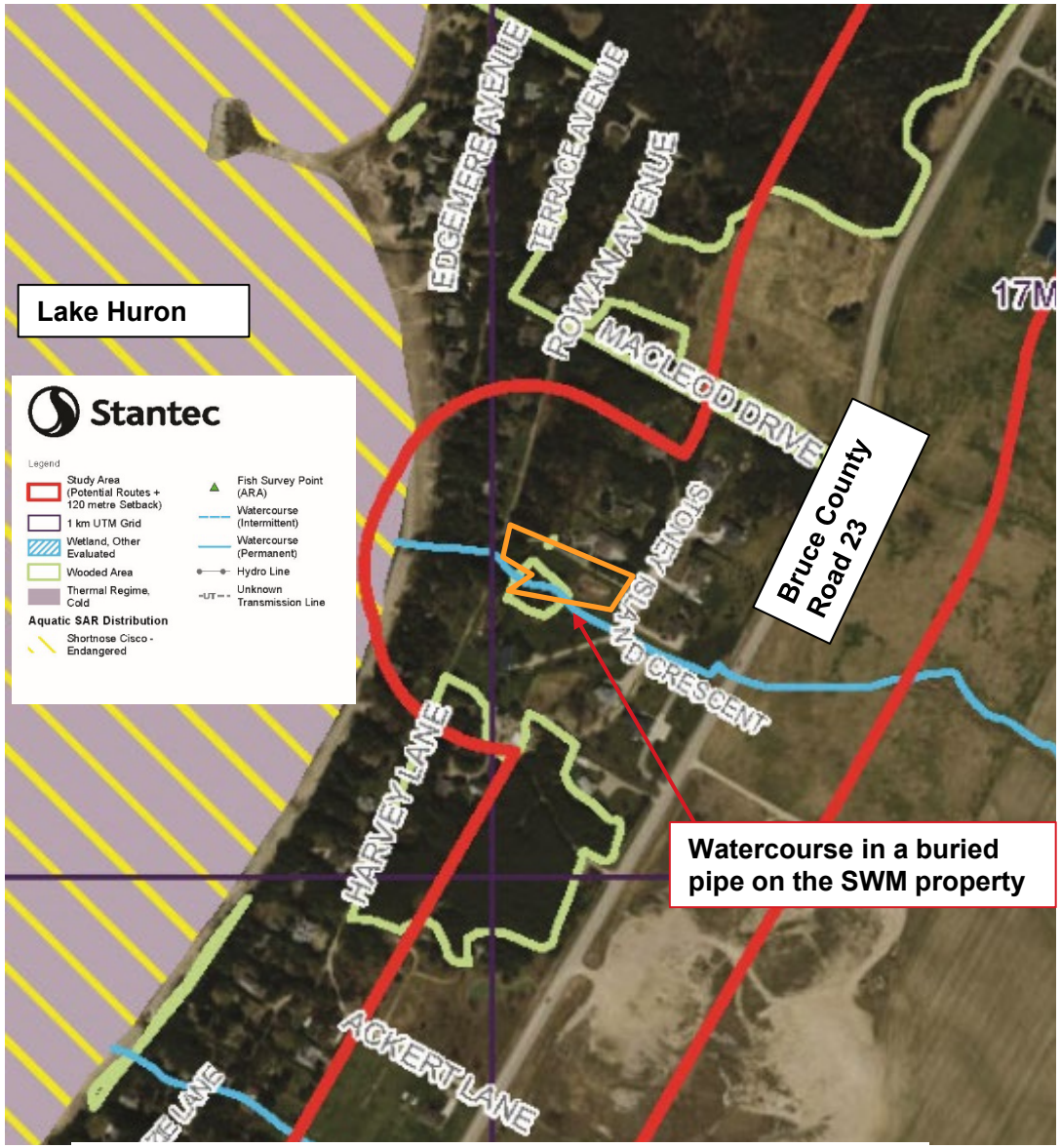
Environment Investigations

Natural Environment

- Natural Environment mapping was reviewed
- Further engagement with SVCA to consider local features and drainage in this area underway
- Site-specific natural environment surveys to be conducted during Detailed Design, once property location is confirmed

Other Investigations

- Built heritage checklist to be included in the Environmental Study Report
- Stage 1 Archaeology Assessment to be completed for this project



Natural Environment Background Review

Phase 3 – Alternative Designs Evaluation Criteria

The Alternative Designs for the Kincardine WTP, the BPS, and the watermain route were evaluated using the criteria:

Socio-Economic Environment

- Consistency with Land Use Plans and Policies
- Supports existing and future planned growth
- Potential property requirements
- Impacts to residents and business operations
- Noise and Air Quality

Natural Environment

- Designated natural features and environmentally sensitive areas
- Potential impacts to terrestrial and aquatic species and habitats (including opportunity for mitigation)
- Potential impacts to Species at Risk and their habitat

Technical

- Provides reliable service – operations and maintenance & treatment complexity
- Meets Ministry of Environment, Conservation and Parks (MECP) standards, permits, and approvals
- Meets existing and future water supply infrastructure needs
- Constructability/system redundancy

Cultural Environment

- Archeological Resources
- Cultural Heritage Resources

Surface Water and Groundwater

- Potential impacts to Lake Huron or local creeks and tributaries
- Protection of groundwater resources
- Considers climate change impacts

Preliminary Cost Estimate

- High level cost estimate for comparative purposes only
- Provides low lifecycle, capital, property acquisition, and operation & maintenance costs

New BPS – Description of Design Alternatives

Alternative Designs were identified as options for the new BPS facility and are described by its major operating feature:

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 • 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 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 design concept would also include:

- Emergency generator, located outdoors in separate enclosure
- Sodium hypochlorite dosing system for maintenance of secondary disinfection
- All other appurtenances (equipment/fixtures) for proper monitoring and control

Alternative Designs for BPS – Detailed Assessment

The Alternative Designs evaluation for expansion of the BPS is summarized below:

CRITERIA	Alternative Design 1: In-Line Booster Pumping	Alternative Design 2: In-Ground Storage and BPS	Alternative Design 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
Financial Environment	Most Preferred	Least Preferred	Moderately Preferred
SUMMARY	Most Preferred	Moderately Preferred	Least Preferred

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 the Bruce Power site
- Lowest financial (capital) cost of the alternatives

Kincardine WTP Process Alternatives

The following Alternative Designs were identified to expand the treatment and supply capacity of the Kincardine WTP at the existing site:

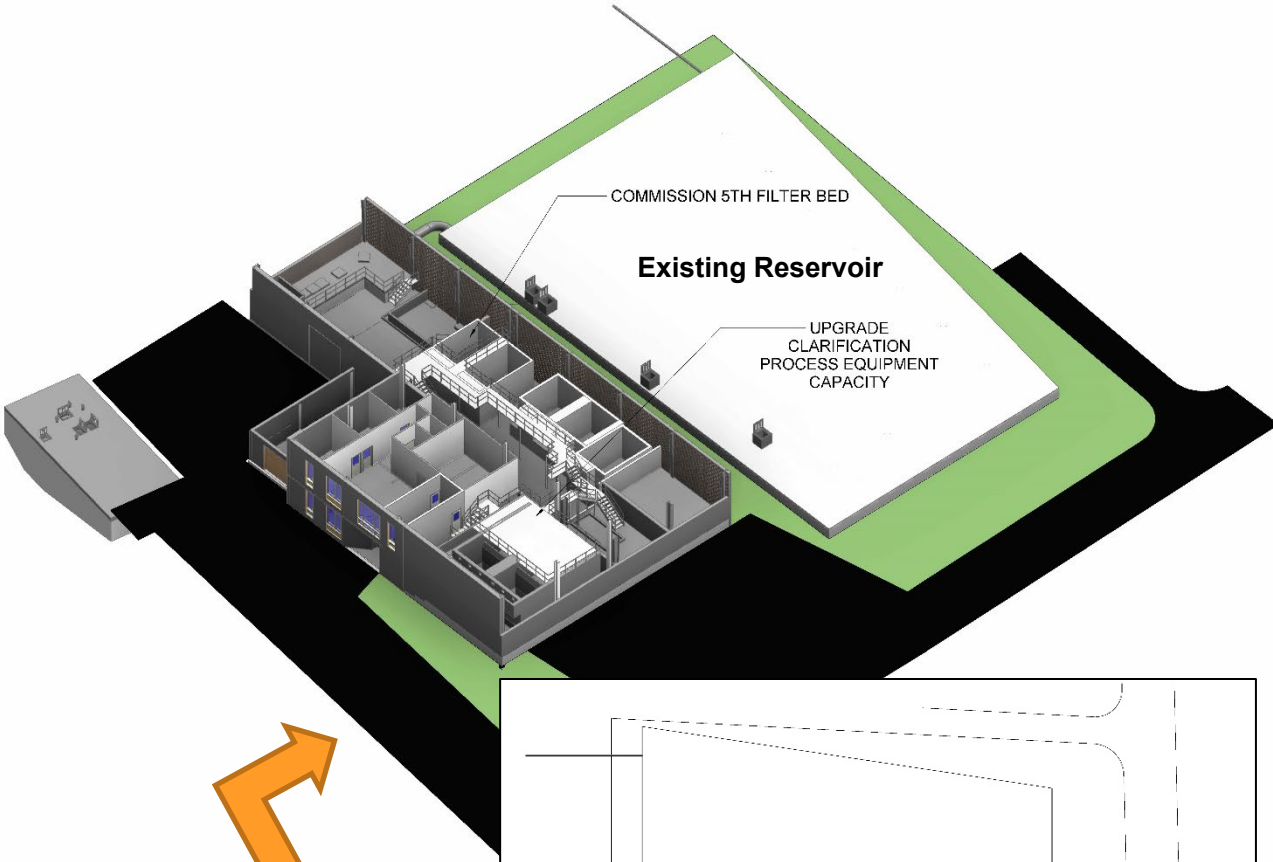
Alternative Design	Description

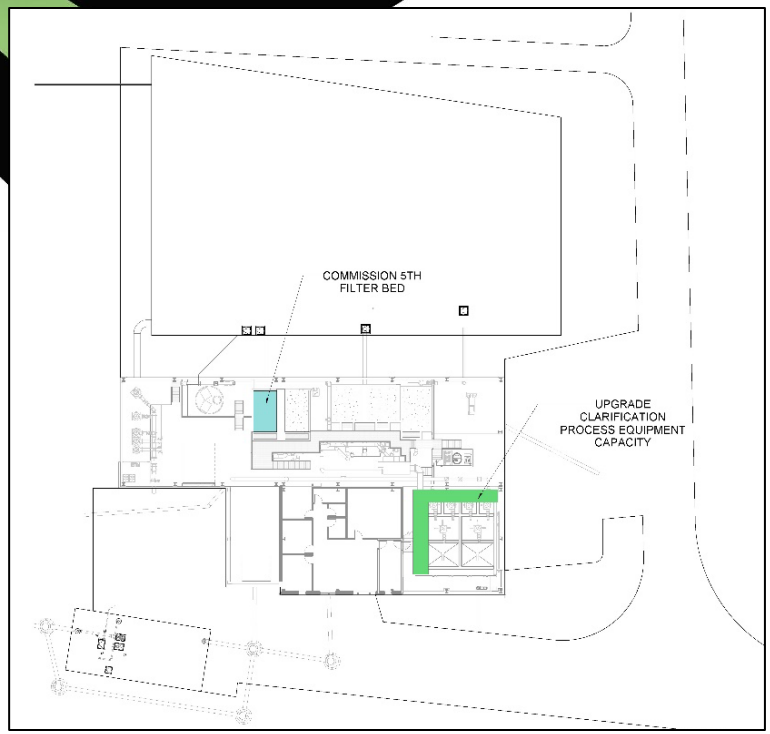
Alternative Design 1: Maintain Chlorine Disinfection Only	• **Can achieve capacity upgrade to 15,500 m³/day**
	• **Maintains the existing gas chlorination system for <u>both</u> primary and secondary disinfection at Kincardine WTP**
	• Ability to achieve higher capacity by:
	  • Increasing chlorine dosing, or
	  • Updates 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 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 secondary disinfection only. • Improves multiple-barrier disinfection processes at the WTP, while making significant on-site storage tank capacity available for system storage • Low-lift pump capacity & re-rating of treatment processes including minor upgrades required • **Not expected to require off-site storage in the near term**

Kincardine WTP Alternative #1

- Alternative Design #1 consists of upgrading water clarification process equipment capacity at the Kincardine WTP, **with no UV disinfection added**
- A 5th Filter bed would be commissioned to provide additional future treatment capacity
- Lowest capital upgrade option at the WTP
- Total system storage would need to be addressed

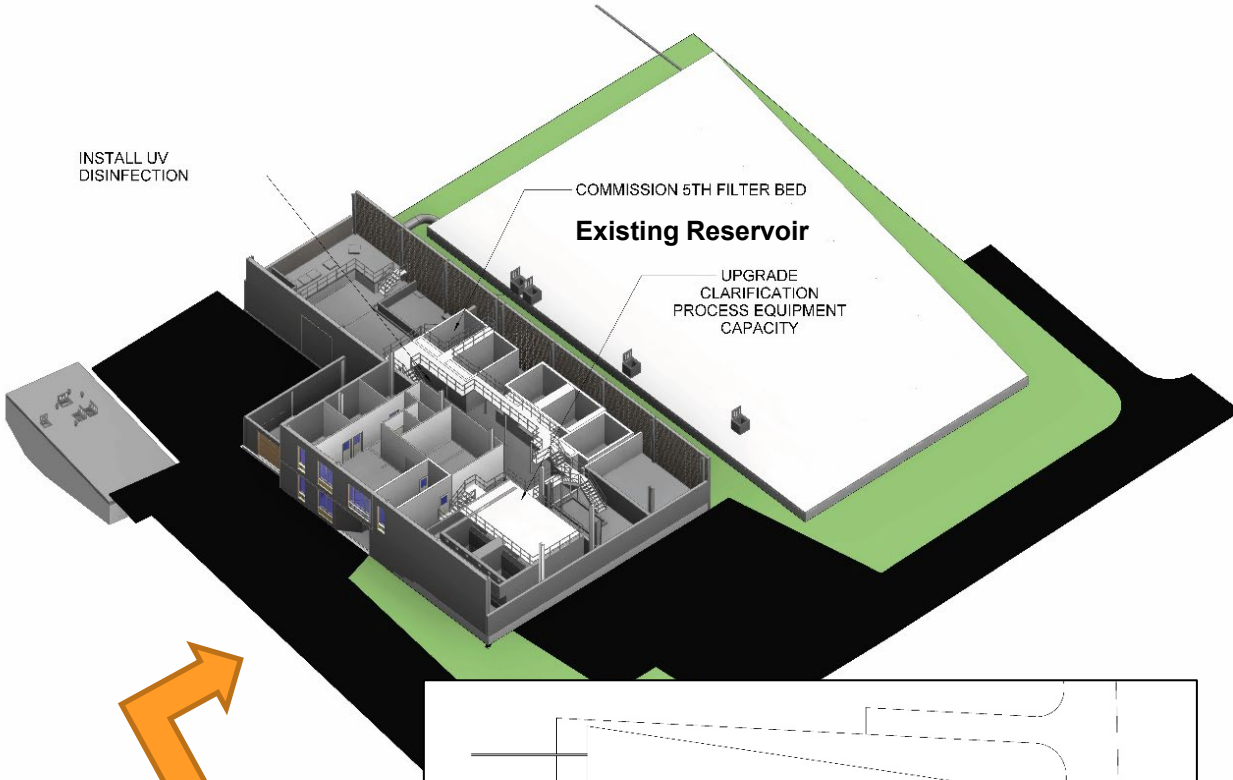




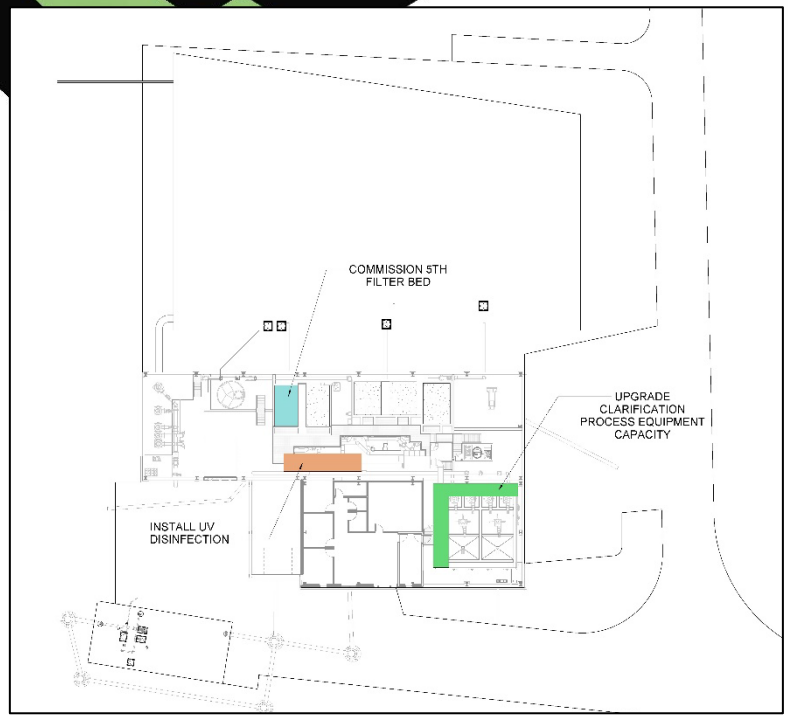
Plan view showing component upgrade locations

Kincardine WTP Alternative #2

- Alternative Design #2 consists of installing UV disinfection at the Kincardine WTP and upgrading water clarification process equipment capacity
- A 5th Filter bed would be commissioned to provide additional future treatment capacity
- Higher capital cost compared to Alternative Design #1, but it provides an additional barrier of protection
- Allows for repurposing of a portion of storage dedicated to disinfection, deferring need to increase storage to address supply needs



Plan view showing component upgrade locations



Alternative Designs for WTP – Detailed Assessment

The Alternative Designs evaluation for expansion of the Kincardine WTP is summarized below:

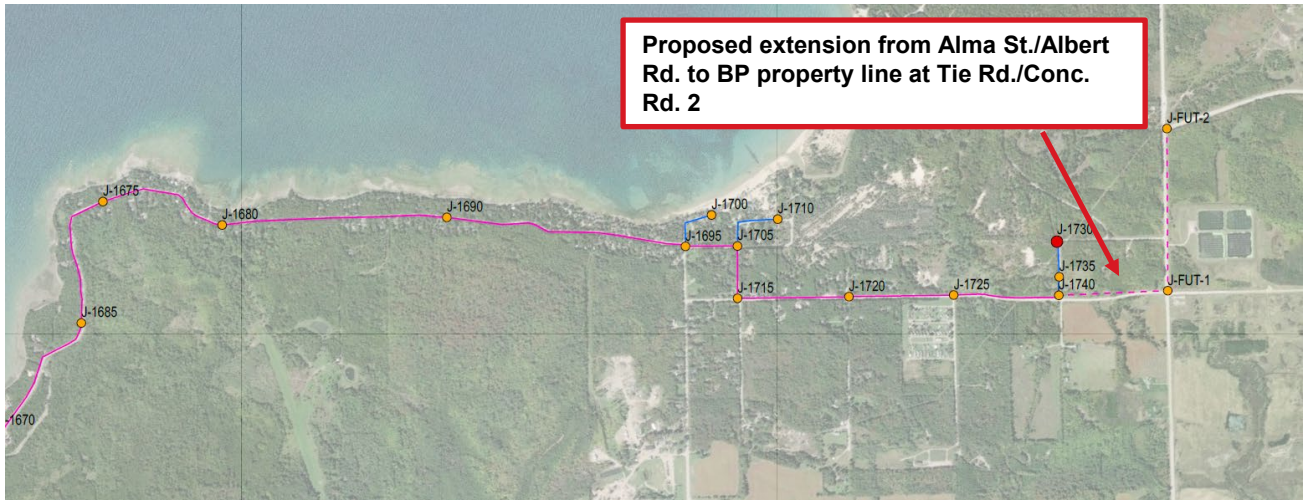
CRITERIA	Alternative Design 1: Maintain Chlorine Disinfection Only	Alternative Design 2: Upgrade Disinfection with Ultraviolet Light (UV)
Social Environment	Moderately Preferred	Most Preferred
Cultural Environment	Moderately Preferred	Most Preferred
Natural Environment	Least Preferred	Most Preferred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

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

- Moderate construction disruption compared to Alt. 1, but UV provides better treatment options overall and an additional treatment barrier for disinfection
- All work contained within the Kincardine WTP, therefore low cultural heritage or natural environment impacts, however Alt.2 is not anticipated to require future off-site storage which minimizes overall impacts
- Provides the needed treatment capacity and multi-barrier approach to disinfection while making existing storage available for supply
- Lower financial (capital) cost of UV disinfection, on the basis that cost of added storage exceeds cost of UV installation

Preferred Watermain Design: Extension to Bruce Power

- Watermain routing from Kincardine system to Bruce Power site dictated by:
  - Where a connection can be made 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 existing 300mm diameter watermain at Alma St./Albert Rd. has sufficient capacity with BPS in operation to supply Bruce Power and Bruce Power preferred connection point is at Tie Rd. and Concession Rd. 2
- Preference for new watermain to be within right-of-way (ROW) to avoid impacts to vegetation, natural habitat, or nearby properties
- Based on above, the shortest route was selected – any other alternative routes would result in longer length of watermain or would require property acquisition
- Actual alignment within ROW to be confirmed during detailed design



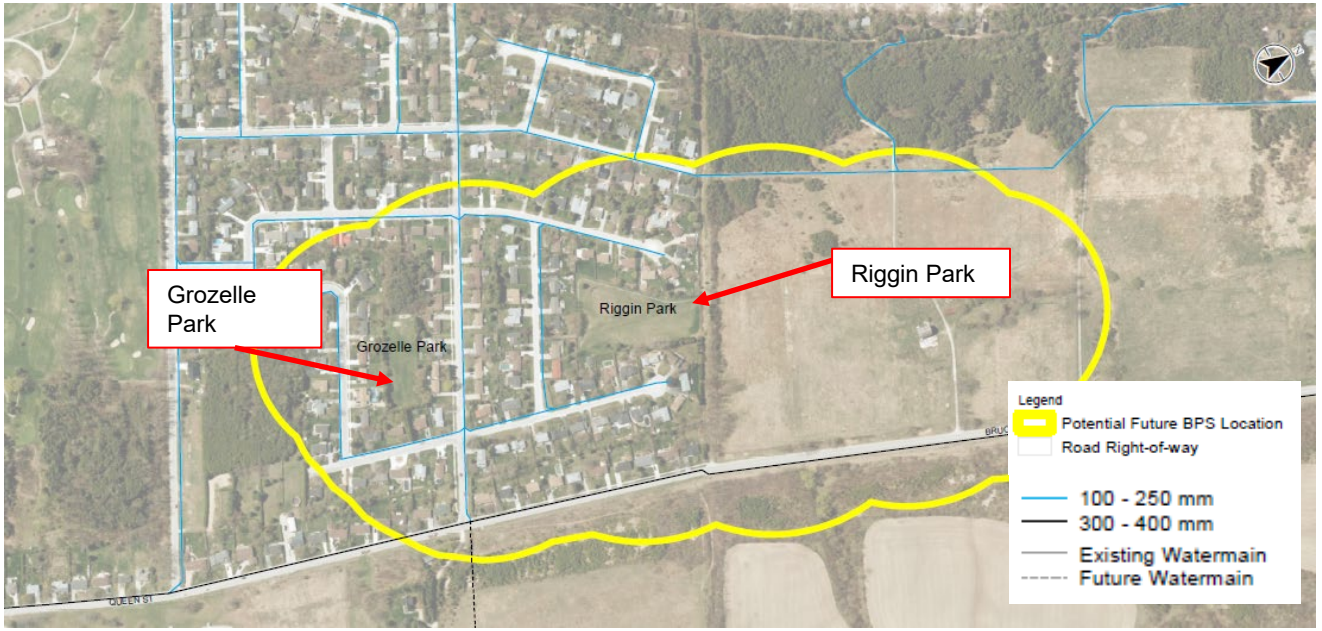
Preferred Design Summary

The Preferred Design consists of:

- **Expansion of the Kincardine WTP**
  - Capacity increase to 15,500 m³/day
  - Upgrade disinfection system to include UV disinfection
  - Maintaining existing gas chlorination system for secondary disinfection
  - Adjustment to operational setpoints to free up water storage to meet system demands
  - Low-lift pump capacity & re-rating of treatment process including minor upgrades required
- **New BPS Facility**
  - In-line booster pumping station, 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
  - All other fixtures (appurtenances) for proper monitoring and control
- **Watermain Extension**
  - 300mm dia. watermain extension within ROW from Alma St./Albert Rd. to Bruce Power site property line at Tie Road./Concession Rd. 2
  - Termination chamber to include billing meter, backflow preventor and other fixtures as required

Future Servicing Needs & Phasing

- Preferred Design Concepts presented will address immediate works required to service Bruce Power site (**Stage 1**)
- Servicing of Bruce Power site reduces capacity at end of system to supply future Kincardine demands beyond the current planning period
- In the future, if and when required based on demand increases, **Stage 2** works may include:
  - Additional BPS in the vicinity of Riggin Park (Site A from PIC 1) 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

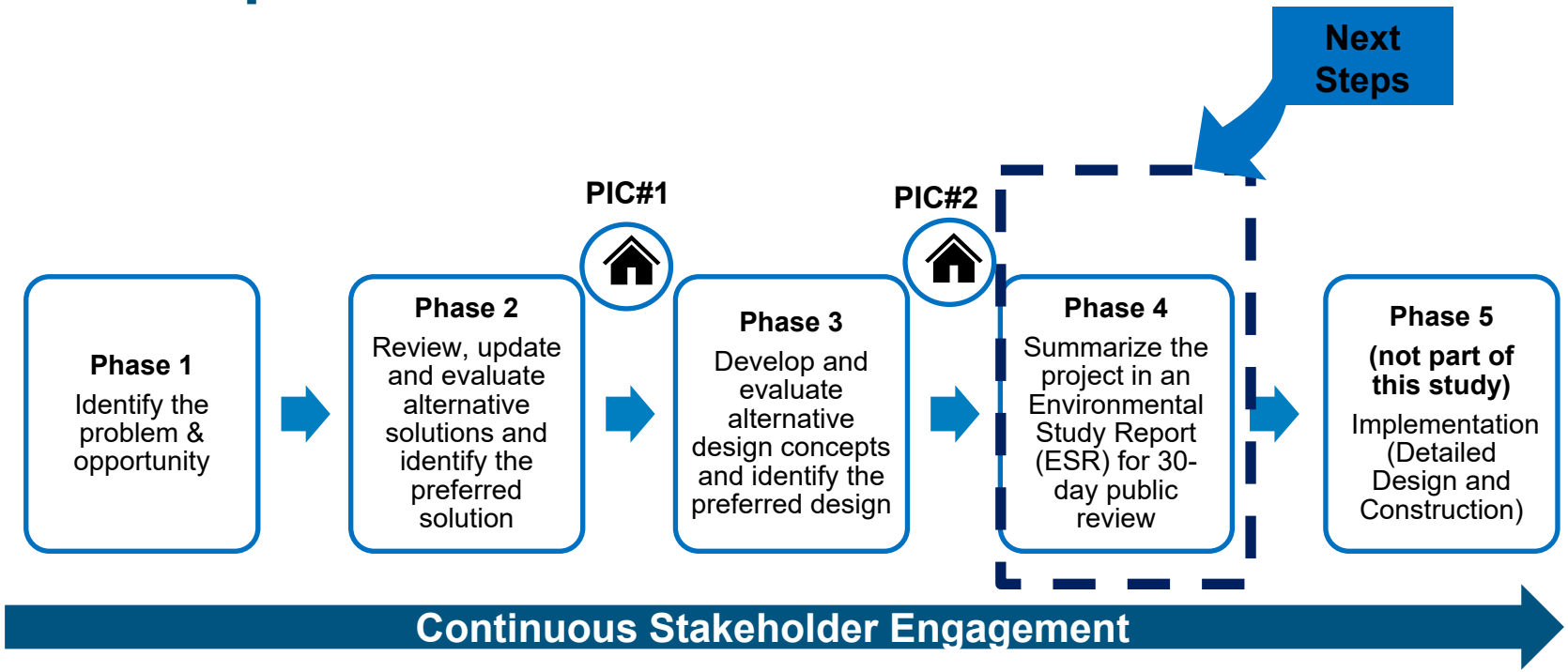


Additional Investigations & Mitigation Measures

Mitigation measures will be identified as part of the Environmental Study Report (ESR). Standard mitigation measures will be included for, but are not limited to, the following:

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
Wildlife and Fish Habitat	• Avoid vegetation removal during typical migratory 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 Species at Risk (SAR) if present • Avoid in-water work to the extent possible, and/or utilize trenchless methods for water crossings • Where required, in-water work in fish habitat may be subject to a Department of Fisheries and Oceans (DFO) request for review • Consult with the Ministry of the Environment, Conservation and Parks (MECP) if SAR may be present
Archaeology	• Stage 1 assessment is currently underway. Complete any further archaeological investigations (Stage 2-4) based on recommendations
Permits and Approvals	• Saugeen Valley Conservation Authority: 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

Next Steps & Schedule



- Following this PIC, the ESR will be prepared to describe the decision-making process as part of the EA, consultation undertaken, the preferred design, and mitigation measures
- The ESR will be published and available for comment for a minimum of 30 days, anticipated to occur in Summer 2023
- Following the 30 day review, the project will proceed to Detailed Design prior to construction

Thank you joining us today!

If you have any questions or comments, please let our team know. We would appreciate your comments by **August 7, 2023.**

You can also request to be added to our study contact list for future updates regarding the project.

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

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: 905-381-3247

APPENDIX C

Correspondence

Agency and Group Correspondence

From: Kielstra, David
Sent: Monday, November 28, 2022 10:02 AM
To: Adam Stanley
Cc: Adam Weishar; Amanda Froese; Jerry Haan; Claire Dodds; Heather Young; Oliveira, Nelson
Subject: RE: Notice of Study Commencement - Kincardine Water TP & DS Expansion

Hello Adam,

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.

Have a great day,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Adam Stanley <AStanley@brucecounty.on.ca>
Sent: Thursday, November 24, 2022 3:55 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Adam Weishar <aweishar@kincardine.ca>; Amanda Froese <AFroese@brucecounty.on.ca>; Jerry Haan <JHaan@brucecounty.on.ca>; Claire Dodds <ClDodds@brucecounty.on.ca>; Heather Young <hyoung@brucecounty.on.ca>
Subject: Notice of Study Commencement - Kincardine Water TP & DS Expansion

Good Afternoon David,

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.

Regards,

Adam Stanley
Engineering Manager
Transportation & Environmental Services
Corporation of the County of Bruce

Office: 519-881-2400
www.brucecounty.on.ca

From: Oliveira, Nelson
Sent: Monday, December 12, 2022 10:10 AM
To: Adam Weishar
Cc: Lisa Ambeau; agarland@bmross.net; Steve Burns; Kielstra, David
Subject: RE: Hydro One Response: 20221212-NoticeOfCommence-Expansion of the Kincardine Water System and Treatment Plant
Attachments: 20221212-NoticeOfCommence-Expansion of the Kincardine Water System and Treatment Plant.pdf

Thanks Adam;

Received. Copying David from our team on this as well so that we can file this.

Nelson Oliveira, P.Eng.
Vice President, Regional Business Leader, Water - Canada East

Direct: 519-675-6620
Mobile: 519-494-7642

Stantec
600-171 Queens Avenue
London ON N6A 5J7

stantec.com

-----Original Message-----
From: Adam Weishar <aweishar@kincardine.ca>
Sent: Monday, December 12, 2022 10:05 AM
To: Oliveira, Nelson <nelson.oliveira@stantec.com>
Cc: Lisa Ambeau <lambeau@kincardine.ca>; agarland@bmross.net; Steve Burns <sburns@bmross.net>
Subject: FW: Hydro One Response: 20221212-NoticeOfCommence-Expansion of the Kincardine Water System and Treatment Plant

Hi Nelson,

See attached from Hydro One.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

subject to the provisions of the Municipal Freedom of Information and Protection and Privacy Act. If you have received this message in error, please notify the sender immediately and delete the message without retaining a copy. Thank you.

-----Original Message-----
From: SUN Hongxia <Susan.SUN@HydroOne.com> On Behalf Of SECONDARY LAND USE Department
Sent: December 12, 2022 9:51 AM
To: Adam Weishar <aweishar@kincardine.ca>
Cc: SECONDARY LAND USE Department <Department.SecondaryLandUse@hydroone.com>
Subject: Hydro One Response: 20221212-NoticeOfCommence-Expansion of the Kincardine Water System and Treatment Plant

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Please see the attached for Hydro One's Response.

Hydro One Networks Inc
SecondaryLandUse@HydroOne.com

Hydro One Networks Inc.
483 Bay Street
8th Floor South Tower
Toronto, Ontario M5G 2P5
HydroOne.com

December 12, 2022

Re: Expansion of the Kincardine Water System and Treatment Plant

Attention:
Adam Weishar, C.E.T.
Director of Infrastructure and Development
Municipality of Kincardine

Thank you for sending us notification regarding (Expansion of the Kincardine Water System and Treatment Plant). In our preliminary assessment, we have confirmed that Hydro One has existing Transmission and Distribution facilities within your study area.

At this time, we do not have sufficient information to comment on the potential resulting impacts that your project may have on our infrastructure. As such, we must stay informed as more information becomes available so that we can advise if any of the alternative solutions present actual conflicts with our assets, and if so; what resulting measures and costs could be incurred by the proponent. Note that this response does not constitute approval for your plans and is being sent to you as a courtesy to inform you that we must continue to be consulted on your project.

In addition to the existing infrastructure mentioned above, the applicable transmission corridor may have provisions for future lines or already contain secondary land uses (e.g., pipelines, watermains, parking). Please take this into consideration in your planning.

Also, we would like to bring to your attention that should (Expansion of the Kincardine Water System and Treatment Plant) result in a Hydro One station expansion or transmission line replacement and/or relocation, an Environmental Assessment (EA) will be required as described under the Class Environmental Assessment for Minor Transmission Facilities (Hydro One, 2016). This EA process would require a minimum of 6 months for a Class EA Screening Process (or up to 18 months if a Full Class EA were to be required) to be completed. Associated costs will be allocated and recovered from proponents in accordance with the Transmission System Code. If triggered, Hydro One will rely on studies completed as part of the EA you are current undertaking.

Consulting with Hydro One on such matters during your project's EA process is critical to avoiding conflicts where possible or, where not possible, to streamlining processes (e.g., ensuring study coverage of expansion/relocation areas within the current EA). Once in receipt of more specific project information regarding the potential for conflicts (e.g., siting, routing), Hydro One will be in a better position to communicate objections or not objections to alternatives proposed.

If possible at this stage, please formally confirm that Hydro One infrastructure and associated rights-of-way will be completely avoided, or if not possible, allocate appropriate lead-time in your

project schedule to collaboratively work through potential conflicts with Hydro One, which ultimately could result in timelines identified above.

In planning, note that developments should not reduce line clearances or limit access to our infrastructure at any time. Any construction activities must maintain the electrical clearance from the transmission line conductors as specified in the Ontario Health and Safety Act for the respective line voltage.

Be advised that any changes to lot grading or drainage within, or in proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Please note that the proponent will be held responsible for all costs associated with modifications or relocations of Hydro One infrastructure that result from your project, as well as any added costs that may be incurred due to increased efforts to maintain said infrastructure.

We reiterate that this message does not constitute any form of approval for your project. Hydro One must be consulted during all stages of your project. Please ensure that all future communications about this and future project(s) are sent to us electronically to secondarylanduse@hydroone.com

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Wednesday, April 19, 2023 1:30 PM
To: Kielstra, David
Subject: FW: Hydro One Response: 20230419-NoticeOfPIC1-Expansion of the Kincardine Water System and Treatment Plant
Attachments: 20230419-NoticeOfPIC1-Expansion of the Kincardine Water System and Treatment Plant.pdf

Sharing.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

-----Original Message-----
From: SUN Hongxia <Susan.SUN@HydroOne.com> On Behalf Of SECONDARY LAND USE Department
Sent: Wednesday, April 19, 2023 10:41 AM
To: Adam Weishar <aweishar@kincardine.ca>
Cc: SECONDARY LAND USE Department <Department.SecondaryLandUse@hydroone.com>
Subject: Hydro One Response: 20230419-NoticeOfPIC1-Expansion of the Kincardine Water System and Treatment Plant

Please see the attached for Hydro One's Response.

Hydro One Networks Inc
SecondaryLandUse@HydroOne.com

Hydro One Networks Inc.
483 Bay Street
8th Floor South Tower
Toronto, Ontario M5G 2P5
HydroOne.com

April 19, 2023

Re: Expansion of the Kincardine Water System and Treatment Plant

Attention:
Adam Weishar, C.E.T.
Director of Infrastructure and Development
Municipality of Kincardine

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.

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

Via E-mail Only

December 18, 2023

David Kielstra
Environmental Planner
Stantec Consulting Ltd.
david.kielstra@stantec.com

Re: Expansion of the Kincardine Water System and Treatment Plant
Municipality of Kincardine
Municipal Class Environmental Assessment – Schedule C
Project Review Unit Comments – Draft Environmental Study Report

Dear David Kielstra,

Thank you for providing the ministry with an opportunity to comment on the draft Environmental Study Report (ESR) for the above noted Class Environmental Assessment (EA) project. Our understanding is that in order to address servicing of anticipated community growth and the Bruce Power site, the Municipality of Kincardine (the proponent) has determined that the preferred alternative includes process upgrades at the Kincardine WTP within the existing site footprint to achieve the projected target rated capacity for (15,500 m3 per day), an approximate 1.1 km watermain extension within existing right of way connecting the existing watermain to the Bruce Power site, and a new in-line booster pump station consisting of new facility to house pumps, to be located generally in the vicinity of Stoney Island Crescent or further south near Concession 5. The Ministry of the Environment, Conservation and Parks (ministry) provides the following comments for your consideration.

General

1) Section 6.4 of the ESR states, "*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." This appendix reference may be incorrect and need to be revised to "Appendix F".

Planning and Policy

2) Section 4.2.2 of the ESR indicates that the Provincial Policy Statement (PPS) 2023 is issued under the *Planning Act*, and references section 3.6 of the PPS 2023. It should be noted that the 2020 version of the Provincial Policy Statement (PPS) is currently in effect, as the 2023 version of the PPS is in the proposal stage. The policies set out in section 3.6 of the PPS 2023 correspond to section 1.6.6 of the PPS 2020. The ESR should be revised to reflect this information.

Indigenous Consultation

3) Please continue reaching out to communities if there are any substantial changes to the project/process or if the proponent is applying for subsequent permits from the ministry that may be of interest or concern to communities. We recommend that the proponent include the record of consultation with any subsequent applications to the ministry to help in our review of those applications.

Excess Materials and Waste

4) In December 2019, the ministry released a new regulation under the Environmental Protection Act, titled *On-Site and Excess Soil Management* (O. Reg. 406/19) to support improved management of excess construction soil. For more information, please visit www.ontario.ca/page/handling-excess-soil. Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the ministry's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014) and "Rules for Soil Management and Excess Soil Quality Standards" (2022). All waste generated during construction must be disposed of in accordance with ministry requirements.

Source Water Protection

5) Section 4.3.6 of the draft ESR discusses source water protection and correctly identifies Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region as the source protection authority within which the proposed works are located. However, the statement "*The Municipality of Kincardine is located within the 'Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region' to protect groundwater sources.*" should be revised to indicate that the plan is in place to protect all sources of drinking water. Source protection plans protect ground and surface drinking water sources and the Municipality of Kincardine relies both on both for its drinking water.

6) The Draft ESR correctly identifies that the study area is located in the following vulnerable areas for both surface and groundwater sources (i.e., IPZ-2, HVA and SGRA), but the scoring for each is not included. Please include the scoring for these vulnerable areas as follows:

Intake Protection Zone (IPZ-2 scoring 4.8) and Highly Vulnerable Aquifer (HVA scoring 6). Significant Groundwater Recharge Areas (SGRA) do not have a score.

7) In addition, the study area also is within an Event Based Area (EBA) for fuel/oil, and while a map of it is included in Appendix D, this vulnerable area should also be discussed and identified in the main body of the report.

8) The expansion of the drinking water system itself is not a significant drinking water threat; however, other activities associated with the construction, maintenance, or operation may be moderate/low drinking water threats and select policies may still apply. In addition, within Highly Vulnerable Aquifers there may be other kinds of drinking water systems present that are not explicitly addressed by the source protection plan and the proponent should take these into consideration. EA projects should protect sensitive hydrologic features including current or future sources of drinking water not explicitly addressed in source protection plans, such as private systems – individual or clusters, and designated facilities within the meaning of O. Reg. 170/03 under the Safe Drinking Water Act – i.e., camps, schools, health care facilities, seasonal users, etc.

9) As a reminder, the proponent should consult with the local source protection authority if they have not already done so.

Species at Risk

10) Section 4.3.3.1 of the draft ESR incorrectly lists Short-eared owl as special concern. This species has recently been uplisted to Threatened. Please correct the Short-eared owl status (Threatened) and consider potential impacts to this species in the context of protections given to threatened and endangered species under s.9 and s.10 of the ESA, 2007.

11) Table 4.3 of Appendix E.1 Natural Environment Report of the draft ESR indicates that Short-eared Owl (Asio flammeus) is listed as special concern. Please note that it has been recently uplisted to threatened, and revise the status listed in the report to reflect the current status as threatened. As a threatened species, this species receives protections under s.9 and s.10 of the *Endangered Species Act* (ESA), 2007. Under its former status as a special concern species, it would not have received these protections and impacts to this species and their habitat may not have been considered.

12) The ministry notes that Lake Sturgeon is identified as occurring in Lake Huron, and though it normally dwells in depths from 5 – 20m, it will spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom. Waterbodies should be assessed to determine habitat suitability. American Eel is also identified as occurring in Lake Huron and has a broad range of habitats. These species are not referenced in the ESR or Appendix E.1 Natural Environment Report (e.g., not mentioned in section 5.1 of Appendix E.1). The proponent should consider possible impacts of the project to Lake Sturgeon and American Eel if any in-water work is required. The ministry notes that the Shortnose Cisco, which is a deepwater species typically dwelling between 22 to 110 metres and last recorded in Lake Huron in 1985, is referenced in section 5.1 of Appendix E.1.

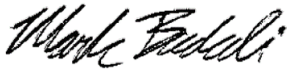
13) Further to section 6.2 of Appendix E.1 Natural Environment Report, Bank Swallow may also nest in fill piles and exposed faces as part of work occurring in the Right of Way and/or elsewhere. The potential for soil piles to be suitable nesting habitat is mentioned in Attachment B-1. Soil piles are mentioned as suitable habitat in the Species at Risk (SAR) Habitat Assessment (Attachment B-1) of the natural heritage desktop review. These could be important considerations given the nature and timing of work being done. The best management practices to mitigate impacts to this species and prevent them from nesting was not mentioned. The proposed action is to use these best management practices if applicable to the project. Please consider these features for their potential to attract nesting Bank Swallow and follow the Best Management Practices (BMP) for mitigating impacts to Bank Swallows.

14) Given observational records in the vicinity of the project, the ESR and Appendix E.1 Natural Environment Report should also consider Lesser Yellowlegs (Threatened), Spotted Turtle (Endangered), American Chestnut (Endangered), American Ginseng (Endangered) and Wood Turtle (Endangered) in their evaluation of impacts to SAR and/or impacts to these species and their habitat as the project proceeds.

Thank you for circulating this draft report for the ministry's consideration. Please document the provision of the draft report to the ministry as well as this Project Review Unit Comments letter in the final report, and please provide an accompanying response letter to support our review of the final report. A copy of the final Notice should be sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca).

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Sincerely,



Mark Badali
Senior Project Evaluator
Environmental Assessment Program Support, Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks

cc John Ritchie, Manager, Owen Sound District Office, MECP
Nelson Oliveira, Vice President, Regional Business Leader, Water - Canada East, Stantec Consulting Ltd.

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Tuesday, December 20, 2022 11:36 AM
To: Badali, Mark (MECP)
Cc: Oliveira, Nelson; Kielstra, David; Ritchie, John (MECP); Battarino, Gavin (MECP)
Subject: RE: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Good Morning Mark,

Thank you for the ministries interest in this class EA. We look forward to further consultation as this file advances.

Wishing you a safe and happy holiday season.
Thanks

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From: Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Sent: December 16, 2022 2:55 PM
To: Adam Weishar <aweishar@kincardine.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Kielstra, David <David.Kielstra@stantec.com>; Ritchie, John (MECP) <John.S.Ritchie@ontario.ca>; Battarino, Gavin (MECP) <Gavin.Battarino@ontario.ca>
Subject: RE: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good afternoon,

Please find the attached letter of acknowledgement, which includes information regarding source water protection, with enclosed Areas of Interest document and supporting attachments. This

acknowledgement letter is provided in response to the Notice of Commencement of the Kincardine Water System and Treatment Plant Expansion project (Schedule C) being undertaken by the Municipality of Kincardine under the Municipal Class Environmental Assessment.

Best regards,

Mark Badali (he/him)
Regional Environmental Planner (REP) – Southwest Region
Project Review Unit | Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks
Mark.Badali1@ontario.ca | (416) 457-2155

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: November 24, 2022 11:54 AM
To: EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>; Badali, Mark (MECP) <Mark.Badali1@ontario.ca>
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

To the Ministry of the Environment, Conservation and Parks,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Schedule C Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. The Notice of Study Commencement and the Project Information Form (PIF) have been attached for your information.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

December 16, 2022

Adam Weishar
Director of Infrastructure and Development
Municipality of Kincardine
aweishar@kincardine.ca

BY EMAIL ONLY

Re: **Expansion of the Kincardine Water System and Treatment Plant**
Municipality of Kincardine
Municipal Class Environmental Assessment, Schedule C
Acknowledgement of Notice of Commencement

Dear Adam Weishar,

This letter is in response to the Notice of Commencement for the above noted project. The Ministry of the Environment, Conservation and Parks (MECP) acknowledges that the Municipality of Kincardine (proponent) has indicated that the study is following the approved environmental planning process for a Schedule C project under the Municipal Class Environmental Assessment (Class EA).

The **updated (August 2022)** attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class EA process. Please address all areas of interest in the EA documentation at an appropriate level for the EA study. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. **Further information is provided at the end of the Areas of Interest document relating to recent changes to the Environmental Assessment Act through Bill 197, Covid-19 Economic Recovery Act 2020.**

The *Clean Water Act, 2006* (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas are delineated around surface water intakes and wellheads for every *municipal residential drinking water system* that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that can be delineated under the CWA for municipal drinking water systems include Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs).

Proponents that are proposing drinking water projects that expand the use of existing or intend to develop a new source of municipal drinking water, should also be aware that the project may result in the **delineation of new**, or require the **amendment of existing**, WHPAs / IPZ and other vulnerable areas. In addition, the completion of other technical work to assess source water vulnerability scores within the new or expanded vulnerable areas may be necessary. The addition of new or amendment of existing WHPAs /IPZ and other vulnerable areas may result in the development/extension of source protection policies to areas where they previously did not apply. If source protection plan policies may apply to new geographic areas as a result of any of the alternatives considered in a Class EA project, this information should be documented and used to inform sections of the project file or environmental study report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

Per the recent amendments to the Municipal Engineers Association (MEA) Class EA parent document approved October 2015, proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be clearly documented in a project file report or environmental study report. Given this requirement, the proponent should include a section in the project file or environmental study report on source water protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or **has the potential to change or creates new vulnerable areas**, and provide applicable details about the area. 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**. The source protection authority can also provide you with assistance in determining whether an activity associated with the construction or operation of the project may be considered to be a drinking water threat as per the CWA and will be able to help determine whether there are policies in the source protection plan that may apply.

MEA Class EA projects may also include activities that, if located in a vulnerable area, may be considered a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and could be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Municipal Class EA projects (where a project

includes a drinking water risk) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

For more information on the *Clean Water Act*, source protection areas and plans, including specific Information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before authorizing this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the consultation process.

The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information provided to date and the Crown`s preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the proposed project:

- Saugeen First Nation and the Chippewas of Nawash Unceded First Nation
    - These communities work together on consultation issues and are known collectively as the Saugeen Ojibway Nation. They have requested notices be sent to the Saugeen Ojibway Nation Environment Office with a copy to the Chief and Council of Saugeen First Nation and Chippewas of Nawash Unceded First Nation.
- Métis Nation of Ontario- Lands and Resources Dept, Region 7

Steps that the proponent may need to take in relation to Aboriginal consultation for the proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments.

Please also refer to the attached document "A Proponent's Introduction to the Delegation of Procedural Aspects of consultation with Aboriginal Communities" for further information, including the MECP's expectations for EA report documentation related to consultation with communities.

The proponent must contact the Director of Environmental Assessment Branch (EABDirector@ontario.ca) under the following circumstances after initial discussions with the communities identified by the MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities;
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right;
- Consultation with Indigenous communities or other stakeholders has reached an impasse; or
- A Section 16 Order request is expected based on impacts to Aboriginal or treaty rights

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should additional steps and activities be required.

A draft copy of the report should be sent directly to me prior to the filing of the final report, allowing a minimum of 30 days for the ministry's technical reviewers to provide comments.

Please also 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.

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Sincerely,

Mark Badali, Regional Environmental Planner – Southwest Region

Cc: Gavin Battarino, Supervisor, Project Review Unit, MECP
John Ritchie, Manager, Owen Sound District Office, MECP
David Kielstra, Environmental Planner, Stantec Consulting Ltd.
Nelson Oliveira, Vice President, Regional Business Leader, Water - Canada East, Stantec Consulting Ltd.

Enclosed: Areas of Interest

Attached: Client's Guide to Preliminary Screening for Species at Risk

A Proponent's Introduction to the Delegation of Procedural Aspects of Consultation with Aboriginal Communities

AREAS OF INTEREST (v. August 2022)

It is suggested that you check off each section after you have considered / addressed it.

☐ **Planning and Policy**

- Applicable plans and policies should be identified in the report, and the proponent should describe how the proposed project adheres to the relevant policies in these plans.
    - Projects located in MECP Central, Eastern or West Central Region may be subject to **A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020)**.
    - Projects located in MECP Central or Eastern Region may be subject to the **Oak Ridges Moraine Conservation Plan (2017)** or the **Lake Simcoe Protection Plan (2014)**.
    - Projects located in MECP Central, Southwest or West Central Region may be subject to the **Niagara Escarpment Plan (2017)**.
    - Projects located in MECP Central, Eastern, Southwest or West Central Region may be subject to the **Greenbelt Plan (2017)**.
    - Projects located in MECP Northern Region may be subject to the **Growth Plan for Northern Ontario (2011).**

- The **Provincial Policy Statement (2020)** contains policies that protect Ontario's natural heritage and water resources. Applicable policies should be referenced in the report, and the proponent should describe how the proposed project is consistent with these policies.

- In addition to the provincial planning and policy level, the report should also discuss the planning context at the municipal and federal levels, as appropriate.

☐ **Source Water Protection**

The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas.

Projects that are subject to the Environmental Assessment Act that fall under a Class EA, or one of the Regulations, have the potential to impact sources of drinking water if they occur in designated vulnerable areas or in the vicinity of other at-risk drinking water systems (i.e.

systems that are not municipal residential systems). MEA Class EA projects may include activities that, if located in a vulnerable area, could be a threat to sources of drinking water (i.e. have the potential to adversely affect the quality or quantity of drinking water sources) and the activity could therefore be subject to policies in a source protection plan. Where an activity poses a risk to drinking water, policies in the local source protection plan may impact how or where that activity is undertaken. Policies may prohibit certain activities, or they may require risk management measures for these activities. Municipal Official Plans, planning decisions, Class EA projects (where the project includes an activity that is a threat to drinking water) and prescribed instruments must conform with policies that address significant risks to drinking water and must have regard for policies that address moderate or low risks.

- In October 2015, the MEA Parent Class EA document was amended to include reference to the Clean Water Act (Section A.2.10.6) and indicates that proponents undertaking a Municipal Class EA project must identify early in their process whether a project is or could potentially be occurring with a vulnerable area. **Given this requirement, please include a section in the report on source water protection.**

    - The proponent should identify the source protection area and should clearly document how the proximity of the project to sources of drinking water (municipal or other) and any delineated vulnerable areas was considered and assessed. Specifically, the report should discuss whether or not the project is located in a vulnerable area and provide applicable details about the area.

    - If located in a vulnerable area, proponents should document whether any project activities are prescribed drinking water threats and thus pose a risk to drinking water (this should be consulted on with the appropriate Source Protection Authority). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local source protection plan. This section should then be used to inform and be reflected in other sections of the report, such as the identification of net positive/negative effects of alternatives, mitigation measures, evaluation of alternatives etc.

- While most source protection plans focused on including policies for significant drinking water threats in the WHPAs and IPZs it should be noted that even though source protection plan policies may not apply in HVAs, these are areas where aquifers are sensitive and at risk to impacts and within these areas, activities may impact the quality of sources of drinking water for systems other than municipal residential systems.

- In order to determine if this project is occurring within a vulnerable area, proponents can use Source Protection Information Atlas, which is an online mapping tool available to the public. Note that various layers (including WHPAs, WHPA-Q1 and WHPA-Q2, IPZs, HVAs, SGRAs, EBAs, ICAs) can be turned on through the “Map Legend” bar on the left. The

mapping tool will also provide a link to the appropriate source protection plan in order to identify what policies may be applicable in the vulnerable area.

- For further information on the maps or source protection plan policies which may relate to their project, proponents must contact the appropriate source protection authority. **Please consult with the local source protection authority to discuss potential impacts on drinking water. Please document the results of that consultation within the report and include all communication documents/correspondence.**

More Information

For more information on the *Clean Water Act*, source protection areas and plans, including specific information on the vulnerable areas and drinking water threats, please refer to Conservation Ontario's website where you will also find links to the local source protection plan/assessment report.

A list of the prescribed drinking water threats can be found in section 1.1 of Ontario Regulation 287/07 made under the *Clean Water Act*. In addition to prescribed drinking water threats, some source protection plans may include policies to address additional "local" threat activities, as approved by the MECP.

☐ **Climate Change**

The document "Considering Climate Change in the Environmental Assessment Process" (Guide) is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA. Proponents should review this Guide in detail.

- **The MECP expects proponents of Class EA projects to:**

1. Consider during the assessment of alternative solutions and alternative designs, the following:
    a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
    b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).
2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project's level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Air Quality, Dust and Noise

- If there are sensitive receptors in the surrounding area of this project, a quantitative air quality/odour impact assessment will be useful to evaluate alternatives, determine impacts and identify appropriate mitigation measures. The scope of the assessment can be determined based on the potential effects of the proposed alternatives, and typically includes source and receptor characterization and a quantification of local air quality impacts on the sensitive receptors and the environment in the study area. The assessment will compare to all applicable standards or guidelines for all contaminants of concern. **Please contact this office for further consultation on the level of Air Quality Impact Assessment required for this project if not already advised.**

- If a quantitative Air Quality Impact Assessment is not required for the project, the MECP expects that the report contain a qualitative assessment which includes:

    - A discussion of local air quality including existing activities/sources that significantly impact local air quality and how the project may impact existing conditions;
    - A discussion of the nearby sensitive receptors and the project's potential air quality impacts on present and future sensitive receptors;
    - A discussion of local air quality impacts that could arise from this project during both construction and operation; and
    - A discussion of potential mitigation measures.

- As a common practice, "air quality" should be used an evaluation criterion for all road projects.

- Dust and noise control measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the study area are not adversely affected during construction activities.

- The MECP recommends that non-chloride dust-suppressants be applied. For a comprehensive list of fugitive dust prevention and control measures that could be applied, refer to *Cheminfo Services Inc. Best Practices for the Reduction of Air Emissions from*

Construction and Demolition Activities report prepared for Environment Canada. March 2005.

- The report should consider the potential impacts of increased noise levels during the operation of the completed project. The proponent should explore all potential measures to mitigate significant noise impacts during the assessment of alternatives.

Ecosystem Protection and Restoration

- Any impacts to ecosystem form and function must be avoided where possible. The report should describe any proposed mitigation measures and how project planning will protect and enhance the local ecosystem.

- Natural heritage and hydrologic features should be identified and described in detail to assess potential impacts and to develop appropriate mitigation measures. The following sensitive environmental features may be located within or adjacent to the study area:
  - Key Natural Heritage Features: Habitat of endangered species and threatened species, fish habitat, wetlands, areas of natural and scientific interest (ANSIs), significant valleylands, significant woodlands; significant wildlife habitat (including habitat of special concern species); sand barrens, savannahs, and tallgrass prairies; and alvars.
  - Key Hydrologic Features: Permanent streams, intermittent streams, inland lakes and their littoral zones, seepage areas and springs, and wetlands.
  - Other natural heritage features and areas such as: vegetation communities, rare species of flora or fauna, Environmentally Sensitive Areas, Environmentally Sensitive Policy Areas, federal and provincial parks and conservation reserves, Greenland systems etc.

We recommend consulting with the Ministry of Natural Resources and Forestry (MNRF), Fisheries and Oceans Canada (DFO) and your local conservation authority to determine if special measures or additional studies will be necessary to preserve and protect these sensitive features. In addition, for projects located in Central Region you may consider the provisions of the Rouge Park Management Plan if applicable.

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario's Species at Risk program. Information, standards, guidelines, reference materials and technical resources to assist you are found at https://www.ontario.ca/page/species-risk.

- The Client's Guide to Preliminary Screening for Species at Risk (Draft May 2019) has been attached to the covering email for your reference and use. Please review this document for next steps.

- For any questions related to subsequent permit requirements, please contact SAROntario@ontario.ca.

Surface Water

- The report must include enough information to demonstrate that there will be no negative impacts on the natural features or ecological functions of any watercourses within the study area. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operational activities (e.g. spills, erosion, pollution) are mitigated as part of the proposed undertaking.

- Additional stormwater runoff from new pavement can impact receiving watercourses and flood conditions. Quality and quantity control measures to treat stormwater runoff should be considered for all new impervious areas and, where possible, existing surfaces. The ministry's Stormwater Management Planning and Design Manual (2003) should be referenced in the report and utilized when designing stormwater control methods. **A Stormwater Management Plan should be prepared as part of the Class EA process** that includes:

    - Strategies to address potential water quantity and erosion impacts related to stormwater draining into streams or other sensitive environmental features, and to ensure that adequate (enhanced) water quality is maintained
    - Watershed information, drainage conditions, and other relevant background information
    - Future drainage conditions, stormwater management options, information on erosion and sediment control during construction, and other details of the proposed works
    - Information on maintenance and monitoring commitments.

- Ontario Regulation 60/08 under the *Ontario Water Resources Act* (OWRA) applies to the Lake Simcoe Basin, which encompasses Lake Simcoe and the lands from which surface water drains into Lake Simcoe. If the proposed sewage treatment plant is listed in Table 1 of the regulation, the report should describe how the proposed project and its mitigation measures are consistent with the requirements of this regulation and the OWRA.

- Any potential approval requirements for surface water taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please

review the Water Taking User Guide for EASR for more information. Additionally, an Environmental Compliance Approval under the OWRA is required for municipal stormwater management works.

Groundwater

- The status of, and potential impacts to any well water supplies should be addressed. If the project involves groundwater takings or changes to drainage patterns, the quantity and quality of groundwater may be affected due to drawdown effects or the redirection of existing contamination flows. In addition, project activities may infringe on existing wells such that they must be reconstructed or sealed and abandoned. Appropriate information to define existing groundwater conditions should be included in the report.

- If the potential construction or decommissioning of water wells is identified as an issue, the report should refer to Ontario Regulation 903, Wells, under the OWRA.

- Potential impacts to groundwater-dependent natural features should be addressed. Any changes to groundwater flow or quality from groundwater taking may interfere with the ecological processes of streams, wetlands or other surficial features. In addition, discharging contaminated or high volumes of groundwater to these features may have direct impacts on their function. Any potential effects should be identified, and appropriate mitigation measures should be recommended. The level of detail required will be dependent on the significance of the potential impacts.

- Any potential approval requirements for groundwater taking or discharge should be identified in the report. A Permit to Take Water (PTTW) under the OWRA will be required for any water takings that exceed 50,000 L/day, with the exception of certain water taking activities that have been prescribed by the Water Taking EASR Regulation – *O. Reg. 63/16*. These prescribed water-taking activities require registration in the EASR instead of a PTTW. Please review the Water Taking User Guide for EASR for more information.

- Consultation with the railroad authorities is necessary wherever there is a plan to use construction dewatering in the vicinity of railroad lines or where the zone of influence of the construction dewatering potentially intercepts railroad lines.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled "On-Site and Excess Soil Management" (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don't go to waste and to provide

clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase in effect on January 1, 2021. For more information, please visit https://www.ontario.ca/page/handling-excess-soil.

- The report should reference that activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014).

- All waste generated during construction must be disposed of in accordance with ministry requirements

Contaminated Sites

- Any current or historical waste disposal sites should be identified in the report. The status of these sites should be determined to confirm whether approval pursuant to Section 46 of the EPA may be required for land uses on former disposal sites. We recommend referring to the MECP's D-4 guideline for land use considerations near landfills and dumps.
  - Resources available may include regional/local municipal official plans and data; provincial data on large landfill sites and small landfill sites; Environmental Compliance Approval information for waste disposal sites on Access Environment.

- Other known contaminated sites (local, provincial, federal) in the study area should also be identified in the report (Note – information on federal contaminated sites is found on the Government of Canada's website).

- The location of any underground storage tanks should be investigated in the report. Measures should be identified to ensure the integrity of these tanks and to ensure an appropriate response in the event of a spill. The ministry's Spills Action Centre must be contacted in such an event.

- Since the removal or movement of soils may be required, appropriate tests to determine contaminant levels from previous land uses or dumping should be undertaken. If the soils are contaminated, you must determine how and where they are to be disposed of, consistent with *Part XV.1 of the Environmental Protection Act* (EPA) and Ontario Regulation 153/04, Records of Site Condition, which details the new requirements related to site assessment and clean up. Please contact the appropriate MECP District Office for further consultation if contaminated sites are present.

Servicing, Utilities and Facilities

- The report should identify any above or underground utilities in the study area such as transmission lines, telephone/internet, oil/gas etc. The owners should be consulted to discuss impacts to this infrastructure, including potential spills.

- The report should identify any servicing infrastructure in the study area such as wastewater, water, stormwater that may potentially be impacted by the project.

- Any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste must have an Environmental Compliance Approval (ECA) before it can operate lawfully. Please consult with MECP's Environmental Permissions Branch to determine whether a new or amended ECA will be required for any proposed infrastructure.

- We recommend referring to the ministry's environmental land use planning guides to ensure that any potential land use conflicts are considered when planning for any infrastructure or facilities related to wastewater, pipelines, landfills or industrial uses.

Mitigation and Monitoring

- Contractors must be made aware of all environmental considerations so that all environmental standards and commitments for both construction and operation are met. Mitigation measures should be clearly referenced in the report and regularly monitored during the construction stage of the project. In addition, we encourage proponents to conduct post-construction monitoring to ensure all mitigation measures have been effective and are functioning properly.

- Design and construction reports and plans should be based on a best management approach that centres on the prevention of impacts, protection of the existing environment, and opportunities for rehabilitation and enhancement of any impacted areas.

- The proponent's construction and post-construction monitoring plans must be documented in the report, as outlined in Section A.2.5 and A.4.1 of the MEA Class EA parent document.

Consultation

- The report must demonstrate how the consultation provisions of the Class EA have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and **describes how they have been addressed by the proponent** throughout

the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Class EA to include full documentation).

- Please include the full stakeholder distribution/consultation list in the documentation.

Class EA Process

- If this project is a Master Plan: there are several different approaches that can be used to conduct a Master Plan, examples of which are outlined in Appendix 4 of the Class EA. **The Master Plan should clearly indicate the selected approach for conducting the plan**, by identifying whether the levels of assessment, consultation and documentation are sufficient to fulfill the requirements for Schedule B or C projects. Please note that any Schedule B or C projects identified in the plan would be subject to Part II Order Requests under the Environmental Assessment Act, although the plan itself would not be. **Please include a description of the approach being undertaken (use Appendix 4 as a reference).**

- If this project is a Master Plan: Any identified projects should also include information on the MCEA schedule associated with the project.

- The report should provide clear and complete documentation of the planning process in order to allow for transparency in decision-making.

- The Class EA requires the consideration of the effects of each alternative on all aspects of the environment (including planning, natural, social, cultural, economic, technical). The report should include a level of detail (e.g. hydrogeological investigations, terrestrial and aquatic assessments, cultural heritage assessments) such that all potential impacts can be identified, and appropriate mitigation measures can be developed. Any supporting studies conducted during the Class EA process should be referenced and included as part of the report.

- Please include in the report a list of all subsequent permits or approvals that may be required for the implementation of the preferred alternative, including but not limited to, MECP's PTTW, EASR Registrations and ECAs, conservation authority permits, species at risk permits, MTO permits and approvals under the *Impact Assessment Act*, 2019.

- Ministry guidelines and other information related to the issues above are available at http://www.ontario.ca/environment-and-energy/environment-and-energy. We encourage you to review all the available guides and to reference any relevant information in the report.

Amendments to the EAA through the Covid-19 Economic Recovery Act, 2020
Once the EA Report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the proponent. The Notice of Completion must be sent to the appropriate MECP Regional Office email address.

The public can request a higher level of assessment on a project if they are concerned about potential adverse impacts to constitutionally protected Aboriginal and treaty rights. In addition, the Minister may issue an order on his or her own initiative within a specified time period. The Director (of the Environmental Assessment Branch) will issue a Notice of Proposed Order to the proponent if the Minister is considering an order for the project within 30 days after the conclusion of the comment period on the Notice of Completion. At this time, the Director may request additional information from the proponent. Once the requested information has been received, the Minister will have 30 days within which to make a decision or impose conditions on your project.

Therefore, the proponent cannot proceed with the project until at least 30 days after the end of the comment period provided for in the Notice of Completion. Further, the proponent may not proceed after this time if:

- a Section 16 Order request has been submitted to the ministry regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, or
- the Director has issued a Notice of Proposed order regarding the project.

Please ensure that the Notice of Completion advises that outstanding concerns are to be directed to the proponent for a response, and that in the event there are outstanding concerns regarding potential adverse impacts to constitutionally protected Aboriginal and treaty rights, Section 16 Order requests on those matters should be addressed in writing to:

Minister David Piccini
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

From:	Kielstra, David
To:	"Michael Oberle"
Cc:	Oliveira, Nelson; "Adam Weishar"
Subject:	RE: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Date:	Tuesday, December 20, 2022 4:53:00 PM

Hello Michael,

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 Saugeen Valley Conservation Authority will be informed and notified at key milestones as the project continues.

Have a great holiday season,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Michael Oberle <m.oberle@SVCA.ON.CA>
Sent: Friday, December 2, 2022 2:25 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: RE: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Good afternoon David Kielstra,

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 Saugeen Valley Conservation Authority (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.

Kind regards,
Mike
Michael Oberle
Environmental Planning Coordinator
Cell: 519-373-4175
1078 Bruce Road 12, PO Box 150, Formosa, ON N0G 1W0
www.saugeenconservation.ca

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: November 24, 2022 11:52 AM
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Hello,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Kielstra, David

From: Kielstra, David
Sent: Friday, May 26, 2023 10:03 AM
To: 'e.downing@svca.on.ca'; 'm.oberle@SVCA.ON.CA'
Cc: Oliveira, Nelson; 'Adam Weishar'
Subject: Kincardine Water Treatment Plant (WTP) Municipal Class EA, Municipality of Kincardine

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning, Michael and Erik,

We are following up on the Kincardine Water Treatment Plant (WTP) Expansion project for the Municipality of Kincardine, and you may recall seeing the notice for the virtual Public Information Centre held between March/April 2023. Most work is anticipated to occur at the Kincardine Water Treatment Plant existing site, although a booster pumping station will be required to enable a water supply extension to Bruce Power.

The preliminary conceptual location for the booster pumping station presented at PIC #1 was identified generally around Stoney Island Crescent, and possibly on the existing SWM facility property. The natural resource mapping shows a watercourse on this site; however we understand that this is a buried stormwater pipe. There is also a SWM facility on this property and we would be looking to avoid impacting the footprint of the SWM facility. Below you will find the conceptual property configuration from PIC 1, and the natural heritage mapping.

If you have any information you can share regarding this site, or nearby constraints around Stoney Island Crescent, given this buried watercourse to help us with siting in this area, please let us know. A future public information centre will be held (PIC#2) later in the EA process, and we will continue to keep you informed.

PIC #1 figure (conceptual only)

Natural environment mapping

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Ministry of Citizenship and Multiculturalism

Heritage Planning Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
5th Flr, 400 University Ave
Tel.: 613.242.3743

Ministère des Affaires civiques et du Multiculturalisme

Unité de la planification relative au patrimoine
Direction du patrimoine
Division des affaires civiques, de l'inclusion et du patrimoine
Tél.: 613.242.3743

January 13, 2023 VIA EMAIL ONLY

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
david.kielstra@stantec.com

MCM File	**:**	**0018478**
Proponent	**:**	**Municipality of Kincardine**
Subject	**:**	**MCEA – Schedule C - Notice of Study Commencement**
Project	**:**	**Expansion of the Kincardine Water System and Treatment Plant**
Location	**:**	**Municipality of Kincardine**

Dear David Kielstra:

Thank you for providing us with the Notice of Study Commencement for the above-referenced project.

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 both Karla Barboza and myself.

MCM's interest in this Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- archaeological resources, including land and marine;
- built heritage resources, including bridges and monuments; and
- 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.

Project 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). This study is being undertaken in accordance with the requirements of Schedule 'C' projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015).

Identifying Cultural Heritage Resources
While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation.

Archaeological Resources
This EA project may impact archaeological resources and should be screened using the Ministry's *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential* to determine if an archaeological assessment is needed. MCM archaeological sites data are available at *archaeology@ontario.ca*.

If the EA project area exhibits archaeological potential, then an archaeological assessment (AA) shall be undertaken by an archaeologist licenced under the *Ontario Heritage Act (OHA)*, who is responsible for submitting the report directly to MCM for review.

Built Heritage Resources and Cultural Heritage Landscapes
A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment will be undertaken for the entire study area during the planning phase and will be summarized in the EA Report. This study will:

1. Describe the existing baseline cultural heritage conditions within the study area by identifying all known or potential built heritage resources and cultural heritage landscapes, including a historical summary of the study area. The Ministry has developed screening criteria that may assist with this exercise: *Criteria for Evaluating for Potential Built Heritage Resources and Cultural Heritage Landscapes*.

2. Identify preliminary potential project-specific impacts on the known and potential built heritage resources and cultural heritage landscapes that have been identified. The report should include a description of the anticipated impact to each known or potential built heritage resource or cultural heritage landscape that has been identified.

3. Recommend measures to avoid or mitigate potential negative impacts to known or potential built heritage resources and cultural heritage landscapes. The proposed mitigation measures are to inform the next steps of project planning and design.

Given that this project covers a large study area, MCM recommends that the Cultural Heritage Report is carried out so that step 1 described above is undertaken early in the planning process. Then, steps 2 and 3 can be undertaken once the preferred alternatives have been selected.

Cultural Heritage Reports will be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed.

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, municipal heritage committees, historical societies and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to them.

Environmental Assessment Reporting

All technical cultural heritage studies and their recommendations are to be addressed and incorporated into EA projects. Please advise MCM whether any technical cultural heritage studies will be completed for this EA project, and provide them to MCM before issuing a Notice of Completion or commencing any work on the site. If screening has 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.

Thank you for consulting MCM on this project and please continue to do so throughout the EA process. If you have any questions or require clarification, please do not hesitate to contact me.

Sincerely,

Joseph Harvey
Heritage Planner
Heritage Planning Unit
joseph.harvey@Ontario.ca

Copied to: Adam Weishar, Director of Infrastructure and Development, Municipality of Kincardine

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Friday, February 10, 2023 8:21 AM
To: Shelley Crummer
Cc: Kielstra, David
Subject: RE: Study Mailing List

Hi Shelley,

We will get you on the list. David, see below.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From: Shelley Crummer <shelley_crummer@bwdsb.on.ca>
Sent: February 9, 2023 4:24 PM
To: Adam Weishar <aweishar@kincardine.ca>
Subject: Study Mailing List

Could you please add the following emails to the Study Mailing List:
Shelley_crummer@bwdsb.on.ca
John_Bumstead@bwdsb.on.ca
Thank you

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
Learning Today, Leading Tomorrow

From: Wilson, Greg (MECP) <Greg.Wilson2@ontario.ca>
Sent: Monday, March 27, 2023 11:40 AM
To: Kielstra, David
Cc: Oliveira, Nelson; Adam Weishar; Howard, Katie (MECP); Davidson, Scott (MECP); Aldworth, James (MECP)
Subject: FW: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant
Attachments: Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hi David,

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.

Sincerely,
Greg

Greg Wilson | Zone Manager – Southwest Zone
659 Exeter Road, London, Ontario, N6E 1L3
P: 519-873-4616 **W**: OntarioParks.com

Ministry of the Environment, Conservation and Parks
Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: March 27, 2023 11:32 AM
To: Aldworth, James (MECP) <James.Aldworth@ontario.ca>; Wilson, Greg (MECP) <Greg.Wilson2@ontario.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Good morning,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

The existing municipal watermain currently ends near Inverhuron Provincial Park and a proposed extension of the watermain is being considered to Bruce Power. The route of the watermain extension has not been confirmed, although it would be anticipated to be constructed in a road right of way outside of the Provincial Park. Please let me know if any

other individuals from Ontario Parks or Inverhuron Provincial Park should be included on our contact list as the EA continues.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Howard, Katie (MECP) <Katie.Howard@ontario.ca>
Sent: Friday, April 28, 2023 2:47 PM
To: Kielstra, David
Cc: Oliveira, Nelson; Adam Weishar; Davidson, Scott (MECP); Aldworth, James (MECP); Wilson, Greg (MECP)
Subject: RE: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Good afternoon David,

Thank you for the notice and for the link to the Virtual PIC. I have reviewed the materials and look forward to remaining updated on this project as it moves forward and more information becomes available regarding the specific route along which the watermain extension will occur.

Have a great weekend,

Katie Howard | A/ Parks Planning Specialist
659 Exeter Rd., London, Ontario, N6E 1L3
P: 519-200-1568

Ministry of the Environment, Conservation and Parks
Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Wilson, Greg (MECP) <Greg.Wilson2@ontario.ca>
Sent: March 27, 2023 11:40 AM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>; Howard, Katie (MECP) <Katie.Howard@ontario.ca>; Davidson, Scott (MECP) <Scott.Davidson1@ontario.ca>; Aldworth, James (MECP) <James.Aldworth@ontario.ca>
Subject: FW: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Hi David,

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.

Sincerely,
Greg

Greg Wilson | Zone Manager – Southwest Zone
659 Exeter Road, London, Ontario, N6E 1L3
P: 519-873-4616 **W**: OntarioParks.com

Ministry of the Environment, Conservation and Parks
Please note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: March 27, 2023 11:32 AM
To: Aldworth, James (MECP) <James.Aldworth@ontario.ca>; Wilson, Greg (MECP) <Greg.Wilson2@ontario.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Good morning,

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Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Tuesday, April 4, 2023 4:04 PM
To: Kennedy, Adam (MNRF); Kielstra, David
Subject: RE: 2023-04-04-MNRF Comments - Kincardine MunClass EA - Water Expansion project

Thanks Adam.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From: Kennedy, Adam (MNRF) <Adam.Kennedy@ontario.ca>
Sent: Tuesday, April 4, 2023 3:54 PM
To: Adam Weishar <aweishar@kincardine.ca>; david.kielstra@stantec.com
Cc: Kennedy, Adam (MNRF) <Adam.Kennedy@ontario.ca>
Subject: 2023-04-04-MNRF Comments - Kincardine MunClass EA - Water Expansion project

Hi Adam and David,

Please find attached Ministry of Natural Resources and Forestry (MNRF) comments per the circulated Notice of Public Information Centre for the “Expansion of the Kincardine Water System and Treatment Plant – Schedule C Municipal Class Environmental Assessment Study”.

If you have any questions, concerns, or require clarification please let me know.

Regards,
Adam

Adam Kennedy
Regional Planner
Land Use Planning and Strategic Issues Section (LUPSI)
Southern Region
Ministry of Natural Resources and Forestry

(705) 761-3374
Adam.Kennedy@Ontario.ca

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: March 22, 2023 4:23 PM
Cc: Adam Weishar <aweishar@kincardine.ca>; Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Hello,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

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Please see the attached Notice of Public Information Centre for more details and how to provide comments.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Ministry of Natural Resources and Forestry

Land Use Planning and Strategic Issues Section
Southern Region

Regional Operations Division
300 Water Street
Peterborough, ON K9J 3C7

Ministère des Richesses naturelles et des Forêts

Section de l'aménagement due territoire et des questions stratégiques
Region du Sud

Division des opérations régionales
300, rue Water
Peterborough (ON) K9J 3C7

April 4 2023

Sent Via Email :
Adam Weishar
Director of Infrastructure and Development
Municipality of Kincardine
aweishar@kincardine.ca

And,

David Kielstra
Environmental Planner
Stantec Consulting Ltd.
David.kielstra@stantec.com

Dear Adam and David,

SUBJECT: ***MNRF Comments – Expansion of the Kincardine Water System and Treatment Plant – Schedule C Municipal Class Environmental Assessment Study – Notice of Public Information Centre***

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.

Natural Heritage

MNRF's natural heritage and natural resources GIS data layers may be obtained through the Ministry's Land Information Ontario (LIO) website. You may also view natural heritage

information online (e.g., Provincially Significant Wetlands, ANSI's, woodlands, etc.) using the Make a Map: Natural Heritage Areas tool.

We recommend that you use the above-noted sources of information during the review of your project proposal.

Natural Hazards

A series of natural hazard technical guides developed by MNRF are available to support municipalities and conservation authorities implement the natural hazard policies in the Provincial Policy Statement (PPS). For example, standards to address flood risks and the potential impacts and costs from riverine flooding are addressed in the *Technical Guide River and Stream Systems: Flooding Hazard Limit (2002)*. We recommend that you consider these technical guides as you assess specific improvement projects that can be undertaken to reduce the risk of flooding.

Petroleum Wells & Oil, Gas and Salt Resources Act

There may be petroleum wells within the proposed project area. Please consult the Ontario Oil, Gas and Salt Resources Library website (www.ogsrlibrary.com) for the best-known data on any wells recorded by MNRF. Please reference the 'Definitions and Terminology Guide' listed in the publications on the library website to better understand the well information available. Any oil and gas wells in your project area are regulated by the *Oil, Gas and Salt Resource Act*, and the supporting regulations and operating standards. If any unanticipated wells are encountered during development of the project, or if the proponent has questions regarding petroleum operations, the proponent should contact the Petroleum Operations Section at POSRecords@ontario.ca or 519-873-4634.

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

- 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 the unde.

If you have any questions or concerns, please feel free to contact me.

Best Regards,

Adam Kennedy

Adam Kennedy
Regional Planner
Land Use Planning and Strategic Issues Section (LUPSI)
Southern Region
Ministry of Natural Resources and Forestry

(705) 761-3374
Adam.Kennedy@Ontario.ca

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Monday, May 29, 2023 1:53 PM
To: Nancy Michie
Cc: Kielstra, David; Oliveira, Nelson
Subject: Re: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Hi Nancy,

I would suggest considering a delegation or request to Council. This is outside our projects scope as David mentioned.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

> On May 29, 2023, at 10:13 AM, Nancy Michie <nancy.michie@bruceenergycentre.com> wrote:
>
> Good Morning:
>
> Thank you for your email shown below. We are very hopeful that the extension of water services to the Bruce Power site can be helpful for the Bruce Energy Centre with its need for potable water. If we are not included in the current study area, please advise us how we can be included in the study area for the provision of potable water to the Bruce Energy Centre.
> Potable water is very important for development and growth at the Bruce Energy Centre.
>
> Your assistance in this mater will be greatly appreciated.
> Please let me know your thoughts and comments and direction for the Bruce Energy Centre to proceed.
>
> Thank you.
>
> Nancy Michie

BRUCE ENERGY CENTRE INC. ***~Industrial and Commercial Land Development, including Design Build & Leasing~***
Dedicated to support Bruce Power Suppliers and Contractors with industrial/Commercial Land and/or Industrial/Commercial Buildings

Corporate Office:
| Nancy Michie, Chief Administrator | DANCOR Campus: 1-2351 Huron Street, London, Ontario, Canada, N5V 0A8 |
| Telephone: +1-519-368-5000 | Fax: +1-519-858-2658 | Mobile: +1-519-357-7344
| E-Mail: nancy.michie@bruceenergycentre.com | Url: www.bruceenergycentre.com

---

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: May 24, 2023 11:14 AM
To: Nancy Michie <nancy.michie@bruceenergycentre.com>
Cc: Adam Weishar <aweishar@kincardine.ca>; Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: RE: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Hello Nancy,

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 Water Treatment Plant (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.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Nancy Michie <nancy.michie@bruceenergycentre.com>
Sent: Monday, April 17, 2023 10:30 AM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Adam Weishar <aweishar@kincardine.ca>
Subject: FW: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant

Good Morning David and Adam:

This email is an update for you, in regards to the Bruce Energy Centre's desire to connect to Potable water, in connection with the proposed expansion of the
Kincardine Water System and Treatment Plant.

I have received and listened to the online presentation from the Public Information Centre on the proposed expansion.

We hereby request that the Bruce Energy Centre, located on Bruce Road 20, be included in the proposed water line extension and be maintained on the study contact list.

Thank you

Nancy Michie

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Corporate Office:
| Nancy Michie, Chief Administrator | DANCOR Campus: 1-2351 Huron Street, London, Ontario, Canada, N5V 0A8 |
| Telephone: +1-519-368-5000 | Fax: +1-519-858-2658 | Mobile: +1-519-357-7344
| E-Mail: nancy.michie@bruceenergycentre.com | Url: www.bruceenergycentre.com

From: Nancy Michie <nancy.michie@bruceenergycentre.com>
Sent: Monday, January 9, 2023 11:40 AM
To: Kielstra, David
Cc: Helga Michelbach; Helmut Sieber (BEC); Adam Weishar; Lisa Courtney
Subject: FW: 22128 Kincardine Water and Wastewater Master Plan Presentation Slides
Attachments: 22128-BEC Development Lands.png

Good Morning David:
I received your name and contact information from Lisa Courtney, B M Ross and Associates Limited .

She suggested that we directly advise you of the request of the Bruce Energy Centre, located on Bruce Road 20, in the area of Bruce Power, in the Municipality of Kincardine,
to have potable water extended to the Bruce Energy Centre, if a decision is made to extend the services to the Bruce Power site.

We were advised that there is a Municipal Class Environmental Assessment (EA) examining the potential expansion of the Kincardine Water Treatment Plant and extension of potable water services to Bruce Power currently being undertaken by Stantec. 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 our comments to the study team for that EA.

The Management of the Bruce Energy Centre 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 potable water service would be a major advantage for the attraction of new industry in the Bruce Energy Centre area,
which will be a great advantage to the Municipality of Kincardine.

It was mentioned at the November 29th open house meeting that the research and knowledge of the area has identified that the
Potable water lines are in place at the Bruce Energy Centre and have been in place for several years.
Ontario Hydro was involved in the Bruce Energy Centre when the water lines were installed.
We also understand that the installation of the potable water for the Bruce Energy Centre was placed on hold in the 1990's,
with the division of the entity from Ontario Hydro to Bruce Power, OPG, etc.
Frank Rover from the Conestoga- Rovers & Associates, was the consultant working on the project, at that time.

We hereby ask that our request be included in the plans and process for the proposed water line extension for the Installation of potable water service to the Bruce Energy Centre area.

Please give consideration to our request and advise us of any further action required from the Bruce Energy Centre.
Thank you

Best regards,

Nancy Michie

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| Telephone: +1-519-368-5000 | Fax: +1-519-858-2658 | Mobile: +1-519-357-7344
| E-Mail: nancy.michie@bruceenergycentre.com | Url: www.bruceenergycentre.com

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Wednesday, May 24, 2023 10:58 AM
To: Jim Murr; Mark O'Leary
Cc: Kielstra, David
Subject: RE: Potable Water To the Energy Center

Hi Jim,

Unfortunately I do not. It is not something we have considered before.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From: Jim Murr <Jim.Murr@greenfield.com>
Sent: Wednesday, May 24, 2023 10:56 AM
To: Adam Weishar <aweishar@kincardine.ca>; Mark O'Leary <moleary@kincardine.ca>
Cc: Kielstra, David <david.kielstra@stantec.com>
Subject: RE: Potable Water To the Energy Center

Thanks Adam
Do you have an estimate of what that cost would be?

Regards

From: Adam Weishar <aweishar@kincardine.ca>
Sent: May-24-23 10:43 AM
To: Mark O'Leary <moleary@kincardine.ca>; Jim Murr <Jim.Murr@greenfield.com>
Cc: Kielstra, David <david.kielstra@stantec.com>
Subject: RE: Potable Water To the Energy Center

Thanks Mark,

Jim, this concept has been raised by a few property owners or businesses within the BEC and through to the EA as Mark has noted. At this time it is not something we are focusing on however if

there was significant serious interest from the benefiting landowners who would need to cover the costs of an expansion line to the BEC then we could dive further into things. Once we mention cost I typically do not hear much more on interest being open about it.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From: Mark O'Leary <moleary@kincardine.ca>
Sent: Wednesday, May 24, 2023 10:39 AM
To: Jim Murr <Jim.Murr@greenfield.com>
Cc: Adam Weishar <aweishar@kincardine.ca>
Subject: RE: Potable Water To the Energy Center

Morning Jim,

Jim, I have looped Adam Weishar into the thread here as well this morning, as he may be able to provide a bit better context on the history in that area.

We currently have an open EA reviewing the possibility of sending potable water to Bruce Power. This is in the preliminary stages, and best practises and opportunities continue to be investigated for this project. I can tell you that currently there isn't much consideration being proposed to get water to the BEC area. We have had a couple of questions or inquiries on both the water and sewer in that area, but it isn't on the radar in the scope of this project.

Thanks

Mark O'Leary
Manager of Environmental Services
519-396-4660 x 6

From: Jim Murr <Jim.Murr@greenfield.com>
Sent: Thursday, May 18, 2023 4:48 PM
To: Mark O'Leary <moleary@kincardine.ca>
Subject: RE: Potable Water To the Energy Center

Mark

Would you be able to discuss this matter further at your convenience?

Regards
Jim

From: Utilities Kincardine <utility@kincardine.ca>
Sent: May-18-23 2:39 PM
To: Jim Murr <Jim.Murr@greenfield.com>
Cc: Water Service <waterservice@kincardine.ca>; Mark O'Leary <moleary@kincardine.ca>
Subject: RE: Potable Water To the Energy Center

Hi Jim,

I believe Mark O'Leary, Manager of Environmental Services, would be the person to discuss this with. I've included him in this email

Thank you,

Kimberly Hall
Utility Receivable & Revenue Clerk
Phone: (519) 396-3468 x 7143
Fax: (519) 396-1488

Municipality of Kincardine
1475 Concession 5, RR 5
Kincardine, ON N2Z 2X6
www.kincardine.ca

From: Jim Murr <Jim.Murr@greenfield.com>
Sent: Thursday, May 18, 2023 12:57 PM
To: Utilities Kincardine <utility@kincardine.ca>
Subject: Potable Water To the Energy Center

Good afternoon

I understand there are discussions underway with the Municipality and Bruce Power that would see the availability of potable water to Bruce Power. Has there been any discussions or consideration in carrying that forward to the businesses in the Energy Center?

Would you have a contact at the Municipality that I can discuss this with?

Kind Regards

Jim Murr
Plant Manager
T. 519-368-7723, x7931
M. 519-955-1574
www.greenfield.com

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Sent: Friday, August 11, 2023 10:50 AM
To: 'Kennedy, Adam (MNRF)'
Cc: Oliveira, Nelson; Adam Weishar
Subject: RE: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Attachments: 2023-08-03-MNRFcomments-PIC2-KincardineWaterProject.pdf; Notice_PIC2 _Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Adam,

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.

Regards,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kennedy, Adam (MNRF) <Adam.Kennedy@ontario.ca>
Sent: Thursday, August 3, 2023 4:43 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Kennedy, Adam (MNRF) <Adam.Kennedy@ontario.ca>
Subject: RE: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hi David,

Please find attached MNRF comments. If you have any questions please let me know.

Thanks,
Adam

Adam Kennedy
Regional Planner
Land Use Planning and Strategic Issues Section (LUPSI)
Southern Region
Ministry of Natural Resources and Forestry

(705) 761-3374
Adam.Kennedy@Ontario.ca

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: July 13, 2023 11:17 AM
To: Kennedy, Adam (MNRF) <Adam.Kennedy@ontario.ca>
Subject: FW: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hello Adam,

Please see the attached notice for the Municipality of Kincardine Expansion of the Kincardine Water System and Treatment Plant Municipal Class EA. Details regarding the upcoming PIC #2 are attached.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Wednesday, July 12, 2023 3:34 PM
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hello,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC #2) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have.

Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: Tuesday, August 8, 2023 12:10 PM
To: Kielstra, David
Cc: Oliveira, Nelson; Adam Weishar
Subject: RE: File 0018478: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

David Kielstra,

Thanks for providing us with these updates.

Have a good week!

Joseph Harvey | Heritage Planner
Citizenship, Inclusion and Heritage Division | Heritage Branch | Heritage Planning Unit
Ministry of Citizenship and Multiculturalism
613.242.3743
Joseph.Harvey@ontario.ca

Effective October 17, 2022, units responsible for cultural heritage matters have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Responsibility for the Ontario Heritage Act and associated Provincial functions is now held by MCM. Individual staff roles and contact information remain unchanged.

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: August 8, 2023 11:54 AM
To: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: RE: File 0018478: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hello Joseph,

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.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Harvey, Joseph (MCM) <Joseph.Harvey@ontario.ca>
Sent: Thursday, July 20, 2023 7:33 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: FW: File 0018478: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hi David,

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.

Thanks,

Joseph Harvey | Heritage Planner
Citizenship, Inclusion and Heritage Division | Heritage Branch | Heritage Planning Unit
Ministry of Citizenship and Multiculturalism
613.242.3743
Joseph.Harvey@ontario.ca

Effective October 17, 2022, units responsible for cultural heritage matters have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Responsibility for the Ontario Heritage Act and associated Provincial functions is now held by MCM. Individual staff roles and contact information remain unchanged.

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: July-12-23 3:34 PM
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hello,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC #2) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have.

Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Nancy Michie <nancy.michie@bruceenergycentre.com>
Sent: Friday, August 11, 2023 10:55 AM
To: Kielstra, David
Subject: RE: Comment form for the Expansion of the Kincardine Water System and Treatment Plant

Thank you

Best regards,

Nancy Michie

BRUCE ENERGY CENTRE INC. ***~Industrial and Commercial Land Development, including Design Build & Leasing~***
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Corporate Office:
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| Telephone: +1-519-368-5000 | Fax: +1-519-858-2658 | Mobile: +1-519-357-7344
| E-Mail: nancy.michie@bruceenergycentre.com | Url: www.bruceenergycentre.com

---

From: Kielstra, David <David.Kielstra@stantec.com>
Sent: August 11, 2023 10:40 AM
To: Nancy Michie <nancy.michie@bruceenergycentre.com>; Adam Weishar <aweishar@kincardine.ca>
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: RE: Comment form for the Expansion of the Kincardine Water System and Treatment Plant

Hello Nancy,

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.

Thank you again,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Nancy Michie <nancy.michie@bruceenergycentre.com>
Sent: Thursday, August 3, 2023 10:48 AM
To: Kielstra, David <David.Kielstra@stantec.com>; Adam Weishar <aweishar@kincardine.ca>
Subject: FW: Comment form for the Expansion of the Kinardine Water Stystem and Treatment Plan

Good Morning David and Adam:

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.
Thank you

Best regards,

Nancy Michie

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| Telephone: +1-519-368-5000 | Fax: +1-519-858-2658 | Mobile: +1-519-357-7344
| E-Mail: nancy.michie@bruceenergycentre.com | Url: www.bruceenergycentre.com

Indigenous Correspondence

NOTICE OF STUDY COMMENCEMENT

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

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 existing plant, and the study area, are shown on the key map.

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. Expansion alternatives will be developed for anticipated community growth and to consider possible servicing requirements to extend supply to the Bruce Power site.

THE PROCESS

This study is being undertaken in accordance with the requirements of Schedule 'C' projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015). The study will be completed concurrently with the Water and Wastewater Servicing Master Plan Update. Information from the Master Plan will inform and be used in this Class EA Study.

PUBLIC INVOLVEMENT

Details regarding opportunities for engagement, including Public Information Centres (PICs) will be advertised as the study progresses on Kincardine's website: www.kincardine.ca/ Upon completion of the study, an Environmental Study Report (ESR) will be prepared and placed on the public record for a minimum 30-day review period.

If you wish to provide comments, have your name added to the study mailing list, or if you have questions about this project, please contact one of the Project Team members listed below.

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

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: (905) 381-3247

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

November 24, 2022

Project/File: 165630238

Chief Ogimaakwe Veronica Smith
Chippewas of Nawash Unceded First Nation
135 Lakeshore Blvd.
Neyaashiinigmiing ON N0H 2T0

Hello Chief Smith,

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

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 existing plant, and the study area, are shown on the key map.

The purpose of this letter is to introduce you to the study, request your consultation, and provide you with some background information. A copy of the Notice of Study Commencement is provided.

Nature of the Proposed Activity

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. Expansion alternatives will be developed for anticipated community growth and to consider possible servicing requirements to extend supply to the Bruce Power site.

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Environmental studies will include a natural environment and cultural heritage background review, as well as a Stage 1 Archaeological Assessment. These studies will consider the natural, social and cultural environments when developing a recommended plan for extension of the water supply. The need for more detailed investigations will be determined in subsequent stages of this study, based on recommended locations for infrastructure.

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)

Opportunities for Participation

The Municipality of Kincardine is interested in engaging with your community as the study progresses. Please let the study team know how your community would like to participate or be consulted as part of this study. The team will also provide you with details regarding Public Information Centres (PICs) or other public engagement events should you wish to attend or obtain a copy of the materials presented.

Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the undersigned.

Sincerely,

Adam Weishar
Signed with ConsignO Cloud (2022/11/24)
Verify with verifio.com or Adobe Reader.
notarius

Adam Weishar
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

CC: Nelson Oliveira, David Kielstra, Stantec Consulting Ltd.

Attachment: Notice of Study Commencement, Key Map

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

Figure 1 Key Map

November 24, 2022

Project/File: 165630238

Chief Jason Henry
Kettle and Stony Point First Nation
6247 Indian Lane
Lambton Shores ON N0N 1J1

Hello Chief Henry,

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

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 existing plant, and the study area, are shown on the key map.

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Nature of the Proposed Activity

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Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)

Opportunities for Participation

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Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the undersigned.

Sincerely,

Adam Weishar
Signed with ConsignO Cloud (2022/11/24)
Verify with verifio.com or Adobe Reader.
notarius

Adam Weishar
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

CC: Nelson Oliveira, David Kielstra, Stantec Consulting Ltd.

Attachment: Notice of Study Commencement, Key Map

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

Figure 1 Key Map

November 24, 2022

Project/File: 165630238

Chief Lester Anoquot
Saugeen First Nation
6 Cameron Drive
Southhampton ON N0H 2L0

Hello Chief Anoquot,

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

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 existing plant, and the study area, are shown on the key map.

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Opportunities for Participation

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Sincerely,

Adam Weishar
Signed with ConsignO Cloud (2022/11/24)
Verify with verifio.com or Adobe Reader.
notarius

Adam Weishar
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

CC: Nelson Oliveira, David Kielstra, Stantec Consulting Ltd.

Attachment: Notice of Study Commencement, Key Map

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

Figure 1 Key Map

November 24, 2022

Project/File: 165630238

Environmental Office Joint Chiefs and Councils of the Saugeen Ojibway Nation
Environmental Office

soneo@saugeenojibwaynation.ca

Hello,

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

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 existing plant, and the study area, are shown on the key map.

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Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)

Opportunities for Participation

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Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the undersigned.

Sincerely,

Adam Weishar
Signed with ConsignO Cloud (2022/11/24)
Verify with verifio.com or Adobe Reader.
notarius

Adam Weishar
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

CC: Nelson Oliveira, David Kielstra, Stantec Consulting Ltd.

Attachment: Notice of Study Commencement, Key Map

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

Figure 1 Key Map

From: Kielstra, David
Sent: Thursday, December 22, 2022 4:22 PM
To: consultations@metisnation.org
Cc: Adam Weishar; Oliveira, Nelson
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Attachments: ad_NOSC - kincardine_Water_System_Expansion_Class_EA_fnl.pdf; let_ind_metis_nation_ontario_20221222.pdf

To the Metis Nation of Ontario, Lands and Resources Department (Region 7),

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

December 22, 2022
Project/File: 165630238

Metis Nation of Ontario
Lands and Resouces Department (Region 7)
By email : Consultations@metisnation.org

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)
Municipal Class Environmental Assessment
Notice of Study Commencement

To the Metis Nation of Ontario,

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 existing plant, and the study area, are shown on the key map.

The purpose of this letter is to introduce you to the study, request your consultation, and provide you with some background information. A copy of the Notice of Study Commencement is provided.

Nature of the Proposed Activity

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. Expansion alternatives will be developed for anticipated community growth and to consider possible servicing requirements to extend supply to the Bruce Power site.

This study is being undertaken in accordance with the requirements of Schedule 'C' projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015). The study will be completed concurrently with the Water and Wastewater Servicing Master Plan Update. Information from the Master Plan will inform and be used in this Class EA Study.

Environmental studies will include a natural environment and cultural heritage background review, as well as a Stage 1 Archaeological Assessment. These studies will consider the natural, social and cultural environments when developing a recommended plan for extension of the water supply. The need for more detailed investigations will be determined in subsequent stages of this study, based on recommended locations for infrastructure.

Reference: Extension of the Kincardine Water System and Treatment Plant (WTP)

Opportunities for Participation

The Municipality of Kincardine is interested in engaging with your community as the study progresses. Please let the study team know how your community would like to participate or be consulted as part of this study. The team will also provide you with details regarding Public Information Centres (PICs) or other public engagement events should you wish to attend or obtain a copy of the materials presented.

Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the undersigned.

Sincerely,

Adam Weishar
Signed with ConsignO Cloud (2022/12/22)
Veri y with veri io.com or Adobe Reader.
notarius

Adam Weishar
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

CC: Nelson Oliveira, David Kielstra, Stantec Consulting Ltd.

Attachment: Notice of Study Commencement with Key Map

Reference: **Extension of the Kincardine Water System and Treatment Plant (WTP)**
Municipal Class Environmental Assessment
Notice of Study Commencement

Figure 1 Key Map

NOTICE OF PUBLIC INFORMATION CENTRE

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site. See study area map.

This study is being undertaken in accordance with the requirements of Schedule C projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015) which is approved under the Ontario *Environmental Assessment Act*.

HOW CAN I PARTICIPATE IN THE STUDY?

A virtual Public Information Centre (PIC) is being 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 will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer/)

Please contact a member of the project team below by **April 28, 2023** to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

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

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: 905-381-3247

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From: Kielstra, David
Sent: Thursday, March 23, 2023 2:57 PM
To: chief.veronica@nawash.ca
Cc: Adam Weishar; Oliveira, Nelson; Hohner, Paula
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Attachments: Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hello Chief Smith,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

The Municipality of Kincardine is interested in engaging with your community as the study progresses. Please let the study team know how your community would like to participate or be consulted as part of this study. As mentioned in the introductory letter sent November 24, 2022, the team will also provide you with details regarding any future Public Information Centres (PICs) or other public engagement events should you wish to participate or obtain a copy of the materials presented.

Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the Municipality of Kincardine Project Manager Adam Weishar, Director of Infrastructure and Development, at 519-396-3468 ext. 119 or aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, November 24, 2022 2:54 PM
To: chief.veronica@nawash.ca
Cc: Adam Weishar <aweishar@kincardine.ca>; soneo@saugeenojibwaynation.ca

Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Hello Chief Smith,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, March 23, 2023 2:56 PM
To: 'consultation@kettlepoint.org'
Cc: 'Adam Weishar'; 'fdesk@kettlepoint.org'; Oliveira, Nelson; Hohner, Paula
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Attachments: Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hello Chief Bressette,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

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Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the Municipality of Kincardine Project Manager Adam Weishar, Director of Infrastructure and Development, at 519-396-3468 ext. 119 or aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, November 24, 2022 2:54 PM
To: 'fdesk@kettlepoint.org' <fdesk@kettlepoint.org>

Cc: Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Dear Chief Henry,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, March 23, 2023 2:54 PM
To: 'environmentoffice@saugeenojibwaynation.ca'
Cc: 'Adam Weishar'; 'chief.veronica@nawash.ca'; 'sfn@saugeen.org'; Oliveira, Nelson; Hohner, Paula
Subject: Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Attachments: Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

To the Saugeen Ojibway Nation Environmental Office,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

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Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, December 22, 2022 2:11 PM
To: environmentoffice@saugeenojibwaynation.ca

Cc: Adam Weishar <aweishar@kincardine.ca>; chief.veronica@nawash.ca; sfn@saugeen.org; Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: RE: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

To the Saugeen Ojibway Nation Environmental Office,

Please see the attached correspondence which was previously undeliverable. We are resending to the revised mailing list on your website.

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, November 24, 2022 2:54 PM
To: soneo@saugeenojibwaynation.ca
Cc: Adam Weishar <aweishar@kincardine.ca>
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

To the Saugeen Ojibway Nation Environmental Office,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
To:	sfn@saugeen.org
Cc:	Adam Weishar; Oliveira, Nelson; Hohner, Paula; environmentoffice@saugeenojibwaynation.ca
Subject:	Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Date:	Thursday, March 23, 2023 2:57:00 PM
Attachments:	Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

Hello Chief Anoquot,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

The Municipality of Kincardine is interested in engaging with your community as the study progresses. Please let the study team know how your community would like to participate or be consulted as part of this study. As mentioned in the introductory letter sent November 24, 2022, the team will also provide you with details regarding any future Public Information Centres (PICs) or other public engagement events should you wish to participate or obtain a copy of the materials presented.

Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the Municipality of Kincardine Project Manager Adam Weishar, Director of Infrastructure and Development, at 519-396-3468 ext. 119 or aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, November 24, 2022 2:54 PM

To: sfn@saugeen.org
Cc: Adam Weishar <aweishar@kincardine.ca>; soneo@saugeenojibwaynation.ca
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

Hello Chief Anoquot,

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
To:	consultations@metisnation.org
Cc:	Adam Weishar; Oliveira, Nelson; Hohner, Paula
Subject:	Notice of Public Information Centre - Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment
Date:	Thursday, March 23, 2023 2:52:00 PM
Attachments:	Notice_PIC1_Kincardine_Water_System_Expansion_Class_EA_20230322_fnl.pdf

To the Metis Nation of Ontario,

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. Expansion alternatives will be developed for anticipated community growth, as well as possible servicing requirements to extend drinking water supply to the Bruce Power site.

A virtual Public Information Centre (PIC) is being held online through the Municipality's YouTube channel (https://youtube.com/@MunicipalityofKincardine) and will be posted between March 30, 2023 and April 28, 2023. The virtual PIC presentation will provide information about the project, including the assessment of alternative solutions and the recommended solution. Presentation materials will also be available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer) during the period mentioned above.

The Municipality of Kincardine is interested in engaging with your community as the study progresses. Please let the study team know how your community would like to participate or be consulted as part of this study. As mentioned in the introductory letter sent December 22, 2022, the team will also provide you with details regarding any future Public Information Centres (PICs) or other public engagement events should you wish to participate or obtain a copy of the materials presented.

Should you have any questions, comments or interests regarding this Class EA Study, or if you would like to schedule a meeting to discuss this project further, please do not hesitate to contact the Municipality of Kincardine Project Manager Adam Weishar, Director of Infrastructure and Development, at 519-396-3468 ext. 119 or aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Thursday, December 22, 2022 4:22 PM

To: consultations@metisnation.org
Cc: Adam Weishar <aweishar@kincardine.ca>; Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: Notice of Study Commencement, Expansion of the Kincardine Water System and Treatment Plant, Schedule C Municipal Class Environmental Assessment

To the Metis Nation of Ontario, Lands and Resources Department (Region 7),

The Municipality of Kincardine has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant. A Notice of Study Commencement is attached which provides details regarding the study.

If you wish to provide comments or if you have any questions about this project, please contact the Project Team members listed on the notice.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

NOTICE OF PUBLIC INFORMATION CENTRE #2

Expansion of the Kincardine Water System and Treatment Plant
Schedule C Municipal Class Environmental Assessment Study

THE STUDY

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street, address potential community growth in the study area, and consider a possible extension to Bruce Power. See study area map.

Expansion alternatives presented at the first Public Information Centre (PIC #1) identified that the preferred solution includes:

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

A second PIC (PIC #2) is being held to provide an update on study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

HOW CAN I PARTICIPATE IN THE STUDY?

PIC #2 will be held in-person using a drop-in format, with project team members and Municipality staff available to discuss the project and any questions.

Date: Monday July 24, 2023
Location: Municipality of Kincardine Council Chambers
1475 Concession 5, RR #5, Kincardine ON N2Z 2X6
Time: 6:00 pm - 8:00 pm

Presentation materials will also be available on the Municipality's website following the PIC. Comments are requested by **August 8, 2023.** (https://www.kincardine.ca/Water-and-Sewer/).

This study is being undertaken in accordance with the requirements of Schedule C projects, as outlined in the Municipal Class EA document (2000, as amended in 2007, 2011 and 2015) which is approved under the Ontario *Environmental Assessment Act*. Near the end of the project, an Environmental Study Report (ESR) will be prepared to document the EA process, consultation activities, and the evaluation. The ESR will be presented for a 30 day public review at that time.

Please contact a member of the project team below to ask questions about the PIC materials, provide comments, or to be added to the study contact list.

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. 7121

David Kielstra, MA, EP, MCIP, RPP
Environmental Planner
Stantec Consulting Ltd.
200-835 Paramount Drive
Stoney Creek ON, L8J 0B4
Email: david.kielstra@stantec.com
Phone: 905-381-3247

If you have any accessibility requirements in order to participate in this project, please contact one of the Project Team members listed above. Comments and information are being collected to assist with meeting the requirements of the *Ontario Environmental Assessment Act*. Information collected will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and *Access to Information Act*. With the exception of personal information, all comments will become part of the public record.

From:	Kielstra, David
To:	chief.veronica@nawash.ca
Cc:	Oliveira, Nelson; Adam Weishar; environmentoffice@saugeenojibwaynation.ca
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:06:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Chief Veronica Smith,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have. Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

A meeting can be arranged with your community should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email at aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Kielstra, David

From: Diana Ross <executiveassistant@nawash.ca>
Sent: Thursday, July 13, 2023 3:49 PM
To: Kielstra, David
Subject: Re: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Attachments: Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Thank you, I have received your email. I will forward to our Chief and any others to be included.

On Jul 13, 2023, at 3:40 PM, Kielstra, David <David.Kielstra@stantec.com> wrote:

Hello Diana,

I telephoned your band office and I was asked to send you a copy of the notice attached. I just wanted to confirm whether the email was received, or if your community had any questions regarding the project. If there is someone else I should send this to instead, please let me know.

Have a great day,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Kielstra, David
Sent: Wednesday, July 12, 2023 3:09 PM
To: chief.veronica@nawash.ca
Cc: Oliveira, Nelson <nelson.oliveira@stantec.com>; Adam Weishar <aweishar@kincardine.ca>; environmentoffice@saugeenojibwaynation.ca
Subject: Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant

Hello Chief Veronica Smith,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing

requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

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A meeting can be arranged with your community should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email ataweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Diana Ross
Executive Assistant
Chippewas of Nawash Unceded First Nation
135 Lakeshore Blvd.
Neyaashiinigmiing, ON N0H 2T0
PH: 519.534.1689 ext. 249
FAX: 519.534.2130

Pronouns: She/Her/Kwe

I respectfully affirm that the land and water on which I live and work is the traditional territory of the Saugeen Ojibway Nation.

From:	Kielstra, David
To:	fdesk@kettlepoint.org; consultation@kettlepoint.org
Cc:	Oliveira, Nelson; Adam Weishar
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:03:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Chief Kimberly Bressette,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have. Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

A meeting can be arranged with your community should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email at aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
To:	environmentoffice@saugeenojibwaynation.ca
Cc:	Oliveira, Nelson; Adam Weishar
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:06:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Joint Chiefs and Councils of the Saugeen Ojibway Nation Environmental Office,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have. Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

A meeting can be arranged with your organization should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email at aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
To:	sfn@saugeen.org
Cc:	Oliveira, Nelson; Adam Weishar; environmentoffice@saugeenojibwaynation.ca
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:05:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Chief Conrad Ritchie (Chi-Nimkii),

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have. Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

A meeting can be arranged with your community should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email at aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:	Kielstra, David
To:	consultations@metisnation.org
Cc:	Oliveira, Nelson; Adam Weishar
Subject:	Notice of Public Information Centre 2 - Expansion of the Kincardine Water System and Treatment Plant
Date:	Wednesday, July 12, 2023 3:04:00 PM
Attachments:	Notice_PIC2_Kincardine_Water_System_Expansion_Class_EA.pdf

Hello Metis Nation of Ontario c/o Lands and Resources Department Region 7,

The Municipality of Kincardine (Kincardine) is undertaking a Schedule 'C' Municipal Class Environmental Assessment (Class EA) Study to identify options for expansion of the Kincardine Water System and Water Treatment Plant (WTP) at 155 Durham Street. The study is also considering anticipated community growth and possible servicing requirements to extend drinking water supply to the Bruce Power site. (Refer to study area map).

A second Public Information Centre (PIC) is being held to provide an update on the study progress, the next phase evaluation of Alternative Designs, and to identify the preliminary preferred Alternative Design concept.

The PIC will be held in-person July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The meeting will use a drop-in format, with project team members and staff available to discuss the project and any questions that individuals may have. Please see the attached notice for information on how to provide comments and for a map of the study area. If you are unable to attend, the displays will also be posted to the Municipal website (https://www.kincardine.ca/Water-and-Sewer/) following the PIC.

A meeting can be arranged with your community should you have any Indigenous interests in the study area, or if you wish to discuss this project further. If you have any questions or comments, please contact Adam Weishar, Director of Infrastructure and Development at 519-396-3468 x 7121 or by email at aweishar@kincardine.ca.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

Public Correspondence

From: Kielstra, David
Sent: Thursday, July 6, 2023 4:07 PM
To:
Cc: 'Adam Weishar'; Oliveira, Nelson
Subject: Expansion of the Kincardine Water System and Treatment Plant Municipal Class Environmental Assessment

Hello

Thank you for providing your comments regarding the Municipality of Kincardine Water Treatment Plant project including comments related to the potential booster station location.

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 (SWM) Site. Further evaluations are underway to consider local site zoning context in the area around Stoney Island Crecent, environmental protection areas, as well as the flooding issues you have mentioned. This evaluation will be presented at a second Public Information Centre to be held July 24th, with a notice to follow for the time and location.

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.

Thank you again for your comments, and you have been added to the mailing list for future updates. If you have any further questions, please give me a call at 905-381-3247 and I would be happy to speak with you.

Regards,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:
Sent: Monday, April 24, 2023 8:58 AM
To: Kielstra, David <David.Kielstra@stantec.com>; aweishar@kincarine.ca
Subject: FW: ATT## Kincardine to Bruce Power water pipe line booster pump site location opposition

Adam Weisher and Daivd Kielstra

I am submitting this letter as opposition to the Stoney Island Cresent booster pump site location. As I hope you are aware this site recently had flooding due to a rain storm(2023) and has flood in past years. The area is used for over land water flow, as there is a ditch with good water flow in the spring and fall. I have video of water flow/flooding and would be happy to share with you. An area that floods is not a suitable spot for a potable water booster pump. I ask the this site be reconsidered and not used.

Please advise a more suitable area

April 24, 2023

To Whom it may concern

We are writing today to bring a potential issue in our neighbour to your attention regarding the Kincardine water extension project, specifically the proposed location of the water booster pumping station. We feel the current primary location site Stoney Island cres is not a suitable location, and we would like the project team to review and locate a more suitable site.

After viewing the council meeting in the beginning of April our attention was directed to a video pertaining to the municipal water extension project to Bruce Power. The video outlined the water extension project in general, but more specifically outlined the need for a water booster pumping station to be built to support extending municipal potable water to Bruce Power. Our specific interest in this is our neighbourhood/street (Stoney Island cres) was singled out as the most viable location to build this booster pump station. Even more specifically, it would be located directly across the road from our house in the storm water management area that is zoned Open Space/Environmentally Protected land and within a flood/water risk area under Saugeen Valley Conservation Authority.

We have several concerns over this location being used but will focus on the few most important. The main concern we have is currently located on this lot is our neighbourhoods Storm Water Management system/holding basin (pond). There is a large volume drainage ditch that runs parallel the street on our property with water flowing downhill from Bruce Road 23 (the B-Line), it flows into an underground catch basin and overflows into the storm water management pond. This drainage ditch several times a year receives a high volume of water, as the agricultural land opposite our property on the B-Line has a large waterway that drains into this ditch in addition to rainfall, ground water, and snow melt. In the short 5-year history we have lived at this property, the drainage ditch routinely fills throughout the year and has twice overflown and broached the road onto Stoney Island Cres. into the storm water pond, and twice the road has been shut to traffic by the Municipality because of flooding.

The storm we received on April 5, 2023, was a well-timed prime example of why having an unobstructed route for water to flow through the drainage ditch and into the overflow stormwater management retention pond is vital to the safety and integrity of our neighbourhood/street/ and our property/home. I will include some photos of the flooding we received on that day, and as you can see in the photos the drainage ditch very quickly overflowed, flooding onto the road at least 1-2 feet of water which thankfully had an unobstructed path to flow into the overflow pond. The overflow pond also very quickly in a matter of half an hour filled and overflowed causing more roadway and property flooding to both our property and the adjacent houses. Had this water flow route been obstructed by a building like the

water booster pump station that is proposed to be built here or even a slight change to the grading of the ground, this would have most definitely caused property damage to both my home and neighbouring homes as the water would have backed up in our drainage ditch with no where to flow to.

Currently the proposed building lot is municipal owned but is within the boundaries of the Saugeen Valley Conservation Authority (SVCA), as this area is at risk for flooding, and was specifically designed and zoned for the purposes of storm water management. We need this to remain as it is. The lot is broken into two zones, the back half is Environmentally Protected land, and the ground is quite wet and unsuitable for building. The front half/street side is zoned as Open Space and is where the proposed building will be located. This is directly in the route of water flow. In our search of SVCA and municipal by-laws, one of the most important items we found was that to gain approval from the SVCA and change zoning so that building can occur here, this change need not cause or increase risk of flooding/property damage to surrounding properties. Any change that occurs to this lot, especially the addition of a building or change to grading of land would most definitely increase risk of flooding and property damage to our property and likely others that are located lower grade within the water flow route from the storm water management pond. Again, please refer to photos provided to understand the volume of water that flows through this ditch, and the flooding that occurred to our road and our personal property lot during the large rainfall on April 5th, 2023. The purpose of the storm water management system is to plan for the 100 year storm, and as pointed out by Council member Bill Stewart during the April 17th, 2023 council meeting when he requested a report on the flooding and current health of the Municipalities storm water management systems as a whole, this was not even the 100 year storm that the management system is supposed to be designed to manage.

Second to our highest concern of water management; the usable portion of this lot is currently zoned OS (open space). This is the only open/green space in our neighbourhood that is not privately owned. This green space is often used by the people who live in our neighbourhood, mainly the children. While we do not have as many occupants in the neighbourhood as others, we feel we should have access to the same availability of green space as any other neighbourhood within the municipality, especially where children live and frequently use. This open green space is used frequently for recreational physical activities by our children and the other neighbouring children for soccer, baseball, sledding in the winter, hockey, tag, exploring etc. It provides communal green space for play/recreation as well as provides an area safely off the road for the younger children to meet and play. To lose the availability of this green space would negatively impact the outdoor recreational activities of all. We all know how important time outdoors is, especially as we come out of the Covid-era when an emphasis was shown how important access to outdoor/open air green space is to all physical, mental, and social health.

This space is also used at times by non-neighbouring community members as this is the access way to a municipal path leading to the waterfront. With the constriction of the KIPP trail last summer we have noted an increase in number of community members who ride bikes or walk down our street and use this lot to access the path to the waterfront. There is an adjacent roadway, but this roadway is privately owned property, thus cannot be assumed as a permanent access point to the municipal path.

Finally, we question whether a residential area is an appropriate site for this type of utility building. We question the impact of potential noise from the vibrations of machinery that could come from the pumps, question the safety and environmental impact of any contaminants that may be used (ie. grease for pump machinery) to the surrounding greenspace, wildlife, and water that this type of building might have. This storm water management area flows directly into Lake Huron. We question the potential impact a utility building that is “out of place” would have on our property values as a whole neighbourhood. We feel a non-residential site would be a much better location.

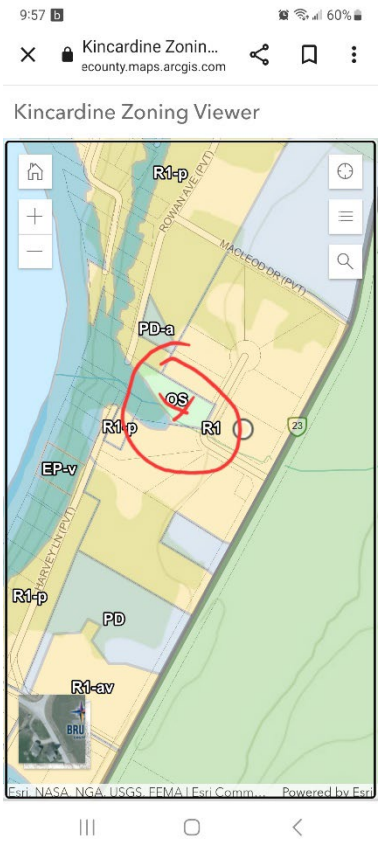
The risk of what will be lost by the proposed building on this lot we feel far outweighs the benefit of using this lot as opposed to finding a more suitable location. Though this may cost more upfront in the need to purchase a small lot of land or pave a roadway to another site, in the long run it will cost much less then the property damage that would occur due to the mismanagement of storm water by the municipality. We stand to lose the integral storm water management system for our property and neighbourhood; as well as the loss of the only much used and enjoyed communal green space for our neighbourhood.

We would like the project team to review and locate a more suitable site for the booster pump station, as Stoney Island is not a suitable location.

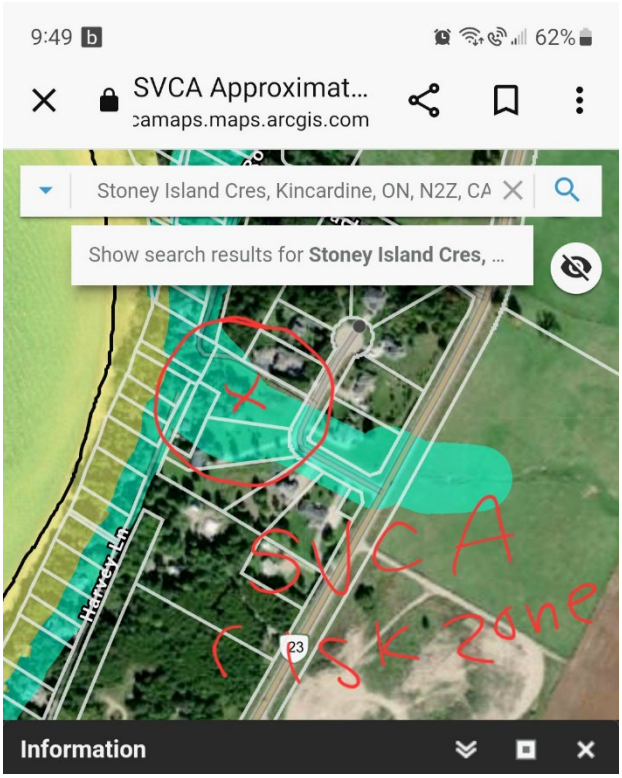
Thank you very much for reviewing our concerns.

Sincerely,

(Please see attached photos, we also have video of flooding from April 5, 2023, to share at later date.)



Proposed lot is currently zoned OS/EP.



Proposed lot is within SVCA flood/water management risk area.

April 5, 2023.

Water reaching approx. 10-15 feet in from road, the drainage ditch is at the same level as the road, it is located on the other side of the small shrubs.

April 5, 2023.

Photo taken standing on front lawn looking across road towards the water management overflow pond. This is the exact location of the proposed building. This is not a suitable location for a building.

April 5, 2023.

Standing in same spot, photo is looking down towards the end of Stoney Island, as you can see the storm water flooded the entire roadway.

April 8, 2023.

The storm water management overflow pond area remained wet for several days. The ground remained very saturated. This area is wet throughout the year. This is not a suitable location for a building.

Winter sledding and snowman building is one of the most favourite recreation activities some of the neighbourhood kids love to get together and do on the open/green space.

From: Kielstra, David
Sent: Thursday, July 6, 2023 4:07 PM
To:
Cc: Adam Weishar; Oliveira, Nelson
Subject: Expansion of the Kincardine Water System and Treatment Plant Municipal Class Environmental Assessment

Hello ,

Thank you for providing your comments regarding the Municipality of Kincardine Water Treatment Plant project including comments related to the potential booster station location and the suggestion to also consider areas east of Bruce Road 23.

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 (SWM) Site. Further evaluations are underway to consider local site zoning context in the area around Stoney Island Crecent, environmental protection areas, as well as the flooding issues you have mentioned. This evaluation will be presented at a second Public Information Centre to be held July 24th, with a notice to follow for the time and location.

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.

Thank you again for your comments, and you have been added to the mailing list for future updates. If you have any further questions, please give me a call at 905-381-3247 and I would be happy to speak with you.

Regards,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:
Sent: Tuesday, April 25, 2023 11:09 PM
To: bstewart@kincardine.ca; mhinchberger@kincardine.ca; aclarke@kincardine.ca; kcraig@kincardine.ca; Kielstra, David <David.Kielstra@stantec.com>
Subject: Expansion of Water System & Treatment Plan

This letter is written in response to the information regarding the expansion of the Kincardine Water System & Treatment Plan. We are currently residents of Stoney Island Crescent, Kincardine.

While we are supportive of the maintenance and development of the municipal water services to promote the growth of the municipality, we have a concern regarding the proposed new location of the Booster Pumping Station on Stoney Island Crescent.

When the municipality engineered Stoney Island Crescent, there was an identified need for storm water management. The most recent heavy water rain event in mid March of this year was one of several rain events in the past few years that demonstrated the necessity for the land to be maintained as the storm management lagoon and run-off it was intended to be. Water from the past March rain event flooded the lagoon, the Crescent and subsequently flowed between the west side of our driveway and our neighbour's driveway to our drainage basins behind our home.

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. Further concerns include flooding causing unmanaged overland water flow which will cause erosion of the ravine and shoreline.

Secondly, 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.

Lastly, as there is presently a former municipal well building on the corner of the Crescent and Bruce Road 23, we are not in favour of an additional concrete structure being built on the Crescent, affecting the optics of our neighbourhood.

Logistically, it seems more practical and potentially less costly and disruptive to locate the Booster Station Pump to the East of Bruce Road 23, rather than tearing up the Crescent and neighbourhood.

We are aware that several neighbours have also contacted the Municipal office regarding this matter and trust you will keep our neighbourhood informed as to any further decisions on this matter via individual email or mail. Thank you for considering our concerns.

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Monday, March 27, 2023 8:27 AM
To:
Cc: Kielstra, David
Subject: RE: Expansion of Kincardine water system to supply Bruce Power

Good Morning

Thanks for submitting your comments. David, sharing so you have this for the EA.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From:
Sent: Saturday, March 25, 2023 2:13 PM
To: Adam Weishar <aweishar@kincardine.ca>
Subject: Expansion of Kincardine water system to supply Bruce Power

Attn Adam Weishar

I oppose the expansion project to supply Bruce Power with potable water.
It seems odd that a multi Billion dollar company can not figure out their own water supply.
When the demand peaks at Bruce Power, there will be significant pressure drop to local residents as the velocity heads down the line.
Why should the local rate payers supply a large corporation.

From: Kielstra, David
Sent: Thursday, July 6, 2023 4:07 PM
To:
Cc: Adam Weishar; Oliveira, Nelson
Subject: Expansion of the Kincardine Water System and Treatment Plant Municipal Class Environmental Assessment

Hello

Thank you for providing your comments regarding the Municipality of Kincardine Water Treatment Plant project including comments related to the potential booster station location and the suggestion to also consider the abandoned pumping station near Bruce Road 23.

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 (SWM) Site. Further evaluations are underway to consider local site zoning context in the area around Stoney Island Crecent, environmental protection areas, as well as the flooding issues you have mentioned. This evaluation will be presented at a second Public Information Centre to be held July 24th, with a notice to follow for the time and location.

Issues related to local flooding associated with the existing SWM pond have been provided to the Municipality to consider as part of their maintenance requirements.

Thank you again for your comments, and you have been added to the mailing list for future updates. If you have any further questions, please give me a call at 905-381-3247 and I would be happy to speak with you.

Regards,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Sunday, April 30, 2023 9:36 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Subject: RE: Proposed Water Station - Stoney Island Cres. Kincardine

Thanks

We will include this in the overall consideration as we advance the EA process.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From:
Sent: Friday, April 28, 2023 11:39 PM
To: Adam Weishar <aweishar@kincardine.ca>; david.kielstra@stantec.com
Subject: Proposed Water Station - Stoney Island Cres. Kincardine

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Wednesday, April 26, 2023 4:19 PM
To: ; Kielstra, David
Cc: Bill Stewart;
Subject: RE: Expansion of Kincardine Water System to Bruce Power

Thank you for your communication . This will form part of the EA process and be included within the overall review and considered as we advance the file. Have a nice evening.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From:
Sent: Wednesday, April 26, 2023 11:55 AM
To: Adam Weishar <aweishar@kincardine.ca>; david.kielstra@stantec.com
Cc: Bill Stewart <bstewart@kincardine.ca>;
Subject: Expansion of Kincardine Water System to Bruce Power

Sirs,

I have reviewed the virtual Public Information video posted on YouTube on the Municipality's Page. I hereby state our strong objections to your proposal to expand the water system to Bruce Power.

Bruce Power has struggled with its own domestic water supply for decades, which is why I presume they are now desperately reaching out to the Municipality to solve their problem. Provision of water to this industrial customer sets a terrible precedent and potentially robs the Municipality of its own capacity for future residential development. One might assume that this large nuclear operator, with all of its technical resources, huge pool of both internal and Supplier engineers and consultants, a company which splits the atom on a daily basis, would be able to determine how to provide its own clean drinking water. This is apparently not the case, however. In 2014, Bruce Power commissioned a demineralization plant to supply its Bruce B generating station with process water. The equipment was designed and

supplied by Veolia Water Solutions, a known expert in water treatment technology; why can they not use this same expertise for Bruce's drinking water coming from the same massive water supply as the Municipality's?

You have selected Stoney Island, our neighborhood, for the location for this pumping station. Specifically, the site is to be on the stormwater retention pond on municipal property. Earlier this month, the street and the pond were overwhelmed by a design basis storm. The pond, which over the years has become home to various flora and fauna, was filled to capacity (if you would like some representative video and photos please advise). We have lived in this neighborhood for nearly twenty years and have never seen a storm event of this nature. And this is to be the proposed site for a pumphouse for new drinking water for Bruce Power? The Municipality previously owned 3 Stoney Island Crescent, directly at the intersection of Bruce Road 23 where the water line is located, which contained the well head and local treatment for this small subdivision before we were forced to connect to the Municipal water supply. The land was sold off as surplus, short-sightedly, years ago when this transition occurred. Perhaps the Municipality should consider negotiating with the current owner for a repurchase of the property (the infrastructure and building still exist), which is surely a cheaper option than designing/building a pumping facility, tearing up Stoney Island crescent and extending the infrastructure into our neighborhood.

Unfortunately, we are not overly optimistic that the Municipality or its consultants will hear the voices of our small Township community. After all, we have complained for YEARS regarding the Municipal endorsement of the unlawful use of the agricultural lands across from our neighborhood as a permanent wayside pit and dumping ground for construction fill on Municipal and other projects and nothing has been done.

Regardless, we would strongly urge the Municipality to cease further consideration of this project and direct its very capable industrial customer to resolve its own water problems.

From:
Sent: Friday, April 28, 2023 11:39 PM
To: aweishar@kincardine.ca; Kielstra, David
Subject: Proposed Water Station - Stoney Island Cres. Kincardine
Attachments: Doc1.docx

Stoney Island Cres.
Kincardine ON,
N2Z 2X6

April 23, 2023

To Whom it may concern,

It has come to our attention that there is a plan to build a water pumping station within the neighbourhood of Stoney Island Crescent. The first concern we have is that this was not communicated to the residents of the neighbourhood and was only discovered by chance that this was in planning stages and questions and comments were required by the 28th April 2023.

After being directed to the on-line video, we have several concerns about this location being deemed the most viable. The chosen space is zoned Open Space and Environmentally protected. This land is also within a flood risk area under the SVCA.

This is the only green space within this subdivision and contains a water holding pond as part of the storm Water Management System for our neighbourhood. This holding pond is home to several wildlife and vegetation species that use this area for protection and breeding throughout the season, of which include birds, frogs, muskrats and turtles.
The side lands beside this drainage pond provide year-round outdoor entertainment for the neighbourhood families to play games, run and gives access to the public beach. It is my understanding that all newly developed neighbourhoods are either required or highly recommended to have green space that is not privately owned to allow an area for safe outdoor use. Why would the municipality choose the only green space in this area to "squeeze" in an industrial building within a residential neighbourhood?

This drainage/retention pond collects water runoff from our street to prevent flooding of our homes. As recent as this month, the current drainage ditch has overflowed, crossed the street and filled this pond. Further disruption to this area and the ability to collect runoff would put several homes at risk to extensive damage.

It should also be noted that there is a small pumping station at the entrance to the sub-division, directly adjacent to the B-Line (Bruce Road 23) that has been abandoned since the water line was installed. Would this land not be more suitable as it is closer to the main water line and would not require digging up a street and destroying a natural habitat, removing green space, as well as risking damage to homes due to flooding? Even this is not that desirable, but it shows there are much better options than what is being proposed.

I understand there is further phases to this project before a final decision is made. We would like the project group to take our concerns into consideration. We believe there are more suitable locations between Kincardine and Bruce Power that would be less disruptive to the community and the Environment.

Thank you

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Monday, April 24, 2023 9:37 AM
To: Jethroy Potter; Kielstra, David
Subject: RE: New pumping station at Stoney Island Crescent

Good Morning ,

Thanks for raising your concerns. We will ensure this is reviewed as we advance the EA process and that this is included in that assessment.

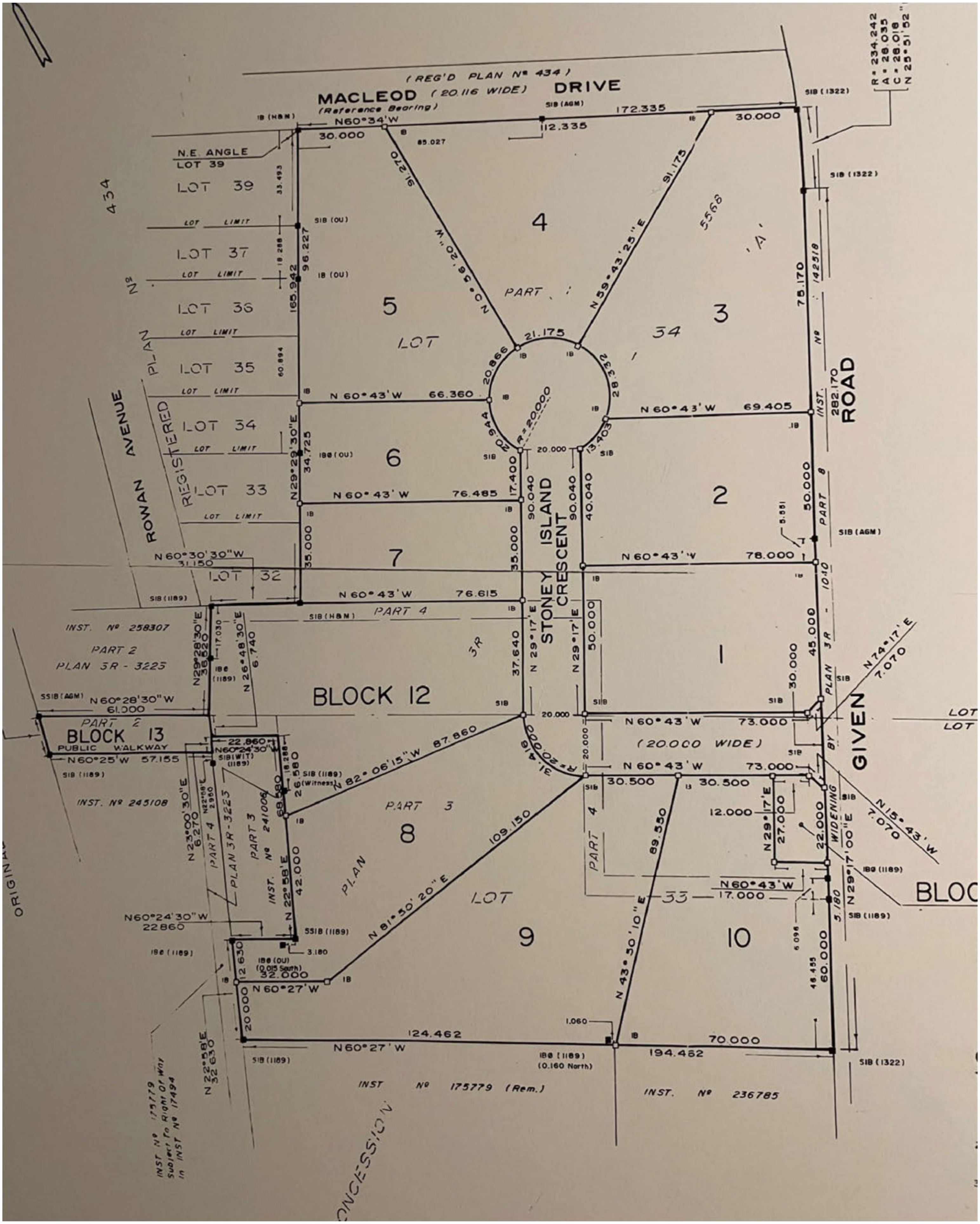
Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From:
Sent: Sunday, April 23, 2023 8:50 PM
To: Adam Weishar <aweishar@kincardine.ca>; david.kielstra@stantec.com
Subject: New pumping station at Stoney Island Crescent

I live at Stoney Island Cres (Block) which is the proposed new site for the pumping station on block 12 on Stoney Island Cres. See attached plan of subdivision. When this subdivision was first developed by Mike Doyle, the town of Kincardine had a condition that he 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. Since I moved here in 2000 this pond has filled with flood waters 3 times in the last 10 years. The last time was this year on Wednesday April 5th which was the worst. As you can see by the attached videos this pond saved us from massive flooding but our century old home still took on water in the basement. If a booster pumping station is built at this location, how will future flood waters be diverted? I believe this pond is crucial to diverting flood waters in this subdivision and if anything, should be dug deeper to handle a larger quantity of water.

Sincerely,


(REG'D PLAN Nº 434)
MACLEOD (20.116 WIDE) DRIVE
(Reference Bearing)
N60°34'W
172.335
112.335
30.000
N.E. ANGLE
LOT 39
LOT 39
LOT LIMIT
LOT 37
LOT LIMIT
LOT 36
LOT LIMIT
LOT 35
LOT LIMIT
LOT 34
LOT LIMIT
LOT 33
LOT LIMIT
LOT 32
REGISTERED PLAN Nº 434
ROWAN AVENUE
4
5
3
PART 1
LOT 34
PLAN 5568 'A'
N 0°56'20"W
91.270
N 59°43'25"E
91.175
21.175
20.866
28.332
R=20.000
N 60°43'W 66.360
N 60°43'W 69.405
6
2
N 60°43'W 76.485
7
N 60°43'W 78.000
N60°30'30"W
31.150
N 60°43'W 76.615
PART 4
INST. Nº 258307
PART 2
PLAN 3R-3225
BLOCK 12
3R
1
STONEY ISLAND CRESCENT
N 29°17'E
90.040
N29°29'30"E
34.725
35.000
37.640
50.000
45.000
30.000
N60°28'30"W
61.000
PART 2
BLOCK 13
PUBLIC WALKWAY
N60°25'W 57.155
22.860
N60°24'30"W
N 82°06'15"W 87.860
R=20.000
31.416
N 60°43'W 73.000
(20.000 WIDE)
N 60°43'W 73.000
30.500
30.500
INST. Nº 245108
N23°00'30"E
PART 4 PLAN 3R-3225
PART 3
INST. Nº 241006
N 22°58'E
42.000
PART 3
8
PLAN
LOT
109.150
N 81°30'20"E
9
N 43°30'10"E
89.550
10
12.000
27.000
22.000
WIDENING
N29°17'00"E
N60°43'W
17.000
33
N60°24'30"W
22.860
N 60°27'W
32.000
20.000
124.462
70.000
194.462
N60°27'W
60.000
INST Nº 175779 (Rem.)
INST. Nº 236785
INST. Nº 175779 Subject to Right of Way in INST Nº 17494
N 22°58'E
32.630
CONCESSION
ORIGINAL
GIVEN ROAD
INST. Nº 142518
282.170
PART 8
PLAN 3R-1010
N74°17'E
7.070
N15°43'W
7.070
BLOCK
R = 234.242
A = 28.035
C = 28.018
N 25°51'52"

From: Kielstra, David
Sent: Wednesday, April 19, 2023 12:33 PM
To:
Cc: Adam Weishar; Oliveira, Nelson
Subject: RE: Water treatment building

Hello ,

Thank you for your email regarding the Expansion of the Kincardine Water System and Treatment Plant Municipal Class Environmental Assessment, and specifically the Stoney Island Crescent location for a booster pumping station that was included in the evaluation. The project is still underway, and I am passing this comment to other members of the project team so they are also aware of your comments as they continue the evaluation.

I appreciate your interest in this project and you will be added to the mailing list for future updates.

Thank you,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

-----Original Message-----
From:
Sent: Wednesday, April 19, 2023 11:20 AM
To: Kielstra, David <David.Kielstra@stantec.com>
Subject: Water treatment building

I am sending this email to oppose the planned water treatment building at Stoney Island Crescent.
After the recent flood in this subdivision, this is definitely not an appropriate site for any building.
Also, this building will more than likely have a direct impact on the value of our homes. There must be more suitable, non-residential locations that this water treatment building can be placed.
Regards

Sent from my iPhone
Caution: This email originated from outside of Stantec. Please take extra precaution.

From: Kielstra, David
Sent: Thursday, August 3, 2023 10:54 AM
To: 'chestergpeterson@aol.com' <chestergpeterson@aol.com>
Cc: Adam Weishar <aweishar@kincardine.ca>; Oliveira, Nelson <nelson.oliveira@stantec.com>
Subject: Inverhuron and District Ratepayers Association

Hello Garth,

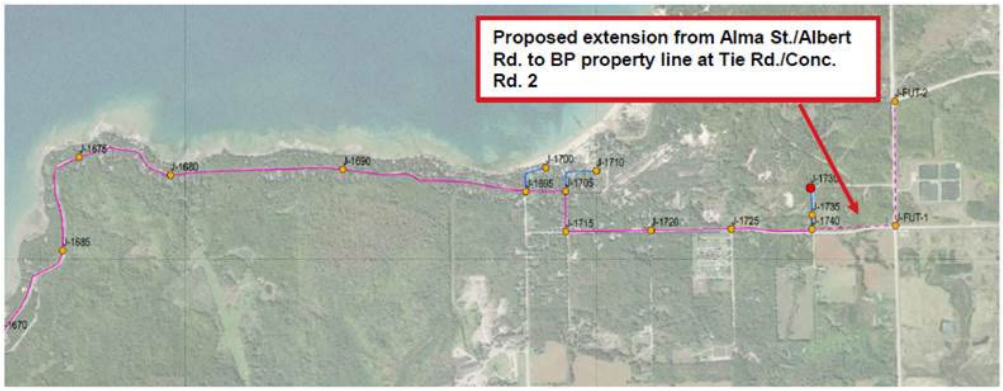
Thank you for the telephone call and speaking with me about the Kincardine Water System and Treatment Plant project. I am sending you a copy of the most recent notice, for your information and if you want to share it with your Inverhuron and District Ratepayers Association.

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 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.

Preferred Watermain Design: Extension to Bruce Power

- Watermain routing from Kincardine system to Bruce Power site dictated by:
  - Where a connection can be made 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 existing 300mm diameter watermain at Alma St./Albert Rd. has sufficient capacity with BPS in operation to supply Bruce Power and Bruce Power preferred connection point is at Tie Rd. and Concession Rd. 2
- Preference for new watermain to be within right-of-way (ROW) to avoid impacts to vegetation, natural habitat, or nearby properties
- Based on above, the shortest route was selected – any other alternative routes would result in longer length of watermain or would require property acquisition
- Actual alignment within ROW to be confirmed during detailed design



17

Thank you again for your interest in this project. We will add you to the project mailing list for further notices or updates.

Regards,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From: Adam Weishar <aweishar@kincardine.ca>
Sent: Monday, July 24, 2023 1:50 PM
To: Kielstra, David <David.Kielstra@stantec.com>; planning@svca.on.ca
Cc:
Subject: RE: Concerns on proposed location for the Kincardine WTP expansion

Thanks for taking the time to share your comments with us. These will be included in our considerations as we advance the EA process.

Adam Weishar C.E.T.
Director of Infrastructure and Development
519-396-3468 x 119

Municipal Administration Centre
1475 Concession 5
Kincardine, Ontario N2Z 2X6

From:
Sent: Thursday, July 20, 2023 6:02 PM
To: Adam Weishar <aweishar@kincardine.ca>; david.kielstra@stantec.com; planning@svca.on.ca
Cc:
Subject: Concerns on proposed location for the Kincardine WTP expansion

Adam, David, Vivian,

It has come to our attention that there is a plan to build a water pumping station within our Neighborhood, Stoney Island Crescent. This proposed facility would be built immediately adjacent to our house.

This development was not communicated to the residents and was only discovered by chance that this in planning stages and questions comments were required in April 2023.

On reviewing all the information which is available on the proposed development we have a number of concerns:

- The space proposed is zoned, Open Space and Environmentally protected. The water holding pond within this area is home to various wildlife and vegetation species. One of the species found in the pond is that of the snapping turtle. The snapping turtle listed as being a Special Concern under the Ontario Endangered Species Act, 2007 and Special Concern under the Federal Species Act. Why would a development be considered which could negatively impact the wildlife? We do have photographs of said baby turtles from this area, when we have had to reposition them back into the pond area for fear of being inadvertently struck while cutting grass around that area. These photos can be provided as required.

- The space next to the water-holding pond, is the only green area for the children/families of the neighborhood to use. When Stoney Island Crescent was first developed, as part of the development agreement with Port Head Estates that land was turned over to the Municipality as "parkland/green space". How can the Municipality now take away from what was originally agreed for the Sub-Division?

- The land is within a flood risk area under SVCA. Further disruption to this area could potentially place homes at risk from flooding. The drainage/retention pond collects run off water from the street, as shown in recent months the current drainage ditch has already overflowed, crossed the street, and went into the water retention pond. Further disruption to this area could be homes at further risk from flooding.

- Personally, we have had no flooding ever in our property. This is largely as a result of the considerations taken while building the house, grading and managing the water to the aforementioned storage pond. Should this build go ahead we will be seeking assurances from the municipality that this will have zero flood impact on our property, which has no flooding history in ~17 years. In the event we are negatively impacted then we will be forced into holding the municipality responsible and liable for any damage.

- We are also in contact with the original sub-division developers who, back then, were directed to provide a percentage of land back to the municipality for green / flood water considerations. From their financial perspective, the original developers would have obviously planned to put a lot in this position, prior to receiving direction to facilitate an area for flood water. We will share any of the original communications from the developers when we receive them.

We understand there are further phases before a final decision will be made, we would like the project group, municipality, and Saugeen Conservation to take into consideration our concerns. We believe there are more suitable locations between Kincardine and Bruce Power, which would be less disruptive to the community and environment, and not go against the originally agreement between the Municipality and the developer.

Please feel free to reach out with any questions you have, our formal letter is attached.

Regards

From: Kielstra, David
Sent: Thursday, July 27, 2023 9:18 AM
To:
Subject: RE: Kincardine Water Booster Pump Stoney Island Cres
Attachments: ppt_kincardine_WTP_PIC2_20230718_final.pdf

Good morning .

Thank you for reaching out about the displays from Public Information Centre #2. I am sending you a copy of the slides as requested.

Have a great day,

David Kielstra MA, EP, MCIP, RPP
Environmental Planner

Direct: 905 381-3247
Fax: 905 385-3534
David.Kielstra@stantec.com

Stantec
200-835 Paramount Drive
Stoney Creek ON L8J 0B4

From:
Sent: Wednesday, July 26, 2023 1:11 PM
To: Kielstra, David <David.Kielstra@stantec.com>
Subject: Kincardine Water Booster Pump Stoney Island Cres

Hello David,

It , could i get a copy of the slide show from the public information session for kincardine water and Stoney Island booster pump site.

Thank you

APPENDIX D

Official Plan Figures

ASP D1.4.21E
ASP D1.4.21
ASP D1.4.21E
ASP D2.5.8
ASP D7.9
ASP D4.3a
ASP D2.5.6
ASP D7.10.c)
ASP D2.5.10
ASP D2.5.7
ASP D2.5.11
ASP D7.10.c)
ASP D2.6.3
ASP D7.10.c)
HIGHWAY 21
HIGHWAY 9
NORTH LINE
KINCARDINE AVE
SOUTH LINE
SARATOGA RD
HURON-KINCARDINE WEST
Penetangore River
Kincardine
Lake Huron

See Bruce County Official Plan

Township of Huron-Kinloss

April 2021

Legend

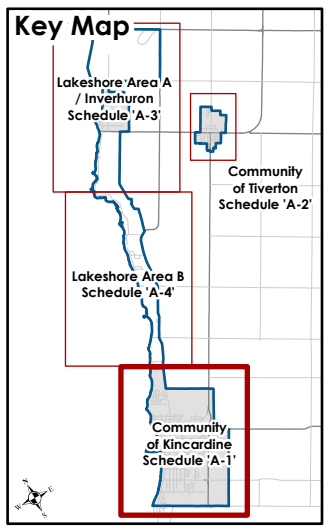
- Settlement Areas
- Parcels
- Provincial Highway
- Arterial Road
- Collector Road
- Proposed Road
- Unopened Road Allowance
- Private Roads
- River / Creek
- Schools
- Area Specific Policy
- Inactive Landfills
- Wellhead Protection Area

Land Use Designations

- Residential
- Highway Commercial
- Core Commercial
- Resort Commercial
- Mixed-Use
- Institutional
- Business Park
- Open Space
- Natural Environment*
- Industrial
- Future Development

*Development and site alteration, including filling and/or grading within some portions of the Natural Environment designation may require a permit from Saugeen Valley Conservation Authority (SVCA) prior to carrying out the work in accordance with Ontario Regulation 169/06.

Key Map



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Schedule 'A-1'

Official Plan

Community of Kincardine Land Use Plan

THE MUNICIPALITY OF great energy. balanced life. KINCARDINE

0 125 250 500 750 1,000

Meters

1:17,000

BRUCE ROAD 20

BRUCE ROAD 23

BRUCE ROAD 15

ENERGY PARK RD

CONCESSION 2

FARRELL DR

RICHARDS DR

WHISPERING WOODS

2021-191 OPA 2

See Bruce County Official Plan

Lake Huron

March 2021

Legend

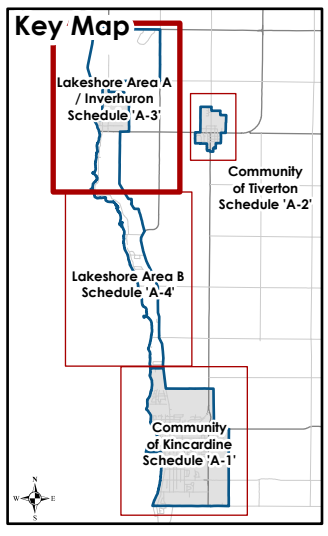
- Settlement Areas
- Parcels
- County Road
- Unopened Road Allowance
- Private Roads
- River / Creek

Land Use Designations

- Shoreline Development
- Open Space
- Natural Environment*
- Industrial

*Development and site alteration, including filling and/or grading within some portions of the Natural Environment designation may require a permit from Saugeen Valley Conservation Authority (SVCA) prior to carrying out the work in accordance with Ontario Regulation 169/06.

Key Map



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Schedule 'A-3'

Official Plan

Lakeshore Area A / Inverhuron Land Use Plan

THE MUNICIPALITY OF KINCARDINE — great energy. balanced life.

0 200 400 800 1,200

Meters

1:21,000

N
E
W
S

UPPER LORNE BEACH RD
SPRUCEWOOD LN
RED CEDAR DR N
COLLINS DR
Anderson Creek
ROBINSON ST
WHITE ST
RED CEDAR DR S
BRUCE ROAD 23
LORNE BEACH RD
KLEPPNES ST
Lorne Creek
BROOKVIEW CR
PARKWOOD RD
Lake Huron Highlands
BIRCHWOOD AVE
EASTWOOD CR
NORTH CEDAR LN
Kinhuron
SOUTH CEDAR LN
KINHURON RD
REDWOOD CR
SHUGERY VALLEY TRL
HIGHWAY 21
CONCESSION 7
See Bruce County Official Plan
Lake Huron
BRUCE ROAD 23
TERRACE AVE
CLOVERLEAF AVE
CEDARCREST AVE
MACLEOD DR
ROWAN AVE
STONEYSIDE CRESCENT
HARVEY LN
ACKERT LN
ANDERSEN LN
BLACKBERRY LN
MITCHELL DR
MAPLEWOOD AVE
VERNA LN
JARRETT LN
McCONNELL DR
MAPLEWOOD AVE
LINDEN LN
WHIPPOORWILL LN
CRAIG DR
Craig Eskrick
DAWSON DR
MCKENZIE LN
CONCESSION 5
April 2021

Legend

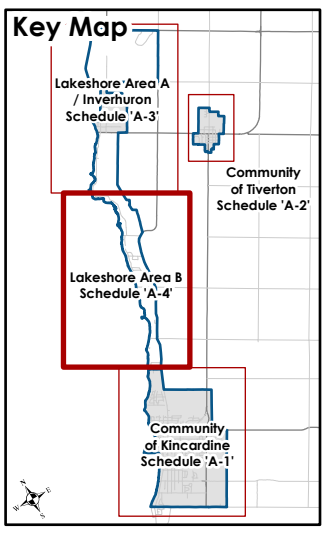
- Settlement Areas
- Parcels
- County Road
- Unopened Road Allowance
- Private Roads
- River / Creek

Land Use Designations

- Shoreline Development
- Open Space
- Natural Environment*

*Development and site alteration, including filling and/or grading within some portions of the Natural Environment designation may require a permit from Saugeen Valley Conservation Authority (SVCA) prior to carrying out the work in accordance with Ontario Regulation 169/06.

Key Map



Schedule 'A-4'

Official Plan

Lakeshore Area B
Land Use Plan

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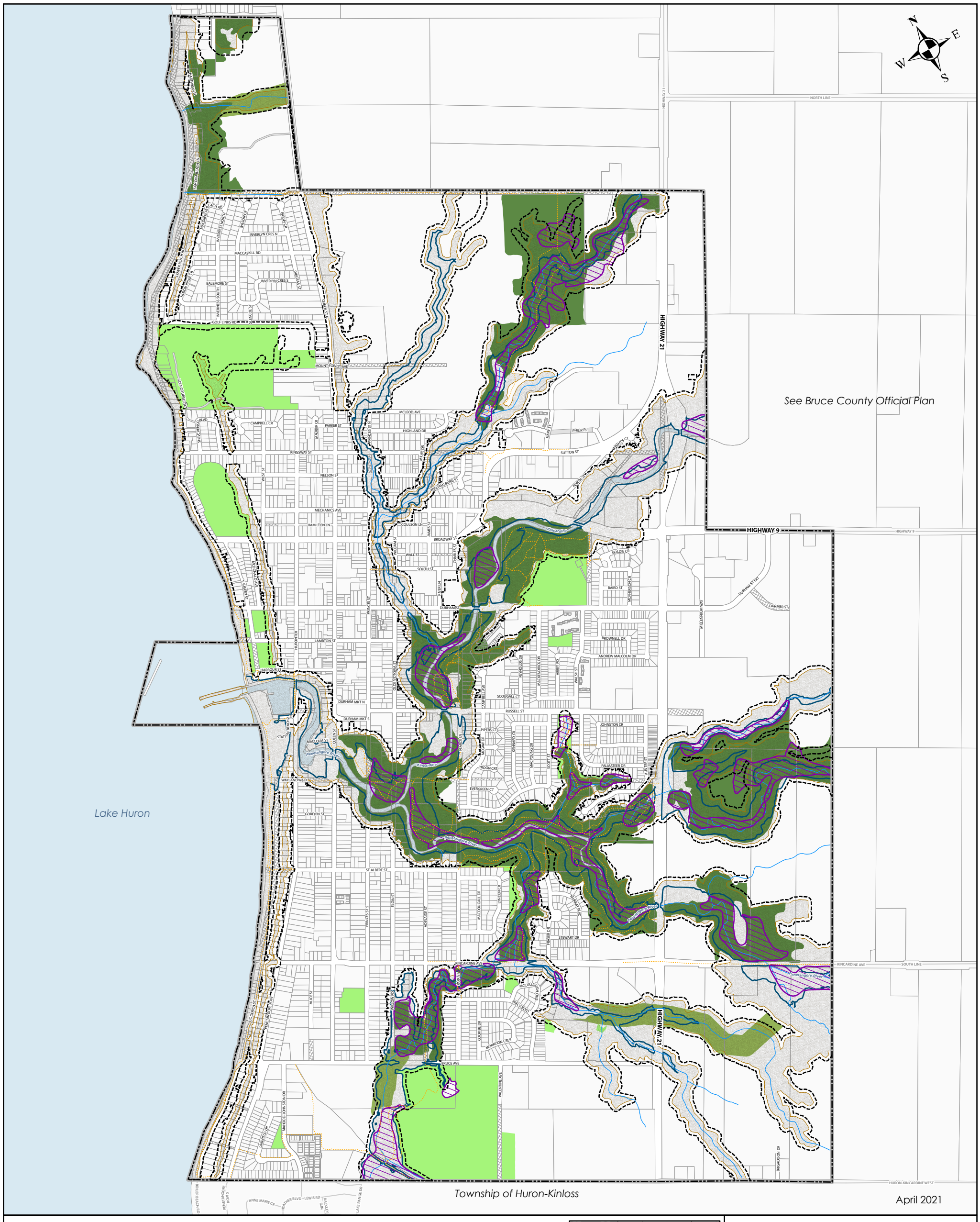
0 200 400 800 1,200
Meters

1:21,000

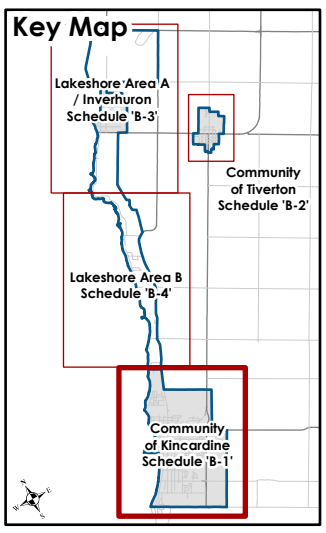


Legend

- Settlement Areas
- Parcels
- Unopened Road Allowance
- Private Roads
- River / Creek
- Trails
- Regulatory Flood Line (SVCA)
- SVCA Approximate Regulated/Screening Area*
- Natural Hazards (SVCA)
- Unevaluated Wetlands (NRSI)
- Significant Woodlands (NRSI)
- Linkages (NRSI)
- Parks & Open Space

*The approximate regulated area/screening area is shown for information purposes and is updated periodically by the SVCA. For more information and for accurate location of SVCA's regulated area, refer to the SVCA.

Key Map



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Schedule 'B-1'

Official Plan
Community of Kincardine
Natural Heritage System
& Natural Hazard Lands

THE MUNICIPALITY OF KINCARDINE
great energy. balanced life.

0 125 250 500 750 1,000
Meters

1:17,000

BRUCE ROAD 20

BRUCE ROAD 23

BRUCE ROAD 15

ENERGY PARK RD

CONCESSION 2

TIE RD

FARRELL DR

RICHARDS DR

WHISPERING WOODS

WHISPER LN

SHADY LN

JOHN ST

DANIEL ST

CEDAR DR

ARCHIE ST

RAE RD

ALMA ST

ALBERT RD

ROBBIE LN

GAYLEY ST

WOOD ST

PINE ST

VICTORIA ST

LONDON RD

UPPER LORNE BEACH RD

Little Sauble River

Lake Huron

See Bruce County Official Plan

March 2021

Legend

- Settlement Areas
- Parcels
- Unopened Road Allowance
- Private Roads
- River / Creek
- Trails
- Regulatory Flood Line (SVCA)
- SVCA Approximate Regulated/Screening Area*
- Natural Hazards (SVCA)
- Unevaluated Wetlands (NRSI)
- Significant Woodlands (NRSI)
- Linkages (NRSI)
- Parks & Open Space
- Inverhuron Provincial Park

*The approximate regulated area/screening area is shown for information purposes and is updated periodically by the SVCA. For more information and for accurate location of SVCA's regulated area, refer to the SVCA.

Key Map

- Lakeshore Area A / Inverhuron Schedule 'B-3'
- Community of Tiverton Schedule 'B-2'
- Lakeshore Area B Schedule 'B-4'
- Community of Kincardine Schedule 'B-1'

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Schedule 'B-3'

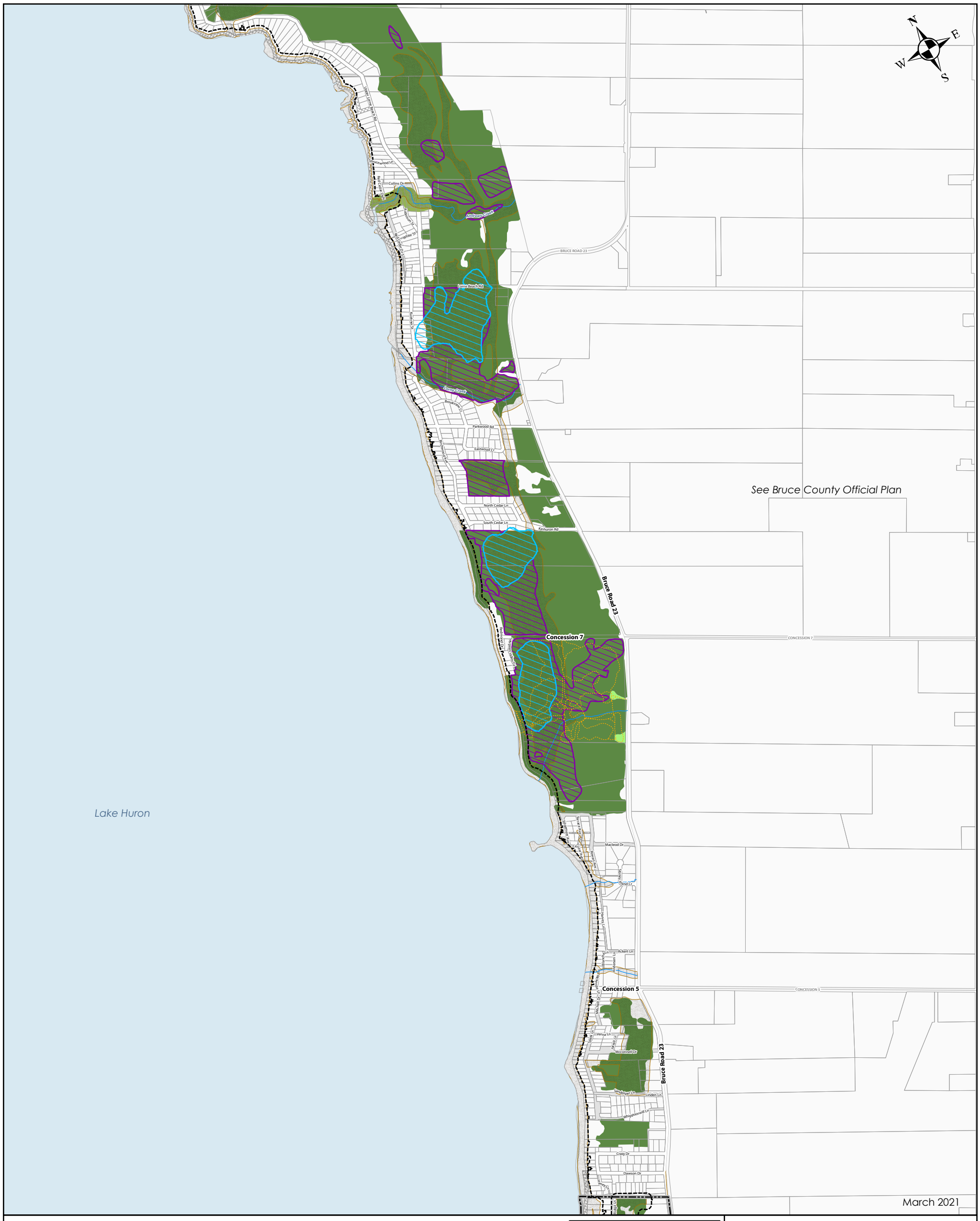
Official Plan

Lakeshore Area A / Inverhuron
Natural Heritage System
& Natural Hazard Lands

THE MUNICIPALITY OF KINCARDINE
great energy. balanced life.

0 200 400 800 1,200
Meters

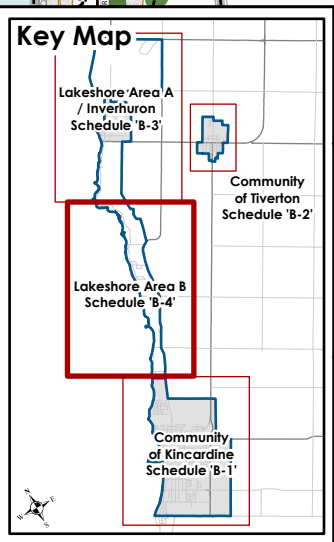
1:21,000



Legend

- Settlement Areas
- Parcels
- Unopened Road Allowance
- Private Roads
- River / Creek
- Trails
- Regulatory Flood Line (SVCA)
- SVCA Approximate Regulated/Screening Area*
- Natural Hazards (SVCA)
- Locally Significant Wetlands (NRSI)
- Unevaluated Wetlands (NRSI)
- Significant Woodlands (NRSI)
- Linkages (NRSI)
- Parks & Open Space

*The approximate regulated area/screening area is shown for information purposes and is updated periodically by the SVCA. For more information and for accurate location of SVCA's regulated area, refer to the SVCA.



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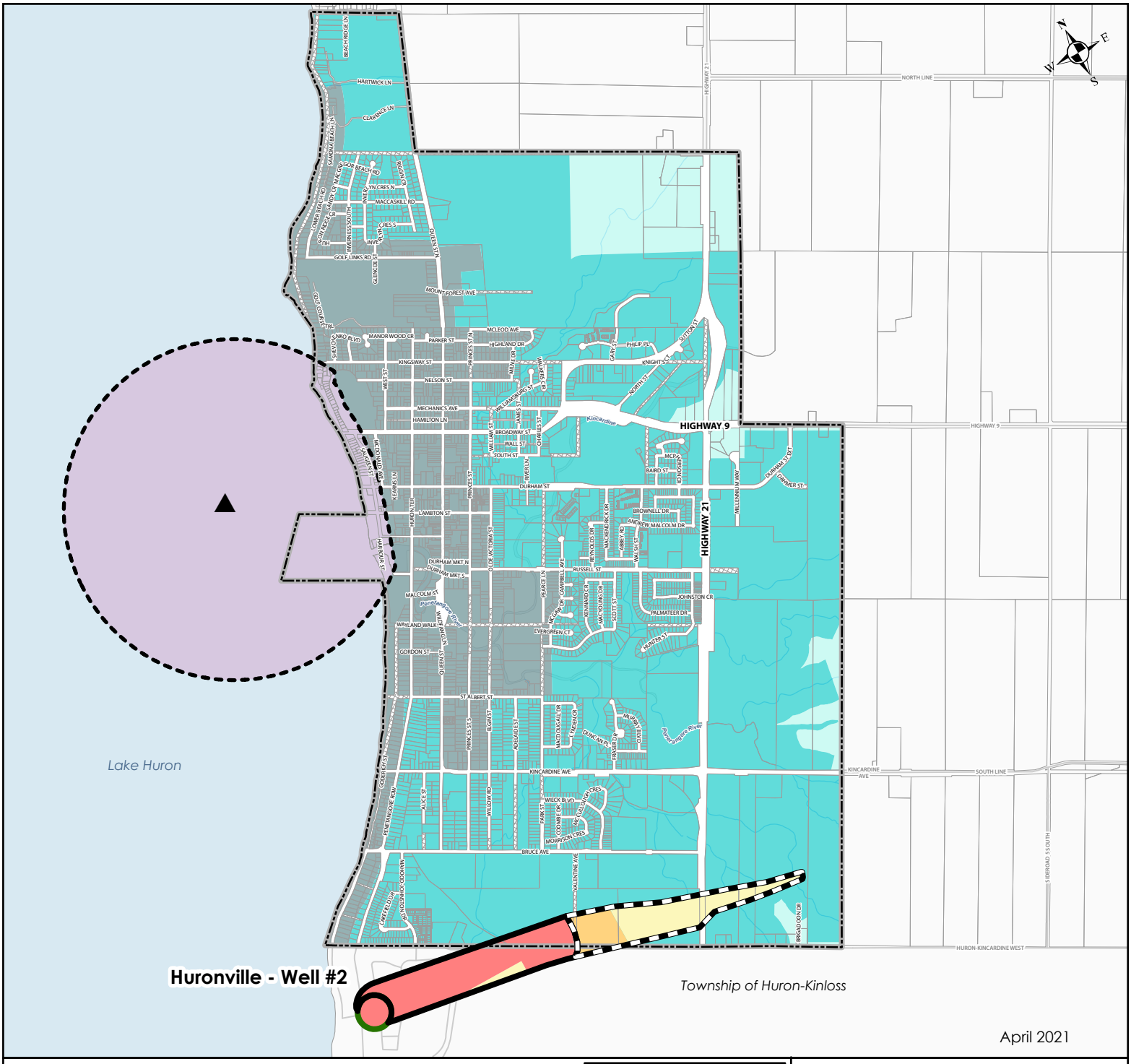
Schedule 'B-4'

Official Plan
Lakeshore Area B
Natural Heritage System
& Natural Hazard Lands

THE MUNICIPALITY OF KINCARDINE
great energy. balanced life.

0 200 400 800 1,200
Meters

1:21,000



Legend

- Settlement Areas
- Parcels

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C

Vulnerability Score

- 6 or Less
- 8
- 10

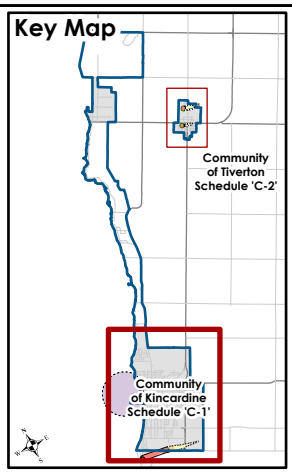
Events-Based Area Policy Components

- EBA-3000
- EBA-5000
- EBA-10000

Intake Protection Zone

- Municipal Intake
- IPZ1 (120 m Shoreline Buffer)

NOTE:
The Source Water Protection policies of Section C9 of this Plan do not apply to lands outside of the Settlement Area boundary. Lands outside of the Settlement Area boundary must conform to the policies of the Bruce County Official Plan.



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Schedule 'C-1'

Official Plan

Community of Kincardine
Wellhead Protection Areas

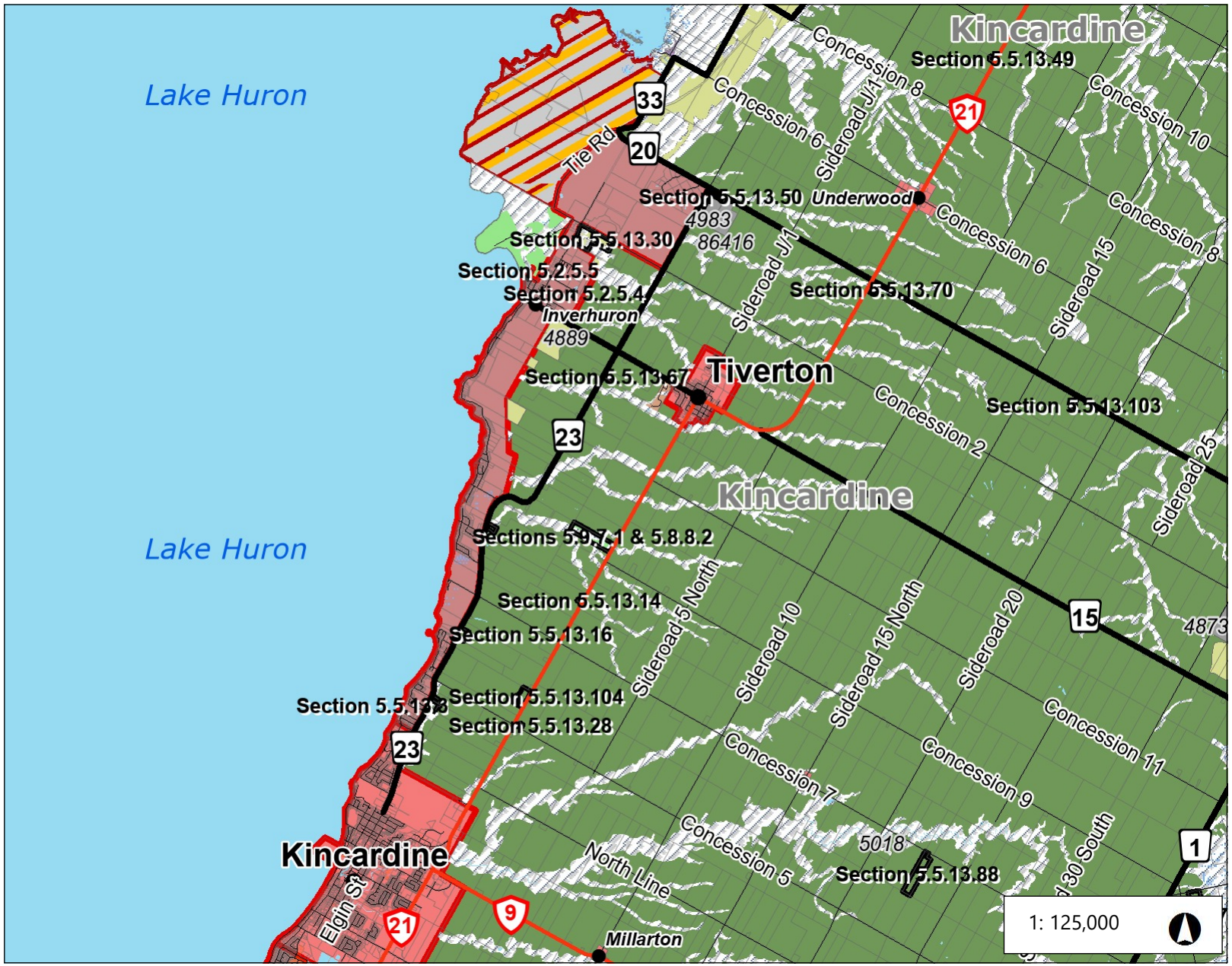
THE MUNICIPALITY OF great energy. balanced life. KINCARDINE

0 250 500 1,000 1,500
Meters

1:32,000

County of Bruce

Bruce County



Legend

- Ferry
- Provincial Highway
- County Road
  - County Road
  - Bridge reconstruction
- Body of Water
- Evaluated Wetland
- Plan Amendment
- Coincident Other Plan
- Special Policy Area
- Licenced Aggregate / Quarry Operation
- Hamlet
- Hazard
- BCOP Plan Designation
  - Agricultural
  - Bruce Nuclear Power Development
  - Escarpment Natural Area
  - Estate Residential Development
  - Inland Lake Development
  - Major Open Space
  - Primary Urban Community
  - Secondary Urban Community
  - Rural
  - Rural Recreational
  - Travel Trailer Park/Commercial Campgrou
- National Park Land Tenure
  - Private Ownership
  - Parks Canada Owned or Managed
  - Parks Canada Owned or Managed Water
  - Parks Canada Owned - Outside
  - Park Unopened Road Allowance or Right-of-Way
  - Canadian Coast Guard
  - Indian Reserve Lands
- Fathom Five

Notes

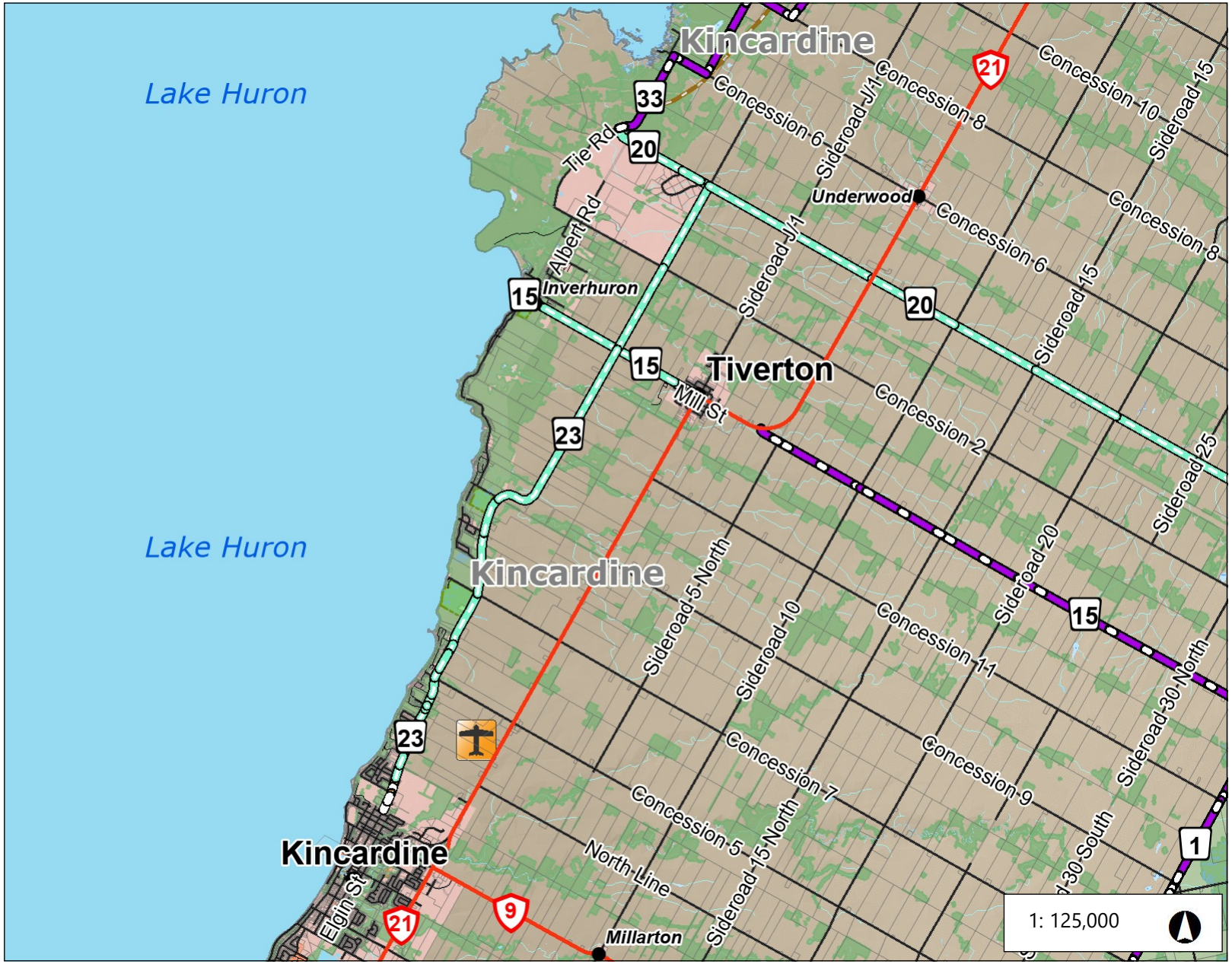
Bruce County Official Plan Schedule A

6.4 0 3.18 6.4 Kilometers

NAD_1983_UTM_Zone_17N

County of Bruce

Bruce County



Legend

- Ferry
- Provincial Highway
- Classified Roads
  - Arterial Urban
  - Arterial Rural
  - Collector Urban
  - Collector Rural
- County Road
  - County Road
  - Bridge reconstruction
- Body of Water
- Evaluated Wetland
- Airport
- Bruce County Rail Trail
- Municipal Road
- National Park Land Tenure
  - Private Ownership
  - Parks Canada Owned or Managed
  - Parks Canada Owned or Managed Water
  - Parks Canada Owned - Outside
  - Park Unopened Road Allowance or Right-of-Way
  - Canadian Coast Guard
  - Indian Reserve Lands
- Fathom Five
- County Forest Boundary
- County Forest
- Wooded Area
- Conservation Authority Property
- Wetland
- Body of Water
- Stream
- Built-up area
- Adjacent Counties

Notes

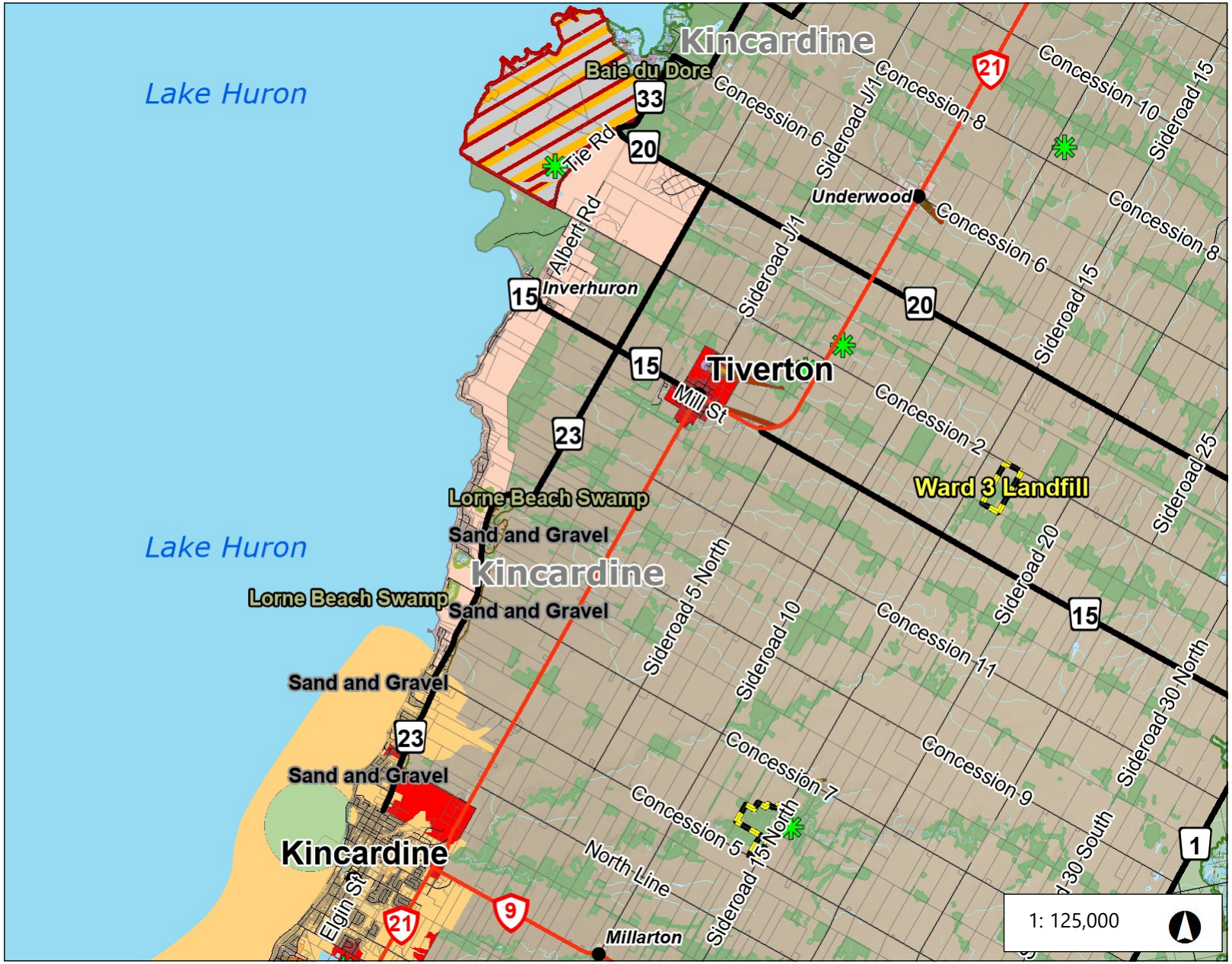
Bruce County Official Plan Schedule B

6.4 0 3.18 6.4 Kilometers

NAD_1983_UTM_Zone_17N

County of Bruce

Bruce County



Legend

- Ferry
- Provincial Highway
- County Road
  - County Road
  - Bridge reconstruction
- Body of Water
- Evaluated Wetland
- Closed Landfill
- Active Landfill
- Wellhead Protection Area
  - 100m Buffer Zone
  - 2 Year Time of Travel
  - 10 Year Time of Travel
  - 25 Year Time of Travel
- Intake Protection Zone
  - Zone 1
  - Zone 2
- Karst
- Mineral Resource Area
- Significant Wetland
  - Provincially Significant Wetland
  - Locally Significant Wetland
- Area of Natural and Scientific Interest
- Niagara Escarpment Plan Area
- Urban Community
  - Primary Urban Community
  - Secondary Urban Community
  - Bruce Nuclear Power Development
- National Park Land Tenure
  - Private Ownership
  - Parks Canada Owned or Managed
  - Parks Canada Owned or Managed Water
  - Parks Canada Owned - Outside
  - Park Unopened Road Allowance or

Notes

Bruce County Official Plan Schedule C

6.4 0 3.18 6.4 Kilometers

NAD_1983_UTM_Zone_17N

SVCA Approximate Regulated & Approximate Screening Areas

12/14/2022, 10:38:17 PM

1:144,448

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Saugeen Valley Conservation Authority

Outside of SVCA Jurisdiction

Province of Ontario, County of Huron, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada, Earthstar Geographics

Saugeen Valley Conservation Authority

APPENDIX E

Environmental Technical Reports

Appendix E1: Natural Heritage Report

Appendix E2: Heritage Checklist and Cultural Heritage Memorandum

Appendix E3: Stage 1 Archaeological Assessment

Municipality of Kincardine Water Supply Schedule C Class Environmental Assessment - Natural Heritage Desktop Review

January 18, 2024

Prepared for:
The Municipality of Kincardine

Prepared by:
Stantec Consulting Ltd.
300 – 1331 Clyde Avenue
Ottawa, ON K2C 3G4

Project Number:
165630328

Limitations and Sign-off

The conclusions in the Report titled Municipality of Kincardine Water Supply Schedule C Class Environmental Assessment - Natural Heritage Desktop Review are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from The Municipality of Kincardine (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided to applicable authorities having jurisdiction and others for whom the Client is responsible, Stantec does not warrant the services to any third party. The report may not be relied upon by any other party without the express written consent of Stantec, which may be withheld at Stantec's discretion.

Prepared by:  Digitally signed by Padvaiskas, Erica Date: 2024.01.18 13:04:01 -05'00'

Signature

Erica Padvaiskas B.Sc.

Printed Name and Title

Reviewed by:  Digitally signed by Sean Spisani Date: 2024.01.18 15:15:04 -05'00'

Signature

Sean Spisani, B.Sc., ERGC

Printed Name and Title

Approved by:  Digitally signed by Josh Mansell Date: 2024.01.18 17:37:16 -05'00'

Signature

Josh Mansell, OCAD, Can-CISEC

Printed Name and Title

Table of Contents

List of Tables

List of Appendices

1 Introduction

The Municipality of Kincardine retained Stantec Consulting Ltd. (Stantec) to complete a Municipal Class Environmental Assessment (Class EA) to identify options for the expansion of the Kincardine Water System and Treatment Plant (WTP). The current Kincardine WTP provides municipal water supply to Kincardine and portions of the lakeshore community, Inverhuron, and Inverhuron Provincial Park. Expansion alternatives will be developed for anticipated community growth and possible servicing requirements to extend supply to the Bruce Power site (**Appendix A, Figure 1**). This memorandum summarizes the desktop natural heritage background review that was conducted to evaluate significant natural heritage features for the Class EA. Proposed water main construction will only occur within existing road rights-of-way (ROW). Therefore, the Study Area for this project includes the potential proposed routes (with an additional 120 m buffer), and two pump stations. The proposed extent of watermain will be dependent on the pump station siting and results of hydraulic modeling but could be as long as 13 km subject to those findings. At present, the location of the pump stations is unknown, but construction of any new facility will be adjacent to the ROWs and may involve undeveloped parcels.

2 Policy Overview

The policy documents discussed below were used to assess the natural heritage features and functions for the Study Area, and to determine natural heritage constraints and opportunities for the project.

2.1 Federal Policy

2.1.1 Species at Risk Act

The federal *Species at Risk Act* (SARA) prohibits the killing, harming, harassing, capturing or taking of an individual of a species that is listed as an extirpated, endangered or threatened species in Schedule 1 of the Act. It also prohibits the damage or destruction of the habitat of a species that is listed as an extirpated, endangered or threatened species in Schedule 1 of the Act. The Act applies to Schedule 1 extirpated, threatened and endangered species on federally owned lands in Ontario and Canada and to fish and mussel species and migratory birds, regardless of location. Migratory birds include species listed as an extirpated, endangered or threatened species in Schedule 1 and species listed in the *Migratory Birds Convention Act, 1994*.

2.1.2 Fisheries Act

The *Fisheries Act* (last amended August 28, 2019) prohibits causing the death of fish and the harmful alteration, disruption or destruction (HADD) of fish habitat, unless authorized by the Minister of Fisheries, Oceans and the Canadian Coast Guard. This protection applies to work being conducted in or near watercourses or waterbodies that support fish and fish habitat. The fish and fish habitat protection provisions of *the Fisheries Act* apply to fish and fish habitat in Canada. When the death of fish or HADD of fish habitat cannot be avoided or mitigated, a subsection 35(2) authorization with appropriate offsetting of residual adverse effects is required.

2.1.3 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) protects migratory birds and their nests (S.4). Section 6 of the Migratory Bird Regulations (Consolidated Regulations of Canada (CRC), c. 1035) prohibits the disturbance, destruction or taking of a nest, egg, or nest shelter of a migratory bird. Disturbance to nests of protected species during construction activities is a contravention of the MBCA.

The MBCA is the enabling statute for the Migratory Birds Regulations, which were updated in May 2022 (*Migratory Birds Regulations*, *2022*; MBR). Under the 2022 MBR, nests for 18 bird species (7 of which occur in Ontario) receive year-round protection for a prescribed length of time ranging from 24-36 months (Schedule 1), and all other nests of migratory birds are protected when they contain a live bird or viable egg (S. 5(2)(b)). If a nest of a species identified on Schedule 1 of the MBR is determined to be empty of live birds or viable eggs, then the nest can be registered under ECCC's Abandoned Nest Registry, at which point the prescribed period of inactivity can begin to be counted.

2.2 Provincial Policy

2.2.1 Endangered Species Act, 2007

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 Species at Risk in Ontario (SARO) list (O. Reg 230/08) (S.9), or the damage to habitat of similarly designated species (S.10). Activities that may impact a protected species or its habitat require the prior issuance of a Permit from the Ministry of the Environment, Conservation and Parks (MECP), unless the activities are exempted under Regulation. The current O.Reg 242/08 and 830/21 identify activities which are exempt from the permitting requirements of the Act subject to rigorous controls outside the permit process including registration of the activity and preparation of mitigation. Activities that are not exempt under regulation require a complete permit application process.

2.2.2 Planning Act

The Provincial Policy Statement (PPS; MMAH 2020) was issued under Section 3 of the Planning Act (PA) and came into effect in 1996, with the most recent revision in March 2020. The PA requires that decisions made by planning authorities are consistent with the policy statements, such as the PPS, which includes policies on development and land use patterns, resources and public health and safety. Municipal official plans are the most important vehicle for implementation of this Provincial Policy Statement (MMAH 2020). Section 2.1 of the PPS deals with natural heritage and requires that natural heritage systems be identified in certain ecoregions. This includes Ecoregion 6E, where the Study Area is located.

Although the PPS provides direction on land use planning and development projects, the policies provide a useful framework for identifying and evaluating the significance of natural heritage features on other projects, such as infrastructure projects that are authorized under an environmental assessment process. The PPS (Section 2.1.5) identifies and defines (Section 6.0) natural heritage features that require consideration under the PA:

- Significant Wetlands
- Significant Woodlands
- Significant Valley lands
- Significant Wildlife Habitat
- Significant Areas of Natural and Scientific Interest
- Coastal Wetlands
- Significant portions of the habitat of endangered or threatened species
- Fish Habitat

2.2.3 Fish and Wildlife Conservation Act, 1997

The *Fish and Wildlife Conservation Act, 1997* (FWCA) provides protection to birds, mammals, reptiles, amphibians, and invertebrates, as well as protection for habitat features such as mammal dens or beaver dams. Birds, such as raptors, which are not protected by the MBCA may also receive protection for individuals and their habitat (i.e., nests) under the FWCA.

2.2.4 Conservation Authorities Act

The *Conservation Authorities Act* (CAA) was created to provide for the organization and delivery of programs and services that further the conservation, restoration, development, and management of natural resources in watersheds in Ontario.

The Saugeen Valley Conservation Authority (SVCA, founded in 1950) has the responsibility to regulate activities in lands adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System, wetlands, watercourses and hazard lands (e.g., areas in and near rivers, streams, floodplains, wetlands, slopes and shorelines) through the Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (O. Reg.169/06). The SVCA implements the regulation by issuing permits for works in or near watercourses, valleys, wetlands, or shorelines when required.

Under the CAA of Ontario, the Authority has certain regulations whose objectives are:

- To prevent the loss of life and property due to flooding and erosion,
- To prevent pollution, and
- To conserve and enhance natural resources.

These policies apply to fill placement and removal or site grading in flood prone areas, erosion prone areas, dynamic beach areas, as well as alteration of watercourses, and interference with wetlands.

Additionally, SVCA review and permitting is based on compliance with the Environmental Planning and Regulations Policies Manual (SVCA, 2017; Amended October 16, 2018). The policies manual is subject for review every 5 years and is approved by SVCA's Board of Directors.

2.3 Municipal Policy

2.3.1 Official Plan of the Municipality of Kincardine

The *Official Plan of the Municipality of Kincardine* (OPMK; Municipality of Kincardine 2021) was approved by the County of Bruce (COB) in April 2021. The OPMK provides policies and guidelines for the protection of natural heritage features, water resources, agricultural lands, mineral aggregate resources, cultural heritage resources, and archaeological resources for their economic, environmental, and social benefits; and is detailed in section D7 (Natural Environmental Areas) of the plan. Natural Environmental Areas are comprised of three main components:

- Natural Heritage Features: consist of known significant woodlands, significant valleylands, wetlands, life science Areas of Natural and Scientific Interest (ANSI), habitat of endangered species and threatened species, fish habitat or any other area that has been determined to be environmentally significant as a result of a planning approval process.
- Key Hydrologic Features: consist of known permanent and intermittent streams, seepage areas and wetlands.
- Hazard Lands: includes both hazardous land adjacent to watercourses, small inland lakes, and the Lake Huron shoreline, including land subject to flooding hazards, erosion hazards, steep slopes, dynamic beach hazards, and any other physical condition that could be unsafe for development and site alteration (i.e., unstable soils or bedrock).

Per the Official Plan Policy D7.6, an Environmental Impact Study (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 Saugeen Valley Conservation Authority 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.

3 Methods

3.1 Sources of Background Data Collection

As part of this natural heritage desktop review, the following background documentation and related information sources were reviewed to identify natural heritage features and constraints in the Study Area:

- The Official Plan of the Municipality of Kincardine (Municipality of Kincardine 2021)
- Bruce County Interactive Map (Bruce County 2022)
- SVCA Approximate Regulated & Approximate Screening Areas ArcGIS Map (SVCA 2021)
- Ontario's Natural Heritage Information Centre (NHIC; Ministry of Natural Resources and Forestry (MNRF 2023a)
- Land Information Ontario (LIO; MNRF 2023b)
- Agricultural Information Atlas (Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA 2022)
- Satellite imagery (Google Earth Pro 2023)

Natural heritage information gathered during the background data collection was used to identify records of significant natural heritage features and species (e.g., Provincially Significant Wetlands, Species at Risk) in the Study Area, if present.

A list of Species at Risk (SAR) and Species of Conservation Concern (SOCC) with the potential to occur in the Study Area was developed by reviewing the following sources:

- Ontario's NHIC (MNRF 2023a)
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Mapping (DFO 2023)
- Ontario Breeding Bird Atlas (OBBA; Cadman et al. 2007)
- Atlas of Mammals in Ontario (AMO; Dobbyn 1994)
- Ontario Reptile and Amphibian Atlas (ORAA; Toronto Entomologists' Association 2023a)
- Ontario Butterfly Atlas Online (OBAO; Toronto Entomologists' Association 2023b)
- iNaturalist Canada (iNaturalist 2023)
- eBird Canada (eBird 2023)
- Correspondence with the MECP (**Appendix C**)

Some of the sources above provide data at a scale as large as 10 km X 10 km. Results were screened to assess their relevance to the Study Area and species were removed from consideration if no suitable habitat was observed in the satellite imagery of the Study Area (e.g., grassland species). Additionally, the above sources are used as indicators or potential occurrences in the Study Area, and do not identify specific locations of species occurrences.

3.1.1 Species at Risk (SAR)

For the purposes of this assessment, SAR are species listed as Threatened (THR) or Endangered (END) on the SARO list or aquatic species and migratory birds as classified as THR or END on Schedule 1 of SARA. SAR records were obtained from the NHIC (MNRF 2023a), DFO (DFO 2023), correspondence with the MECP (**Appendix C**) and other online databases.

3.1.2 Species of Conservation Concern (SOCC)

Species of Conservation Concern (SOCC) may be designated at the global, national, provincial, or local level. For this report, SOCC includes species that are provincially rare (with a Provincial S-rank of S1 to S3), listed as Special Concern (SC) on the SARO list, or terrestrial species listed on Schedule 1 of SARA but not included on the SARO list.

Provincial ranks (S-ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of factors such as abundance, distribution, population trends and threats in Ontario and are not legal designations. By comparing the global and provincial ranks, the status, rarity, and the urgency of conservation needs can be determined. Species with provincial ranks of S1 to S3 are considered SOCC. Provincial S-ranks are defined as follows:

S1: Critically imperiled; usually fewer than 5 occurrences

S2: Imperiled; usually fewer than 20 occurrences

S3: Vulnerable; usually fewer than 100 occurrences

S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences

S5: Secure; common, widespread, and abundant

S-rank followed by a “?” indicates the rank is still uncertain or lacking confidence and requires more data. However, there is enough existing data to inform a potential S-rank.

A breeding status generally follows the S-rank. A breeding status is only used for species that have distinct breeding and/or non-breeding populations in the province. A breeding-status S-rank can be coupled with its complementary non-breeding-status S-rank if the species also winters in the province, and/or a migrant-status S-rank if the species occurs regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. If there is more than one status rank, they are separated by a comma (e.g., " SB4, S4N "). Breeding status options are defined as follows:

B: Breeding; Conservation status refers to the breeding population of the species in the province

N: Nonbreeding; Conservation status refers to the non-breeding population of the species in the province.

M: Migrant; Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

4 Terrestrial Background Review Results

4.1 Physical Environment

The Study Area is in Ecoregion 6E (Lake Simcoe-Rideau Ecoregion), and more specifically the Ecodistrict of 6E-2 (Kincardine). This Ecodistrict is a long narrow strip of land located along the shore of Lake Huron, which ranges from 3 to 25 km wide (Wester et al. 2018). In total it encompasses 147,253 ha; 2.3% of the ecoregion, 0.2% of the province. The Kincardine Ecodistrict is dominated by a gently rolling landscape of deep, calcareous, morainal material overlying Paleozoic bedrock. Although this Ecodistrict is located in the in the Eastern Temperate Deciduous Forest Vegetation Zone (Baldwin et al. 2018), nearly three-quarters of the land base has been converted to pasture and cropland (74%) (Wester et al. 2018). Natural features are more prominent along the Lake Huron shoreline occurring on shoreline cliffs, beach ridges, and sand dunes along with upland forests, river valley systems, and wetlands (Hanna 1984). Settlement and associated infrastructure cover approximately 2% of this area, and only 1.4% of the Ecodistrict is comprised of protected areas (Wester et al. 2018).

4.2 Vegetation

The Study Area is within the Eastern Temperate Deciduous Forest Vegetation Zone (Baldwin et al. 2018). 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 (MNRF 2023a) in **Table 4.1**.

Table 4.1: Vegetation Communities in the Study Area

Vegetation Community	Provincial S-Ranks
Little Bluestem - Long-leaved Reed Grass - Great Lakes Wheat Grass Dune Grassland	S2
Sea Rocket Sand Beach	S2, S3
Slender Wheat-grass Sand Barren	S1

4.3 Designated Features

The MNRF LIO mapping website (MNRF 2023b) identified two non-provincially significant wetlands (non-PSWs) 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. There are also several unevaluated wetlands which can be identified using Schedule B of the OPMK (Municipality of Kincardine 2021). Schedule B also identifies several significant woodlands within the Study Area. There is a relatively large wooded area located between the two route options (**Appendix A, Figure 2.4**), over half of which is considered significant. Both route options encounter this large wooded area, although the eastern route contains much less coverage than the west route option. The Study Area also contains Inverhuron Provincial Park (**Appendix A, Figure 2.5**; MNRF 2023a).

4.4 Species at Risk and Species of Conservation Concern

A total of 30 records of terrestrial SAR (2 Herptiles, 20 Birds, 4 Mammals, and 4 Plants) and 17 records of terrestrial SOCC (2 Insects, 5 Herptiles, 9 Birds, and 1 Plant) overlapped with the Study Area (**Table 4-2, and 4-3**). Of these observations, 8 terrestrial SAR (6 Birds, and 2 Plants), and 5 records of SOCC (1 Insect, 3 Herptiles, and 1 Plant) were identified in the 1km x 1km NHIC assessment squares. An assessment of suitable habitat for all 47 terrestrial SAR and SOCC is detailed in **Appendix B-1 and B-2**.

Table 4.2: Records of Potential SAR in the Study Area

Species	Status		
	Provincial S-Ranks	Ontario ESA	Federal SARA, (Schedule 1)
HERPTILES			
Spotted Turtle (*Clemmys guttata*)[4]	S2	Endangered	Endangered
Wood Turtle (*Glyptemys insculpta*)[4]	S2	Endangered	Threatened
BIRDS			
Bank Swallow (*Riparia riparia*)[3]	S4B	Threatened	Threatened
Bobolink (*Dolichonyx oryzivorus*)[1, 3]	S4B	Threatened	Threatened
Canada Warbler (*Cardellina canadensis*)[1, 3]	S4B	Special Concern	Threatened
Cerulean Warbler (*Setophaga cerulea*)[3]	S3B	Threatened	Endangered
Chimney Swift (*Chaetura pelagica*)[3]	SB4, S4N	Threatened	Threatened
Common Nighthawk (*Chordeiles minor)*[3]	SB4	Special Concern	Threatened
Eastern Meadowlark (*Sturnella magna*)[1, 3]	S4B	Threatened	Threatened
Eastern Whip-poor-will (*Antostromus vociferus*)[1, 3]	SB4	Threatened	Threatened
Golden-winged Warbler (*Vermivora chrysoptera*)[3]	S4B	Special Concern	Threatened
Henslow's Sparrow (*Ammodramus henslowii*)[3]	SHB	Endangered	Endangered
King Rail (*Rallus elegans*)[3]	S2N	Endangered	Endangered
Least Bittern (*Ixobrychus exilis)*[1, 3]	S4B	Threatened	Threatened
Lesser Yellowlegs (*Tringa flavipes*)[4]	S3S4B, S5M	Threatened	No Status, No Schedule
Loggerhead Shrike (*Lanius ludovicianus*)[3]	S2B	Endangered	Endangered
Louisiana Waterthrush (Parkesia motacilla)[3]	S3B	Threatened	Threatened
Olive-sided Flycatcher (*Contopus borealis*)[3]	S4B	Special Concern	Threatened
Prothonotary Warbler (*Protonotaria citrea*)[3]	S1	Endangered	Endangered
Red-headed Woodpecker (*Melanerpes erythrocephalus)*[3]	S4B	Endangered	Endangered
Short-eared Owl (*Asio flammeus*)[3]	S2N, S4B	Threatened	Special Concern

Species	Status		
	Provincial S-Ranks	Ontario ESA	Federal SARA, (Schedule 1)
Wood Thrush (*Hylocichla mustelina*)[1, 3]	S4B	Special Concern	Threatened
MAMMALS			
Small-footed Myotis (*Myotis leibii*)[2]	S2, S3	Endangered	No Status, No Schedule
Little Brown Myotis (*Myotis lucifugus*)[2]	S4	Endangered	Endangered
Northern Myotis (*Myotis septentrionalis*)[2]	S3	Endangered	Endangered
Tri-colored Bat (*Perimyotis subflavus*)[2]	S3?	Endangered	Endangered
PLANTS			
American Chestnut (*Castanea dentata*)[4]	S1S2	Endangered	Endangered
American Ginseng (*Panax quinquefolius*)[4]	S2	Endangered	Endangered
Butternut (*Juglans cinerea*)[1]	S2?	Endangered	Endangered
Pitcher's Thistle (*Cirsium pitcheri*)[1]	S2	Threatened	Special Concern

Notes:
1 NHIC (MNRF 2022)
2 AMO (Dobbyn, 1994)
3 OBBA (Cadman et al., 2007)
4 Correspondence with the MECP (2023)

Table 4.3: Records of Potential SOCC to occur in the Study Area

Species	Status		
	Provincial S-Ranks	Ontario ESA	Federal SARA, (Schedule 1)
INSECTS (2)			
Monarch (*Danaus plexippus*)[4]	SB4, S2N	Special Concern	Endangered
Yellow-banded Bumble Bee (*Bombus terricola*)[1]	S3, S5	Special Concern	Special Concern
HERPTILES (5)			
Eastern Milksnake (*Lampropeltis triangulum*)[1, 2]	S3	No Status	Special Concern
Eastern Ribbonsnake (*Thamnophis sauritus*)[2]	S3	Special Concern	Special Concern
Midland Painted Turtle (*Chrysemys picta marginata*)[1, 2]	S5	Special Concern	Special Concern
Snapping Turtle (*Chelydra serpentina*)[1, 2]	S3	Special Concern	Special Concern
Western Chorus Frog (*Pseudacris triseriata*)[2]	S3	No Status	Threatened
BIRDS (9)			
Bald Eagle (*Haliaeetus leucocephalus*)[3]	S4B, S2N	Special Concern	No Schedule, No Status
Barn Swallow (*Hirundo rustica*)[3]	S4B?	Special Concern	Threatened
Black Tern (*Chilidonias niger*)[3]	S3B	Special Concern	No Schedule, No Status

Species	Status		
	Provincial S-Ranks	**Ontario ESA**	**Federal SARA, (Schedule 1)**
Eastern Wood-pewee (*Contopus virens*)[3]	S4B	Special Concern	Special Concern
Evening Grosbeak (*Coccothraustes vespertinus*)[3]	S4B	Special Concern	Special Concern
Grasshopper Sparrow (*Ammodramus savannarum*)[3]	S4B	Special Concern	Special Concern
Great Egret (*Ardea alba*)[3]	S2B, S3M	No Status	No Schedule, No Status
Peregrine Falcon (*Falco peregrinus*)[3]	S3B	Special Concern	Special Concern
Rusty Blackbird (*Euphagus carolinus*)[3]	S4B, S3N	Special Concern	Special Concern
PLANTS (1)			
Dwarf Lake Iris (*Iris lacustris*)[1]	S3	Special Concern	Special Concern

Notes:
1 NHIC (MNRF 2022)
2 ORAA (Toronto Entomologists' Association 2023a)
3 OBBA (Cadman et al., 2007)
4 OBAO (Toronto Entomologists' Association 2023b)

4.5 Significant Wildlife Habitat

Candidate significant wildlife habitat (SWH) features are defined in the Significant Wildlife Habitat Technical Guide (MNRF 2000) and Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 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 (MNRF 2015) 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 the MNRF (MNRF 2023a) in the Study Area (shown on **Appendix A, Figure 1 and 2.5**).

5 Fisheries and Background Review Results

Available background data related to the following surface water features in the Study Area are illustrated in **Appendix A, Figure 1**. All waterbodies (i.e., wetlands, rivers, creeks) plus 30 m on either side are regulated by the SVCA. The creeks/rivers within the Study Area are described below in order of location from north to south.

Little Sauble River – Little Sauble River runs through the north portion of the Study Area (**Appendix A, Figure 2.5**). Outside of the Study Area, it runs through Inverhuron Provincial Park, and into Lake Huron. The mapped watercourse has a cold-water thermal regime and permanent flow regime. In-water works on cold-water thermal regimes are restricted by the MNRF from October 1 to May 31. It is recommended that this timing window be confirmed by the MNRF (Midhurst District) and/or the SVCA. Six fish survey points were obtained within the boundary of the Study Area, and no SAR or SOCC were recorded (MNRF 2023a). Although DFO mapping (DFO 2023) does not indicate the presence of aquatic SAR or SAR habitat, it is possible that American Eel may use Little Sauble River as a migratory route to access upstream or downstream habitats (see **Section 5.1**),

Tiverton Creek – Tiverton Creek runs once through both route options for where the proposed route separate in the Study Area (**Appendix A, Figure 2.4**). Outside of the Study Area Tiverton Creek flows into Lake Huron. The mapped watercourse has a cold-water thermal regime and permanent flow regime. In-water works on cold-water thermal regimes are restricted by the MNRF from October 1 to May 31. It is recommended that this timing window be confirmed by the MNRF (Midhurst District) and/or the SVCA. Two fish survey points were obtained within the boundary of the Study Area (one in each route option), and no SAR or SOCC were recorded (MNRF 2023a). Although DFO mapping (DFO 2023) does not indicate the presence of aquatic SAR or SAR habitat, it is possible that American Eel may use Tiverton Creek as a migratory route to access upstream or downstream habitats (see **Section 5.1**),

Andrews Creek – Andrews Creek runs once through both route options for where the proposed routes separate in the Study Area (**Appendix A, Figure 2.3**). Two additional tributaries that flow into Andrews Creek also run through the east proposed route option. Outside of the Study Area Andrews Creek flows into Lake Huron. This Creek is located on the north side of Lorne Beach Swamp. Thermal regime was unknown and is recommended to be confirmed with the MNRF (Midhurst District) and/or the SVCA. The mapped watercourse is a permanent flow regime and has three fish survey points which recorded no SAR or SOCC (MNRF 2023a).

Lorne Creek – Lorne Creek is the most southern Creek within the Study area, located on the south side of Lorne Beach Swamp (**Appendix A, Figure 2.3**). Lorne Creek Flows into Lake Huron within the Study Area and is considered a permanent flow regime. Thermal regime was unknown and is recommended to be confirmed with the MNRF (Midhurst District) and/or the SVCA. There are no fish community data available from the LIO database for this creek within the Study Area (MNRF 2023b).

5.1 Species at Risk

A review of the background databases and correspondence with the MECP (**Appendix C**) identified three aquatic species at risk in Lake Huron (**Table 5.1**). DFO data indicates the presence of Shortnose Cisco within Lake Huron up to the shoreline (DFO 2023). Shortnose Cisco are regulated by the ESA and the SARA, 2002 and their habitat includes the entirety of Lake Huron. Correspondence with the MECP (2023), indicated the presence of American Eel and Lake Sturgeon within Lake Huron. These species and their habitat are protected by the ESA. American Eel may also occur in the larger watercourses (i.e., Little Sauble River and Tiverton Creek) within the Study Area.

Table 5.1: Records of Potential Aquatic SAR in the Study Area

Species	Status		
	Provincial S-Ranks	**Ontario ESA**	**Federal SARA, (Schedule 1)**
AQUATIC (1)			
American Eel (*Anguilla rostrata*)[1]	S1S2	Endangered	No Schedule, No Status
Lake Sturgeon (*Acipenser fulvescens*)[1]	S2	Threatened	No Schedule, No Status
Shortnose Cisco (*Coregonus reighardi)*[2]	SH	Endangered	Endangered

Notes:
1 Correspondence with the MECP (2023)
2 DFO (2023)

6 Natural Heritage Feature Summary

6.1 Natural Heritage Features

Based on the review of background natural heritage information, the following natural heritage features were confirmed in the Study Area (**Appendix A, Figure 1**):

- Inverhuron Provincial Park (MNRF 2023b)
- Evaluated non-PSWs:
  - Lorne Beach Swamp (MNRF 2023b)
  - Unnamed wetland (OPMK Schedule B; Municipality of Kincardine 2021)
- Unevaluated wetlands (OPMK Schedule B; Municipality of Kincardine 2021)
- Woodland areas associated with the two non-PSWs (OPMK Schedule B; Municipality of Kincardine 2021)
- Significant woodland areas (OPMK Schedule B; Municipality of Kincardine 2021)
- Significant Wildlife Habitat – deer wintering area (MNRF 2023b)
- Waterbodies – Lake Huron (MNRF 2023b)
- Watercourses / fish habitat (as occurring north to south of the Study Area) (MNRF 2023b):
  - Little Sauble River (cold-water thermal regime)
  - Tiverton Creek (cold-water thermal regime)
  - Andrews Creek (unknown thermal regime)
  - Lorne Creek (unknown thermal regime)
- SVCA Regulation Limits associated with wetlands, watercourses, Stoney Island Conservation Area, and Lake Huron Shoreline

6.2 Species at Risk and Species of Conservation Concern

The highest quality habitat available in the Study Area is located with woodlands, grasslands and wetlands outside the ROW where features are fragmented and disturbed. Along ROWs, sensitive SAR and SOCC habitat would be less likely to occur. However, it is more likely that SAR and SOCC habitat will be located where project activities are planned for the proposed pump stations, which will be adjacent to the ROW. Once a design route has been determined, a following Impact Assessment is recommended to identify specific species which will be impacted by the project.

Based on the background review of records and habitat suitability assessment (**Appendix B-1 and B-2**), there are records and suitable habitat for the following SAR and SOCC, indicating there is a reasonable likelihood they are present in the Study Area:

1. Terrestrial SAR protected under the ESA:

- Butternut may occur in woodlands and hedgerows and other open natural habitats
- American Chestnut and American Ginseng may occur in the woodland habitats
- Pitcher's Thistle may occur in sandy habitats along the Lake Huron shoreline
- Short-eared Owl may nest in meadows, pastures, and agricultural fields
- Migratory Birds protected under the SARA, and/or the ESA:
  - Bank Swallow may nest in exposed soils associated with soil piles, eroding banks along the Lake Huron shoreline, and/or in exposed faces as part of work occurring in the ROW or elsewhere in the Study Area
    - To reduce the risk of Bank Swallows nesting in these locations, construction activities should occur outside of the primary nesting period (April 1 – August 31). If construction activities are unavoidable during this window, the following management practices should be implemented to reduce and avoid impacts to Bank Swallows and their nests:
      - Vertical faces of soil piles should be eliminated by reducing the slope to 70 degrees or less. Reducing the slope may be achieved by bulldozing; piling material on the face, or/and using an excavator to create the desired slopes (MNFR, 2017).
      - Geotextile, plastic covers, tarping, or yellow strips of fabric may be placed over exposed faces or soil piles to prevent nesting. These barriers should be well-secured to prevent access to Bank Swallows (MNRF, 2017).
      - One or more plastic Great Horned Owls may be installed near soil piles and exposed faces. The owl deterrent should be moved regularly to reduce the likelihood of swallows becoming habituated (MNRF, 2017).
    - Any deterrents or exclusion measures must be installed prior to the breeding season (i.e., before April) and should remain present until the end of the breeding period (i.e., August 31). If deterrents are not installed prior to the breeding season or are ineffective at excluding Bank Swallows, construction activities must stop immediately; destroying Bank Swallow nests will require a permit and may require mitigation measures to be applied.
  - 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 Golden-winged 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
- Bat SAR protected under the ESA may use:
  - woodlands, hedgerows, and other open as maternity roosts where large trees are present
  - structures and buildings along side the ROW for maternity roosting

2. Aquatic SAR protected under the SARA and / or ESA:

- American Eel, Lake Sturgeon and Shortnose Cisco may occur in portions of Lake Huron in the Study Area; however, Lake Huron in-water works are not anticipated for this project. Should in-water works be included in the detailed design within Lake Huron, Shortnose Cisco must be considered and further consultation with the DFO is required (see **Section 7.2**).
- American Eel may also occur in the larger watercourses (i.e., Little Sauble River and Tiverton Creek) in the Study Area. If in-water work for is required for these watercourses, then American Eel should be considered and further consultation with the DFO is required (see **Section 7.2**).

3. 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
  - Rusty Blackbird may nest in the forested wetland, and Lorne Beach Swamp

7 Regulatory Requirements

7.1 Federal Regulations

7.1.1 Species At Risk Act

The Study Area is predominantly not located on federally owned lands (exceptions detailed below) and therefore terrestrial species listed as extirpated, threatened and endangered species on Schedule 1 of the SARA are not regulated under the SARA on these lands. Migratory bird species listed as extirpated, endangered or threatened on Schedule 1 of the SARA and species listed in the MBCA are regulated under the SARA. Contravention of the SARA can be avoided by implementing measures to prevent the disturbance, destruction or taking of a nest as described for the MBCA below.

Although Lake Huron is within the Study Area, project activities are only anticipated to be conducted within the terrestrial ROW indicated in **Appendix A, Figure 1**. Therefore, no in water works are anticipated and no permit required. Should in water works be necessary, further consultation with the DFO and a permit will be required.

7.1.2 Fisheries Act

Following guidance and criteria provided on DFO's website, details of the project will be assessed to determine the need for project review by DFO. If it is determined that DFO review is required, a Request for Review form should be completed for project review under the *Fisheries Act*.

Two of the creeks identified running through the Study Area were identified as cold-water thermal regimes (i.e., Little Sauble River, Tiverton Creek), while the other two were unknown thermal regimes (i.e., Andrews Creek, Lorne Creek). It is recommended for all 4 watercourses their timing window(s) be confirmed or identified by the MNRF (Midhurst District) and/or the SVCA. General timing windows are as follows:

Thermal regime restricted in-water works windows:

- Warm-water: March 15 to July 15
- Cold-water: October 1 to May 31

7.1.3 Migratory Birds Convention Act, 1994

To avoid contravention of the MBCA, 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 seven (7) 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.

7.2 Provincial Regulation

7.2.1 Endangered Species Act, 2007

Should detailed design result in potential impacts to provincially regulated SAR or their habitats (see **Section 6.2** and **Appendix B-1**), consultation with MECP is recommended to confirm authorization requirements under the ESA. Additionally, the Study Area intersects with Inverhuron Provincial Park, and therefore any form of activity (i.e., construction, design, planning) on these provincially regulated lands will have to be approved by Ontario Parks or the MECP.

7.2.2 Fish And Wildlife Conservation Act, 1997

Where there is potential to handle fish and wildlife during construction or field investigations, the following licences will be required from the MNRF:

- Licence to Collect Fish for Scientific Purposes
- Wildlife Scientific Collector's Authorization

Licences are issued to the individuals that will be conducting the work and expire on December 31 of the year in which they are issued.

Additionally, should the removal of a raptor nest be necessary for the project, a FWCA permit will be required.

7.2.3 Conservation Authorities Act

Under Ontario Regulation 169/06 of the *Conservation Authorities Act* (CAA), a permit will be required for development or interference with wetlands and alterations to shorelines and watercourses.

According the SVCA Policies, development and site alteration within 30 m of a non-PSW or development within 120 m from a PSW will require a permit. SVCA may require on-site wetland boundary delineation/staking, and will recommend this to the appropriate planning authority. An EIS to assess the hydrologic impact may be required if the submitted plans do not demonstrate the following:

- Disturbance to natural vegetation communities contributing to the hydrologic function of the wetland are avoided
- Overall existing drainage patterns for the lot will be maintained

- Disturbed area and soil compaction is minimized
- Development is located above the high-water table
- All sewage disposal systems are located a minimum of 15 metres from the wetland and a minimum of 0.9 m above the water table
- Impervious areas are minimized
- Best Management Practices are used to:
  - Maintain water balance
  - Control Sediment and erosion
  - Maintain as much of the wetland buffer as possible

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.

7.3 Municipal Regulations

7.3.1 Official Plan of The 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 Saugeen Valley Conservation Authority 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 OPMK (Municipality of Kincardine 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 Saugeen Valley Conservation Authority (SVCA) prior to carrying out the work in accordance with Ontario Regulation 169/06.

8 Conclusion

The information contained in this memo has been summarized to provide a general overview of the existing natural heritage conditions in the Study Area and is based on a desktop analysis only. The intent of the information is to inform the design team of the potential natural heritage constraints to development.

This review found the highest quality habitat available in the Study Area to be woodlands, grasslands and wetlands outside the ROW, where features are fragmented and disturbed. Along ROWs, sensitive SAR and SOCC habitat would be less likely to occur. However, it is more likely that SAR and SOCC habitat will be located where project activities are planned for the proposed pump stations, which will be adjacent to the ROW.

Once a design route has been determined, a following Environmental Impact Study (EIS) is recommended to identify specific species which will be impacted by the project. To complete the EIS, further natural heritage assessments will be required (i.e., vegetation community inventories, flora and fauna surveys, targeted surveys for species at risk, wildlife habitat assessments and fish and fish habitat assessments).

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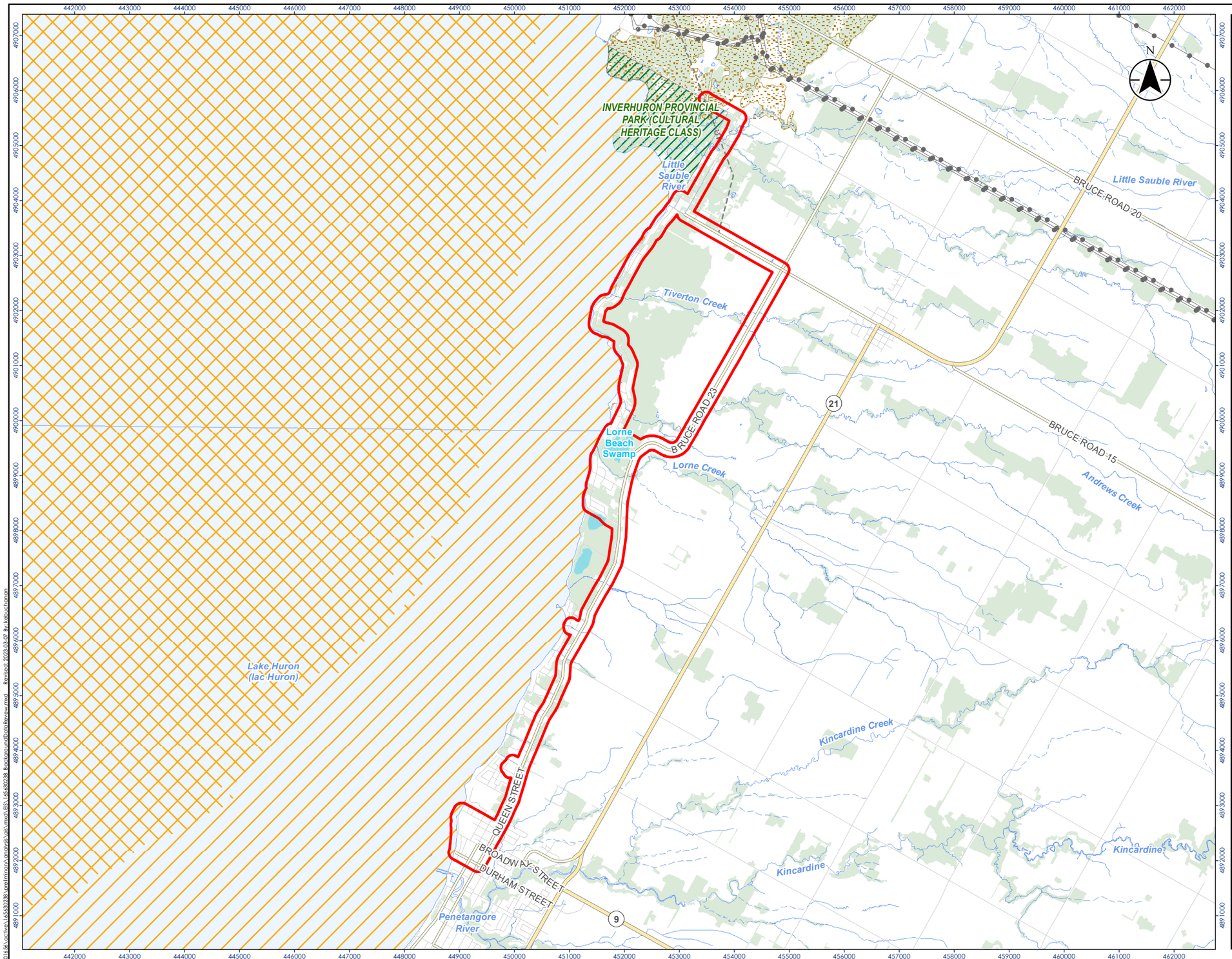
Appendices

Appendix A Figures



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
- UT Unknown Transmission Line
- Watercourse (Intermittent)
- Watercourse (Permanent)

0 1 2 3 4 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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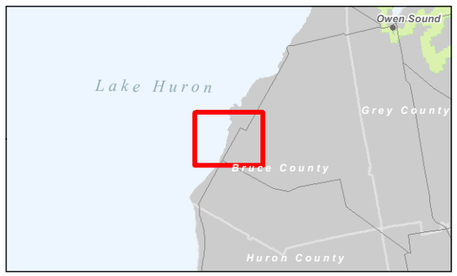
Niagara Escarpment Plan

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.
1

Title
Natural Heritage - Overview

Stantec

Legend

- Study Area (Potential Routes + 120 metre Setback)
- 1 km UTM Grid
- Wooded Area
- Thermal Regime, Cold

Aquatic SAR Distribution

- Shortnose Cisco - Endangered
- Fish Survey Point (ARA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Hydro Line
- Unknown Transmission Line

0 0.75 km

1:12,500 (At original document size of 11x17)

Notes

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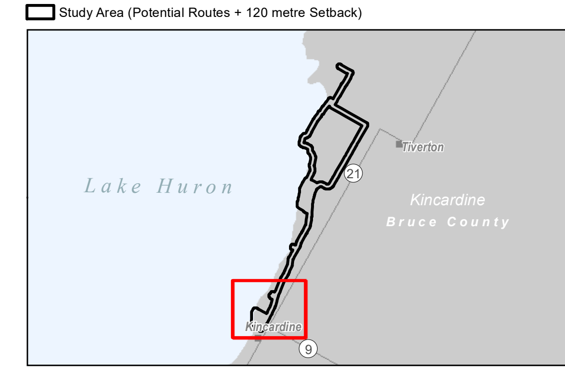

Project Location
Municipality of Kincardine

165630238 REV4
Prepared by KDB on 2023-03-07

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

Figure No.
2.1

Title
Natural Heritage - Detailed View (Sheet 1 of 5)

Stantec

Legend

- Study Area (Potential Routes + 120 metre Setback)
- 1 km UTM Grid
- Wetland, Other Evaluated
- Wooded Area
- Thermal Regime, Cold
- Fish Survey Point (ARA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Hydro Line
- UT Unknown Transmission Line

Aquatic SAR Distribution

- Shortnose Cisco - Endangered

0 0.75 km

1:12,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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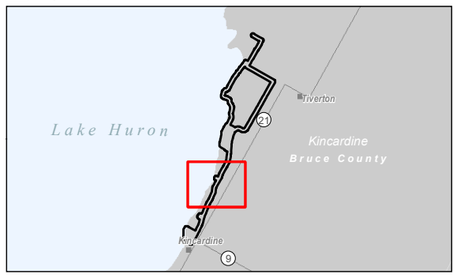
Study Area (Potential Routes + 120 metre Setback)



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.
2.2

Title
Natural Heritage - Detailed View (Sheet 2 of 5)

Stantec

Legend

- Study Area (Potential Routes + 120 metre Setback)
- 1 km UTM Grid
- Wetland, Other Evaluated
- Wooded Area
- Thermal Regime, Cold
- Fish Survey Point (ARA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Hydro Line
- Unknown Transmission Line

Aquatic SAR Distribution

- Shortnose Cisco - Endangered

0 0.75 km

1:12,500 (At original document size of 11x17)

Notes

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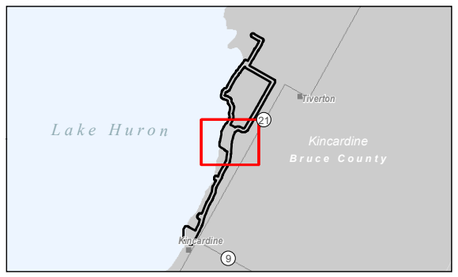
Study Area (Potential Routes + 120 metre Setback)



Project Location
Municipality of Kincardine

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Prepared by KDB on 2023-03-07

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

Figure No.
2.3

Title
Natural Heritage - Detailed View (Sheet 3 of 5)

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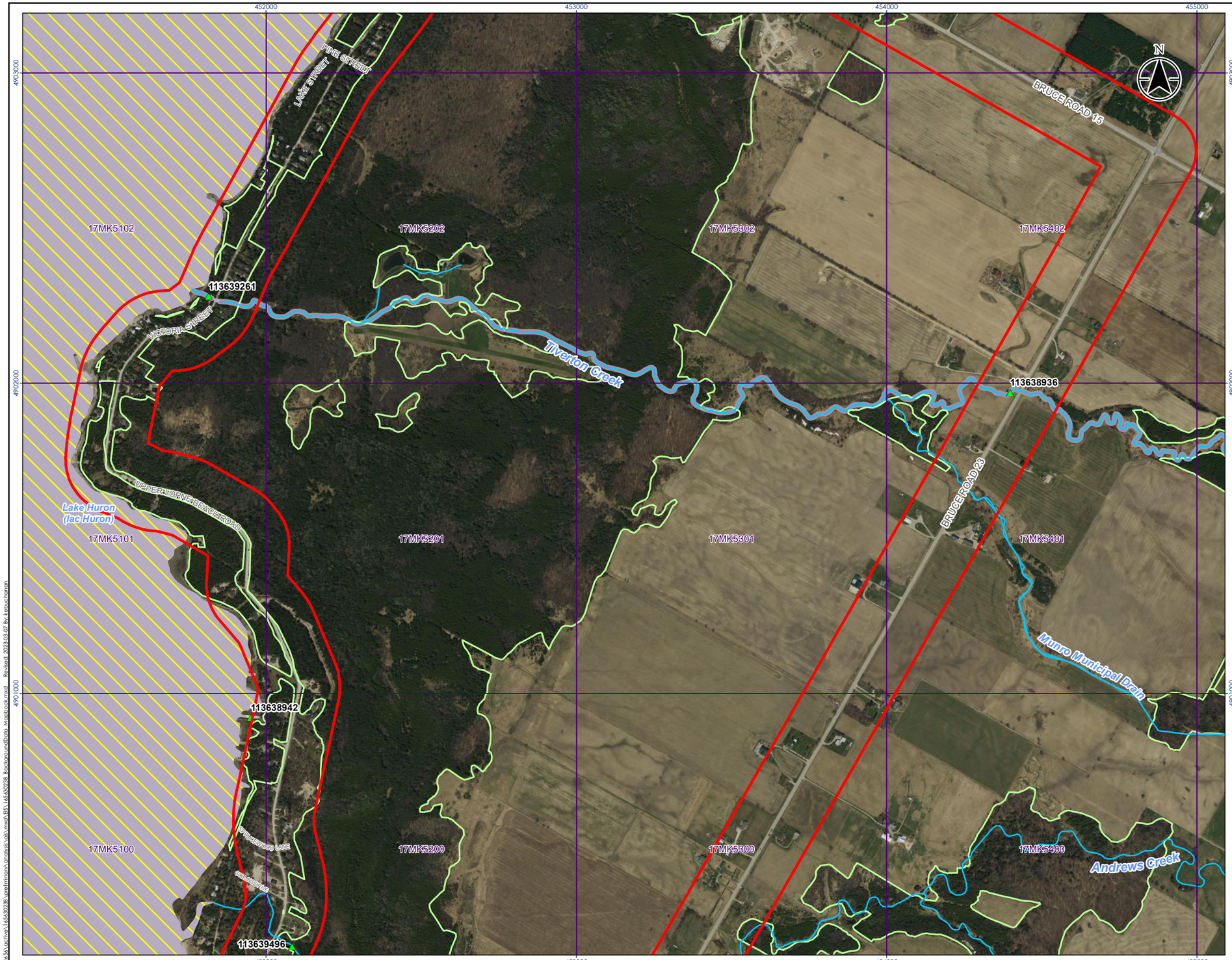

Stantec

Legend

- Study Area (Potential Routes + 120 metre Setback)
- 1 km UTM Grid
- Wooded Area
- Thermal Regime, Cold

Aquatic SAR Distribution

- Shortnose Cisco - Endangered
- Fish Survey Point (ARA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Hydro Line
- UT Unknown Transmission Line

0 0.75 km

1:12,500 (At original document size of 11x17)

Notes

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Study Area (Potential Routes + 120 metre Setback)

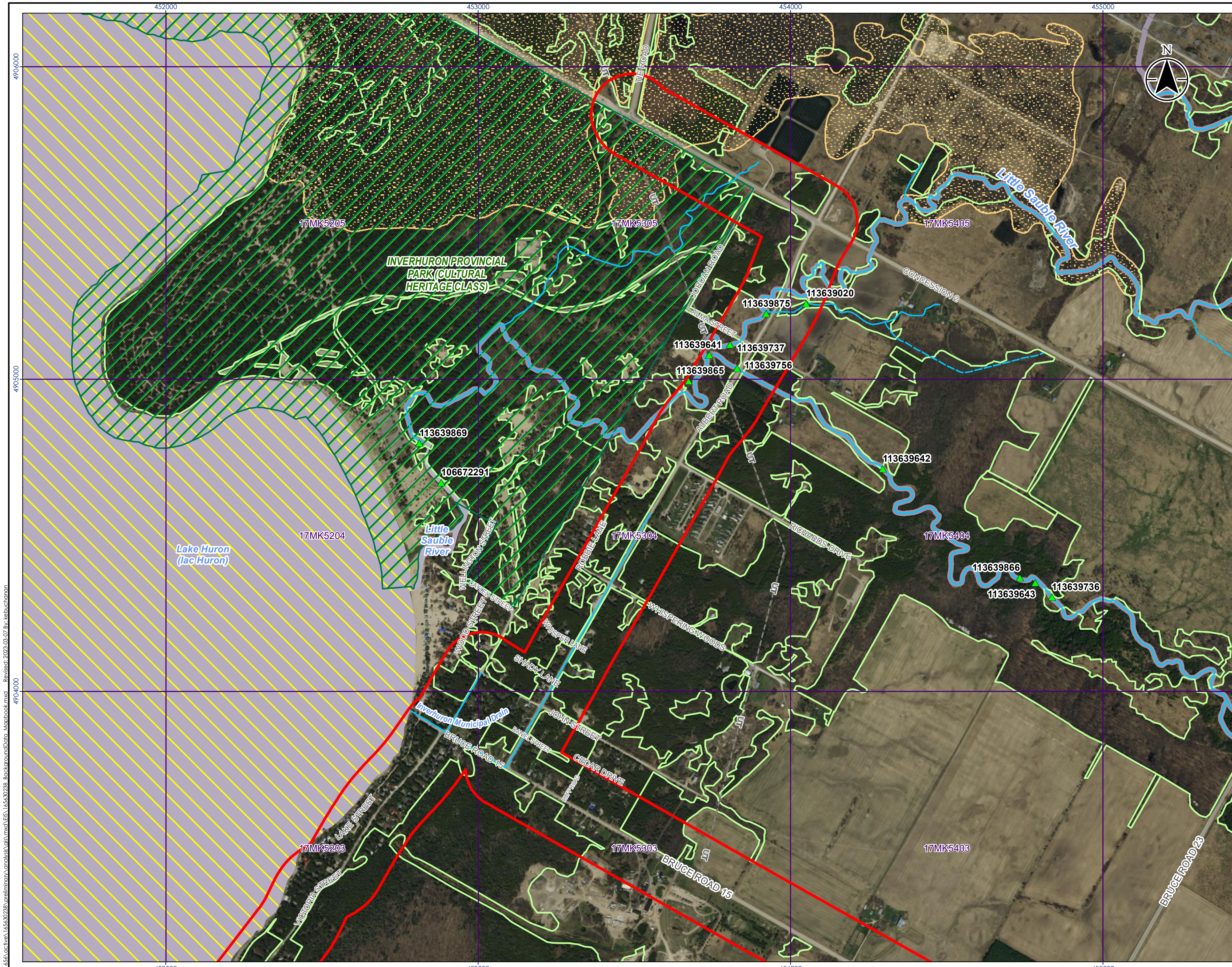
Project Location
Municipality of Kincardine

165630238 REV4
Prepared by KDB on 2023-03-07

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

Figure No.
2.4

Title
Natural Heritage - Detailed View (Sheet 4 of 5)



Legend

- Study Area (Potential Routes + 120 metre Setback)
- 1 km UTM Grid
- Deer Wintering Area
- Provincial Park
- Wooded Area
- Thermal Regime, Cold
- Fish Survey Point (ARA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Hydro Line
- -UT- Unknown Transmission Line

Aquatic SAR Distribution

- Shortnose Cisco - Endangered

0 0.75 km

1:12,500 (At original document size of 11x17)

Notes

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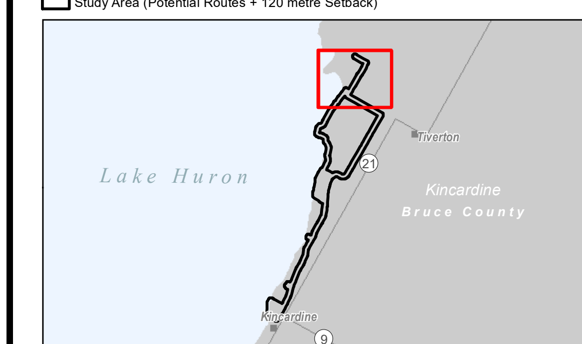
Study Area (Potential Routes + 120 metre Setback)



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.
2.5

Title
Natural Heritage - Detailed View (Sheet 5 of 5)

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Appendix B SAR and SOCC Habitat Assessments

B.1 Species at Risk Habitat Assessment

Attachment B-1: Species at Risk Habitat Assessment

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
HERPTILES		
Spotted Turtle	Spotted Turtles are commonly found in shallow, slow-moving ponds, bogs, fens, marshes, and other wetlands. Vegetation structures such as sphagnum moss, sedge tussocks, cattails, water lilies and hydrophilic shrubs, as well as soft-bottom substrates, are important components of aquatic habitats. Nesting habitats for Spotted Turtle include marshy pastures, sphagnum mats, decaying logs in swamps and anthropogenic sites (i.e., road right-of-way, mowed fields, pastures, lawns) (COSEWIC, 2004c).	**Yes –** Spotted Turtle has the potential to occur in wetlands and drainage creeks (i.e., Andrews Creek, Tiverton Creek, Lorne Creek, Little Sauble River) in the Study Area. Nesting habitat for Spotted Turtle has the potential to occur in or adjacent to these features, especially features with permanent standing water.
Wood Turtle	Wood Turtle are a semiaquatic species, typically found in rivers and streams with sand or gravel-sand bottoms and a moderate current. This species typically nests on sand or gravel-sand beaches and banks, at the edges of roads and railways, in utility rights-of-ways, in farming fields, pastures and former fields (COSEWIC, 2007c).	**Yes –** Wood Turtle has the potential to occur in wetlands and drainage creeks (i.e., Andrews Creek, Tiverton Creek, Lorne Creek, Little Sauble River) in the Study Area. Nesting habitat for Wood Turtle has the potential to occur adjacent to these features, especially features with permanent standing water.
BIRDS		
Bank Swallow	Bank Swallow breeds in both natural and artificial sites with vertical banks (i.e., riverbanks, lake and ocean bluffs, aggregate pits, road cuts, stockpiles of soil, and/or fill piles for construction activities). Sand-silt substrates are preferred for excavating nest burrows. Breeding sites tend to be somewhat ephemeral due to the dynamic nature of bank erosion and are often situated near open terrestrial habitat used for aerial foraging (e.g., grasslands, meadows, pastures, and agricultural cropland). Large wetlands are used as communal nocturnal roost sites during post-breeding, migration, and wintering periods (COSEWIC 2013a).	**Yes –** There is potential for suitable nesting habitat for Bank Swallow in the Study Area, which may include exposed soils associated with soil piles, eroding banks along the Lake Huron shoreline, and exposed faces as part of work occurring in the ROW or elsewhere in the Study Area.
Bobolink	Bobolink is a grassland obligate species that nests in a variety of open grassland habitats in Ontario including pastures, savannahs, alvar grasslands, and hayfields. They are mostly found in agricultural habitats (i.e., hayfields, pastures, fallow cropfields) in Ontario due to the loss of native grassland habitats. Sites with a higher ratio of grasses to forbs, abundant litter cover, and moderately dense vegetation cover with a low proportion of woody vegetation (e.g., shrubs, trees) are preferred for breeding (COSEWIC 2010).	**Yes –** Bobolink has the potential to nest in hayfields, meadows and pastures in the Study Area.
Canada Warbler	Canada Warblers nest in wet forest habitat with a well-developed shrub layer and are generally observed in shrubby marshes, conifer swamps, riparian woodlands, and regenerating forest (i.e., 6-30 years post-disturbance). Preferred habitats have abundant shrubs and groundcover, perch trees, and low canopy height near standing water or streams (COSEWIC 2020a).	**Yes –** Woodlands in the Study Area have the potential to support breeding habitat for Canada Warbler. Potential is low as forested areas are predominantly deciduous in the Study Area.

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
Cerulean Warbler	Cerulean Warblers are associated with mature deciduous forest with large and tall trees and an open understory. They are found in both wet bottomland forests and upland locations on dry ridges. In Ontario, they also occupy older second-growth deciduous forests (COSEWIC 2003).	**Yes –** Woodlands in the Study Area have the potential to support breeding habitat for Cerulean Warbler.
Chimney Swift	Chimney Swifts are aerial insectivorous birds that have adapted to human altered landscapes and preferentially nest on/in anthropogenic structures in sheltered areas with vertical surfaces that they can grip, including chimneys, barns, and wells. Before European settlement, Chimney Swifts used large hollow trees (COSEWIC 2018a).	**Yes –** Chimneys suitable for nesting Chimney Swifts have the potential to occur in the Study Area in Kincardine and other buildings. Hollow trees in the woodlands and hedgerows in the Study Area also have the potential to provide nesting habitat; however, it is not preferred habitat for Chimney Swift.
Common Nighthawk	Common Nighthawks are aerial insectivorous birds that breed in a wide variety of open habitats where bare ground is available for nesting. Nesting habitat includes clear cuts, burns, rock outcrops, rocky areas, sandy costal habitats, and flat gravel rooftops. Nests are built on the ground in well-drained areas near shade (COSEWIC 2018b).	**Yes –** Potential habitat for Common Nighthawk occurs in sparse meadows and pastures in the Study Area.
Eastern Meadowlark	Eastern Meadowlark is a grassland obligate species that nests in a variety of open grassland habitats in Ontario including pastures, savannahs, alvar grasslands, and hayfields. They are mostly found in agricultural habitats (i.e., hayfields, pastures, fallow cropfields) in Ontario due to the loss of native grassland habitats. Sites with a higher ratio of grasses to forbs, abundant litter cover, and moderately dense vegetation cover with a low proportion of woody vegetation (e.g., shrubs, trees) are preferred for breeding (COSEWIC 2011a).	**Yes –** Eastern Meadowlark has the potential to nest in hayfields, meadows and pastures in the Study Area.
Eastern Whip-poor-will	Whip-poor-will breeding habitat is dependent upon forest structure rather than composition, although common tree associations in both summer and winter are pine (Pinus) and oak (Quercus). The species avoids both wide-open spaces and closed-canopy forests. Semi-open forests or patchy forests with clearings, such as barrens or forests that are regenerating following major disturbances, are preferred as nesting habitat. Areas with little ground cover are also preferred. In winter, Whip-poor-wills occupy primarily mixed woods, commonly in broadleaf evergreen forests near open areas. (COSEWIC 2009a).	**Yes –** Semi-open woodlands in the Study Area have the potential to support breeding habitat for Eastern Whip-poor-will.
Golden-winged Warbler	Golden-winged Warblers usually breed in loose colonies that may contain 10 pairs of breeding birds with each pair defending a 1-2 ha territory. Breeding habitat is selected on landscape scale where early successional habitat within a large forest landscape is selected. Preferred breeding habitat are areas with low shrubs and scattered trees near a forest edge and include utility corridors, field edges, recently logged areas, and beaver marshes (COSEWIC 2006a).	**Yes –** Woodlands and forest edge habitat in the Study Area have the potential to support breeding habitat for Golden-winged Warbler.

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
Henslow's Sparrow	Henslow's Sparrow is an area-sensitive grassland obligate; it requires grassland habitat and occurs more frequently and at higher densities in large patches of suitable habitat. In Ontario, Henslow's Sparrow colonies have been located in abandoned fields, lightly grazed pasture, and wet meadows (COSEWIC 2011b).	**Yes –** Henslow's Sparrow has the potential to nest in hayfields or lightly grazed pasture in the Study Area.
King Rail	King Rail uses a wide variety of freshwater marshes in the breeding season. In many areas the presence of wild rice seems to be important for food, but sedge and cattail marshes and shrub swamp habitats are also used. Very large marshes, with more open water areas merging with shrubby areas are probably essential habitat in Canada (COSEWIC 2000a).	**No –** Due to the wetlands having full forest cover (**Appendix A, Figure 1**), it is anticipated that there is lacking open water habitat suitability for the King Rail (MECP 2021).
Least Bittern	Least Bitterns breed strictly in marshes of emergents (usually cattails, *Typha spp*.) that have relatively stable water levels and interspersed areas of open water (COSEWIC 2009b).	**No –** Due to the wetlands having full forest cover (**Appendix A, Figure 1**), it is anticipated that there is lacking open water habitat suitability for the Least Bittern (Environment Canada 2014).
Lesser Yellowlegs	Lesser Yellowlegs commonly nests on dry ground in boreal forests or taiga. Nests are typically found ground near marshes, ponds, peatlands and other wetlands (COSEWIC 2020b).	**No –** The study Area is outside the nesting range for Lesser Yellowlegs. As such this species is not anticipated to nest in the Study Area. However, Lesser Yellowlegs has the potential to be found in the wetlands within the Study Area during their migration period.
Loggerhead Shrike	Loggerhead Shrikes prefer open country such as pastures, prairie grasslands, sagebrush, and agricultural fields. In all of these habitats, shrikes require scattered small trees, shrubs or hedgerows for foraging perches and nesting sites (COSEWIC 2004a).	**Yes –**There are several hayfields, meadows and pastures adjacent to hedgerows and forested area in the Study Area that could be potential Loggerhead Shrike habitat.
Louisiana Waterthrush	The Louisiana Waterthrush occupies specialized habitat, showing a strong preference for nesting and wintering along relatively pristine headwater streams and wetlands situated in large tracts of mature forest. It prefers running water, although it also inhabits heavily wooded swamps with vernal or semi-permanent pools (COSEWIC 2015).	**Yes –** Louisiana Waterthrush has the potential to nest in several creeks (i.e., Andrews Creek, Lorne Creek, Tiverton Creek, Little Sauble River) and unnamed tributaries that run through the Study Area.
Olive-sided Flycatcher	Olive-sided Flycatcher is most often associated with natural forest openings, forest edges near natural openings (such as wetlands) or open to semi-open forest stands and will use human-made openings (such as clearcuts). In Ontario, nests are most often placed in conifers, such as white spruce, black spruce, jack pine and balsam fir (COSEWIC 2007a).	**Yes –** Woodlands around natural forest openings (i.e., Lorne Beach Swamp) have the potential to support breeding habitat for the Olive-sided Flycatcher. Potential is low as forested areas are predominantly deciduous in the Study Area.
Prothonotary Warbler	Prothonotary Warblers occupy mature and semi-mature, deciduous swamp forest and riparian floodplains. Permanent and semi-permanent pools of open water are characteristic, and nests are typically situated over standing or slow-moving water (COSEWIC 2007b).	**Yes –** Prothonotary Warbler has the potential to nest in unnamed wetlands and Lorne Beach Swamp in the Study Area.

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
Red-headed Woodpecker	The Red-headed Woodpecker prefers open woodlands and forest edges, often found in disturbed areas such as cemeteries, parks, golf courses, sparsely treed pastures, and agricultural areas. Preferred nesting habitat typically requires dead limbs or snags with an open canopy (COSEWIC 2018c).	**Yes –** Woodlands and hedgerows in the Study Area have the potential to support breeding habitat for Red-headed Woodpecker
Short-eared Owl	Short-eared Owl typically breed in a large number of open habitats including grasslands, artic tundra, taiga, bogs, marshes, old pastures, and sand sage, Preferred nesting sites are areas of dense grasslands, as well as tundra with areas of small willows, however the primary factor determining Short-eared Owl nest site choice is likely proximity to a reliable source of small mammal prey (COSEWIC 2008).	**Yes** – Short-eared Owl has the potential to nest in meadows, pastures and agricultural fields in the Study Area.
Wood Thrush	Wood Thrush breeds in deciduous or mixed upland forest habitat with a moderate subcanopy and open forest floor. Wood Thrush are sensitive to habitat fragmentation but will nest in forest patches as small as 3 ha. Nests are constructed in young trees or shrubs and adults primarily forage for invertebrates on the ground (COSEWIC 2012a).	**Yes –** Woodlands in the Study Area have the potential to support breeding habitat for Wood Thrush.
MAMMALS		
Eastern Small-footed Myotis	Eastern Small-footed Myotis is an aerial insectivore that roosts in a variety of habitats, including mature trees with loose bark or cavities, under rocks or in rock outcrops, in buildings, caves, mines and under bridges (Humphrey 2017). Trees with a diameter at breast height (DBH) of 10 cm or greater can provide summer/maternity roosting (MNRF 2015, 2017).	**Yes –** Suitable roosting habitat has the potential to occur in the woodlands and hedgerows in the Study Area. Rocky outcrops and overwintering features may be present.
Little Brown Myotis	Little Brown Myotis is an aerial insectivore commonly found near waterbodies in buildings, attics, roof crevices, under bridges, and in mature trees with loose bark or cavities. Overwintering habitat includes caves and abandoned mines (COSEWIC 2013b).	**Yes –** Suitable roosting habitat has the potential to occur in the woodlands and hedgerows in the Study Area. Overwintering features may be present.
Northern Myotis	Northern Myotis are aerial insectivores that will also glean prey. These bats forage more frequently along and within forests, including mature hardwood stands, and with a preference for ridges and midslopes. They overwinter in caves and mines (IUCN 2022, Bat Conservation International 2022).	**Yes –** Suitable roosting habitat has the potential to occur in the woodlands and hedgerows in the Study Area. Overwintering features may be present.
Tri-colored Bat	Tri-colored Bat is an aerial insectivore which roosts in colonies in tree cavities in a wide variety of deciduous and coniferous forest stands. Strongly associated with forest watercourses and streamside vegetation. Overwintering habitat includes caves and abandoned mines (COSEWIC 2013b).	**Yes –** Suitable roosting habitat has the potential to occur in the woodlands and hedgerows in the Study Area. Overwintering features may be present.
AQUATIC		

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
American Eel	Habitat requirements during the overwintering period for American Eel are poorly known, in both fresh and saltwater habitats. In fresh water, American Eel is frequently found in lakes and rivers with a depth of 10 meters where Eel grass and interstitial spaces are abundant. This species commonly overwinters in bay and estuary habitats with mud bottoms (COSEWIC 2006c).	**Yes –** American Eel may occur in portions of Lake Huron in the Study Area; however, Lake Huron in-water works are not anticipated for this project. American Eel may also occur in the larger Rivers and Creeks (i.e., Little Sauble River and Tiverton Creek) within the Study Area.
Lake Sturgeon	Lake Sturgeon are commonly found in large rivers or lakes and dwells in depths from 5 – 10m. This species spawns in fast-flowing water, usually below waterfalls, rapids, or dams, with gravel and boulders at the bottom (COSEWIC 2006b)	**Yes -** Lake Sturgeon may occur in portions of Lake Huron in the Study Area; however, Lake Huron in-water works are not anticipated for this project.
Shortnose Cisco	The shortnose cisco has been collected in depths ranging from 37m to 92m in Lake Huron. It is known to live in clear, cold-water environments year-round. Nothing else is known about its habitat preferences. (COSEWIC 2005).	**Yes –** Shortnose Cisco may occur in portions of Lake Huron in the Study Area; however, Lake Huron in-water works are not anticipated for this project.
PLANTS		
American Chestnut	American Chestnut is a medium-sized tree that is commonly found in upland deciduous forests, frequently with oak. In Ontario, its range is limited to the Carolinian Zone (COSEWIC, 2004d).	**Yes –** Although the Study Area is located outside of the Carolinian Zone, American Chestnut may still occur in the woodlands within the Study Area.
American Ginseng	This species is found within deciduous woodlands with rich, moist deciduous woods. Colonies often found in the warm, well drained microhabitat at the bottom of slopes (COSEWIC, 2000c).	**Yes –** Woodlands and hedgerows in the Study Area have the potential to contain American Ginseng
Butternut	Butternut is a medium-sized tree that is commonly found in a variety of habitats including woodlands and hedgerows. Butternut is intolerant of shade and occurs singly or in small groups (COSEWIC 2017).	**Yes –** Woodlands and hedgerows in the Study Area have the potential to contain Butternut.
Pitcher's Thistle	Pitcher's Thistle is found in sandy habitats on the high beach, foredunes, blowouts and dune ridges along Lake Huron. The species occurs as a minor associate among grasses and is found most frequently in blowouts. The plants grow best in open locations with maximum sunlight and can withstand high surface soil temperatures (COSEWIC 2000b).	**Yes –** Sandy habitats along the Lake Huron shoreline in the Study Area have the potential to support Pitcher's Thistle.

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B.2 Species of Conservation Concern Habitat Assessment

Attachment B-2: Species of Conservation Concern Habitat Assessment

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
INSECTS		
Monarch	Adult Monarchs feed on nectar from wildflowers in a variety of habitats, while larvae are confined to meadows and open areas with Milkweed plants (COSEWIC 2016a).	**Yes –** Monarch's larval host, milkweed (*Asclepias spp.*), has the potential to occur throughout the meadow and marsh communities and roadsides in the Study Area.
Yellow-banded Bumble Bee	Yellow-banded Bumble Bee are habitat generalists and can occupy open coniferous, deciduous, or mixed-wood forests, wet and dry meadows, grasslands, urban parks, gardens, and agricultural areas which contain flowering plants throughout the growing season. The queen overwinters in burrows in loose soil or rotting trees and nests underground often in abandoned rodent burrows (COSEWIC 2015).	**Yes –** As a habitat generalist, there are several habitats (i.e., woodlands, meadowland, grassland, urban parks, etc.) which have the potential to provide suitable habitat for the Yellow-banded Bumble Bee.
HERPTILES		
Eastern Milksnake	Eastern Milksnakes are habitat generalists, but prefer open areas such as pastures, meadows, prairies, rock outcrops, rights-of-way, and agricultural land near forest habitat. They commonly feed around old buildings and barns, where rodent populations are high. Milksnake hibernate in mammal burrows, old building foundations, old wells, hollow logs, and rock crevices (COSEWIC 2014).	**Yes –** Eastern Milksnake is a habitat generalist that has the potential to occur throughout the Study Area, especially associated with old foundations and barns.
Eastern Ribbonsnake	The Eastern Ribbonsnake is semi-aquatic and most frequently found along wetland edges. Quiet, shallow water with low surrounding cover is preferred, although areas with good exposure to sunlight are also required. Gravid females may move away from water before nesting, as females and juveniles are occasionally found in upland areas (COSEWIC 2002).	**Yes –** Edges of Lorne Beach Swamp and unnamed wetlands within the Study area have the potential to support Eastern Ribbonsnake habitat. Habitat edges of creeks (i.e., Andrews Creek, Lorne Creek, Tiverton Creek, Little Sauble River, etc.) throughout the Study Area also have the potential to provide potential habitat; however, it is less preferred habitat for Eastern Ribbonsnake.
Midland Painted Turtle	Midland Painted Turtles inhabit slow moving, relatively shallow and well-vegetated wetlands including swamps, marshes, ponds, fens, bogs, lakes, rivers, and creaks with abundant basking sites and organic substrate. Nesting habitat is usually within 1,200 m of aquatic habitat and in an open, south-facing area with sandy-loamy and/or gravely substrate (COSEWIC 2018).	**Yes –** Midland Painted Turtle has the potential to occur in wetlands and drainage creeks (i.e., Andrews Creek, Tiverton Creek, Lorne Creek, Little Sauble River) in the Study Area. Nesting habitat for Midland Painted Turtle has the potential to occur adjacent to these features, especially features with permanent standing water.

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
Snapping Turtle	Snapping Turtles inhabit a wide range of wetland habitats including ponds, sloughs, streams, rivers, and shallow bays that are characterized by slow moving water, soft bottoms, and dense aquatic vegetation. Adults will use streams to move between waterbodies especially during the mating season. Nesting sites are in open habitat with sandy or gravelly substrate and are often found in road shoulders (COSEWIC 2008a).	**Yes –** Snapping Turtle has the potential to occur in wetlands and drainage creeks (i.e., Andrews Creek, Tiverton Creek, Lorne Creek, Little Sauble River) in the Study Area. Nesting habitat for Snapping Turtle has the potential to occur adjacent to these features, especially features with permanent standing water.
Western Chorus Frog	Western Chorus Frogs are lowland terrestrial species that are found in marshes, meadows, and forest habitat near water. Breeding ponds are small, shallow wetlands that usually dry out in the late summer and contain no fish (e.g., predators). Adults forage in upland habitat generally within 250 to 300 m of the breeding pond and overwinter under rocks, leaf litter, loose soil, or old animal burrows (COSEWIC 2008b). Adults have limited movement capabilities and generally do not disperse more than 750 m to find new breeding ponds (ECCC 2015).	**Yes –** Unnamed wetland communities, Lorne Beach Swamp, seasonal pooling areas and ditches have the potential to provide breeding habitat for Western Chorus Frog.
BIRDS		
Bald Eagle	Bald Eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. While fish are their main source of food, Bald Eagles can easily catch prey up to the size of ducks, and frequently feed on dead animals, including White-tailed Deer. They usually nest in large trees such as Pine and Poplar (MECP 2021a).	**Yes –** Bald Eagle has the potential to establish nests in woodlands and large trees adjacent to Lake Huron within the Study Area.
Barn Swallow	Barn Swallows are aerial insectivorous birds that have adapted to human altered landscapes and preferentially nest on/in anthropogenic structures. Before European settlement, Barn Swallows used caves, holes, crevices, and rocky cliff faces for nesting. Now, Barn Swallows nest in barns, garages, sheds, buildings with overhanging ledges, and under bridges and culverts (COSEWIC 2011).	**Yes –** Barn Swallow has the potential to establish nests in various structures and buildings throughout the Study Area.
Black Tern	Black Terns build floating nests in loose colonies in shallow marshes, especially in cattails. In Ontario, Black Terns are found scattered throughout the province, but breed mainly in the marshes along the edges of the Great Lakes (MECP 2021b).	**No –** Due to the wetlands having full forest cover (**Appendix A, Figure 1**), it is anticipated that there is insufficient habitat for the Black Tern, as it prefers an equivalent proportion (1:1) of open water interspersed with irregular patches of dense emergent vegetation (MECP 2021c).
Eastern Wood-pewee	Eastern Wood-pewees are found in the mid-canopy layer of deciduous and mixedwood forests with open understories and are commonly associated with edges and clearings. Forest size does not seem to be a critical factor in habitat selection; however, breeding numbers decrease with increasing development in surrounding habitat. (COSEWIC 2012).	**Yes –** Woodlands in the Study Area have the potential to support breeding habitat for Eastern Wood-Pewee.

Species	Habitat Preference	Potential Habitat Present in the Study Area? (Yes/No)
Evening Grosbeak	Evening Grosbeak breeding habitat generally includes open, mature mixedwood forests, where fir species and/or White Spruce are dominant, and Spruce Budworm is abundant. Outside the breeding season, the species seems to depend largely on seed crops from various trees such as firs and spruces in the boreal forest, but is also attracted to ornamental trees that produce seeds or fruit, and bird feeders stocked with sunflower seeds (COSEWIC 2016b).	**Yes –** Woodlands in the Study Area have the potential to support breeding habitat for Evening Grosbeak. Potential is low as forested areas are predominantly deciduous in the Study Area.
Grasshopper Sparrow	Eastern Grasshopper Sparrow typically breeds in large human-created grasslands (≥ 5 ha), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by relatively low, sparse perennial herbaceous vegetation. The habitat used by the Grasshopper Sparrow in its wintering range is generally similar to that used in the breeding range (COSEWIC 2013).	**Yes –** Grasshopper Sparrow has the potential to nest in hayfields, meadows and pastures in the Study Area.
Great Egret	Great Egret typically breed in marshes, ponds, shores, mud flats. They are flexible in their foraging environment, usually foraging in rather open situations (i.e., along edges of lakes, large marshes, shallow coastal lagoons and estuaries), but also along rivers in wooded country. Nesting habitat is typically in trees or shrubs near water, in thickets some distance from water, or low in marshes (Audubon 2023).	**Yes –** Great Egret has the potential to nest in the unnamed wetland and Lorne Beach Swamp in the Study Area.
Peregrine Falcon	Peregrine Falcon occurs in a wide range of habitats. Although its diet is flexible, it breeds only in habitats with access to sufficient food supplies (COSEWIC 2007).	**No –** Cliffs are not anticipated in the Study Area, and tall buildings/structures suitable for nesting are unlikely to occur in these small towns.
Rusty Blackbird	Rusty Blackbirds breed in boreal riparian habitats including bogs, sedge meadows, marshes, willow thickets, and estuaries and select breeding sites with a combination of shallow water and emergent vegetation with conifers or tall shrubs. Rusty Blackbirds use flooded forests and swamps, the edges of lakes, rivers, and streams, and pastures, agricultural fields as roosting and foraging habitat during migration. Overwintering habitat includes agricultural fields, swamps, pastures, and residential areas to forage for seeds and berries during the winter (COSEWIC 2017).	**Yes –** As a habitat generalist, Rusty Blackbird has the potential to nest in the forested wetland, and Lorne Beach Swamp within the Study Area.
PLANTS		
Dwarf Lake Iris	Dwarf Lake Iris grows on alvars, dolostone bedrock shorelines, sand or gravel beach ridges, and in openings in coniferous woodlands. The majority of populations are within 500 m of the shore of Lake Huron, and roughly 37% of the Canadian population is on land in protected areas (COSEWIC 2010).	Yes – Dwarf Lake Iris has the potential to grow in rocky shorelines, sand or gravel beach ridges, and in openings in coniferous woodlands and other open habitats within the Study Area, particularly where there is protected land (i.e., Inverhuron Provincial Park).

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Appendix C Correspondence with the MECP

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

Via E-mail Only

December 18, 2023

David Kielstra
Environmental Planner
Stantec Consulting Ltd.
david.kielstra@stantec.com

Re: Expansion of the Kincardine Water System and Treatment Plant
Municipality of Kincardine
Municipal Class Environmental Assessment – Schedule C
Project Review Unit Comments – Draft Environmental Study Report

Dear David Kielstra,

Thank you for providing the ministry with an opportunity to comment on the draft Environmental Study Report (ESR) for the above noted Class Environmental Assessment (EA) project. Our understanding is that in order to address servicing of anticipated community growth and the Bruce Power site, the Municipality of Kincardine (the proponent) has determined that the preferred alternative includes process upgrades at the Kincardine WTP within the existing site footprint to achieve the projected target rated capacity for (15,500 m3 per day), an approximate 1.1 km watermain extension within existing right of way connecting the existing watermain to the Bruce Power site, and a new in-line booster pump station consisting of new facility to house pumps, to be located generally in the vicinity of Stoney Island Crescent or further south near Concession 5. The Ministry of the Environment, Conservation and Parks (ministry) provides the following comments for your consideration.

General

1) Section 6.4 of the ESR states, "*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." This appendix reference may be incorrect and need to be revised to "Appendix F".

Planning and Policy

2) Section 4.2.2 of the ESR indicates that the Provincial Policy Statement (PPS) 2023 is issued under the *Planning Act*, and references section 3.6 of the PPS 2023. It should be noted that the 2020 version of the Provincial Policy Statement (PPS) is currently in effect, as the 2023 version of the PPS is in the proposal stage. The policies set out in section 3.6 of the PPS 2023 correspond to section 1.6.6 of the PPS 2020. The ESR should be revised to reflect this information.

Indigenous Consultation

3) Please continue reaching out to communities if there are any substantial changes to the project/process or if the proponent is applying for subsequent permits from the ministry that may be of interest or concern to communities. We recommend that the proponent include the record of consultation with any subsequent applications to the ministry to help in our review of those applications.

Excess Materials and Waste

4) In December 2019, the ministry released a new regulation under the Environmental Protection Act, titled *On-Site and Excess Soil Management* (O. Reg. 406/19) to support improved management of excess construction soil. For more information, please visit www.ontario.ca/page/handling-excess-soil. Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the ministry's current guidance document titled "Management of Excess Soil – A Guide for Best Management Practices" (2014) and "Rules for Soil Management and Excess Soil Quality Standards" (2022). All waste generated during construction must be disposed of in accordance with ministry requirements.

Source Water Protection

5) Section 4.3.6 of the draft ESR discusses source water protection and correctly identifies Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region as the source protection authority within which the proposed works are located. However, the statement "*The Municipality of Kincardine is located within the 'Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region' to protect groundwater sources.*" should be revised to indicate that the plan is in place to protect all sources of drinking water. Source protection plans protect ground and surface drinking water sources and the Municipality of Kincardine relies both on both for its drinking water.

6) The Draft ESR correctly identifies that the study area is located in the following vulnerable areas for both surface and groundwater sources (i.e., IPZ-2, HVA and SGRA), but the scoring for each is not included. Please include the scoring for these vulnerable areas as follows:

Intake Protection Zone (IPZ-2 scoring 4.8) and Highly Vulnerable Aquifer (HVA scoring 6). Significant Groundwater Recharge Areas (SGRA) do not have a score.

7) In addition, the study area also is within an Event Based Area (EBA) for fuel/oil, and while a map of it is included in Appendix D, this vulnerable area should also be discussed and identified in the main body of the report.

8) The expansion of the drinking water system itself is not a significant drinking water threat; however, other activities associated with the construction, maintenance, or operation may be moderate/low drinking water threats and select policies may still apply. In addition, within Highly Vulnerable Aquifers there may be other kinds of drinking water systems present that are not explicitly addressed by the source protection plan and the proponent should take these into consideration. EA projects should protect sensitive hydrologic features including current or future sources of drinking water not explicitly addressed in source protection plans, such as private systems – individual or clusters, and designated facilities within the meaning of O. Reg. 170/03 under the Safe Drinking Water Act – i.e., camps, schools, health care facilities, seasonal users, etc.

9) As a reminder, the proponent should consult with the local source protection authority if they have not already done so.

Species at Risk

10) Section 4.3.3.1 of the draft ESR incorrectly lists Short-eared owl as special concern. This species has recently been uplisted to Threatened. Please correct the Short-eared owl status (Threatened) and consider potential impacts to this species in the context of protections given to threatened and endangered species under s.9 and s.10 of the ESA, 2007.

11) Table 4.3 of Appendix E.1 Natural Environment Report of the draft ESR indicates that Short-eared Owl (Asio flammeus) is listed as special concern. Please note that it has been recently uplisted to threatened, and revise the status listed in the report to reflect the current status as threatened. As a threatened species, this species receives protections under s.9 and s.10 of the *Endangered Species Act* (ESA), 2007. Under its former status as a special concern species, it would not have received these protections and impacts to this species and their habitat may not have been considered.

12) The ministry notes that Lake Sturgeon is identified as occurring in Lake Huron, and though it normally dwells in depths from 5 – 20m, it will spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom. Waterbodies should be assessed to determine habitat suitability. American Eel is also identified as occurring in Lake Huron and has a broad range of habitats. These species are not referenced in the ESR or Appendix E.1 Natural Environment Report (e.g., not mentioned in section 5.1 of Appendix E.1). The proponent should consider possible impacts of the project to Lake Sturgeon and American Eel if any in-water work is required. The ministry notes that the Shortnose Cisco, which is a deepwater species typically dwelling between 22 to 110 metres and last recorded in Lake Huron in 1985, is referenced in section 5.1 of Appendix E.1.

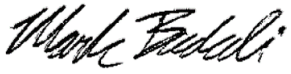
13) Further to section 6.2 of Appendix E.1 Natural Environment Report, Bank Swallow may also nest in fill piles and exposed faces as part of work occurring in the Right of Way and/or elsewhere. The potential for soil piles to be suitable nesting habitat is mentioned in Attachment B-1. Soil piles are mentioned as suitable habitat in the Species at Risk (SAR) Habitat Assessment (Attachment B-1) of the natural heritage desktop review. These could be important considerations given the nature and timing of work being done. The best management practices to mitigate impacts to this species and prevent them from nesting was not mentioned. The proposed action is to use these best management practices if applicable to the project. Please consider these features for their potential to attract nesting Bank Swallow and follow the Best Management Practices (BMP) for mitigating impacts to Bank Swallows.

14) Given observational records in the vicinity of the project, the ESR and Appendix E.1 Natural Environment Report should also consider Lesser Yellowlegs (Threatened), Spotted Turtle (Endangered), American Chestnut (Endangered), American Ginseng (Endangered) and Wood Turtle (Endangered) in their evaluation of impacts to SAR and/or impacts to these species and their habitat as the project proceeds.

Thank you for circulating this draft report for the ministry's consideration. Please document the provision of the draft report to the ministry as well as this Project Review Unit Comments letter in the final report, and please provide an accompanying response letter to support our review of the final report. A copy of the final Notice should be sent to the ministry's Southwest Region EA notification email account (eanotification.swregion@ontario.ca).

Should you or any members of your project team have any questions regarding the material above, please contact me at mark.badali1@ontario.ca.

Sincerely,



Mark Badali
Senior Project Evaluator
Environmental Assessment Program Support, Environmental Assessment Branch
Ontario Ministry of the Environment, Conservation and Parks

cc John Ritchie, Manager, Owen Sound District Office, MECP
Nelson Oliveira, Vice President, Regional Business Leader, Water - Canada East, Stantec Consulting Ltd.

Stantec

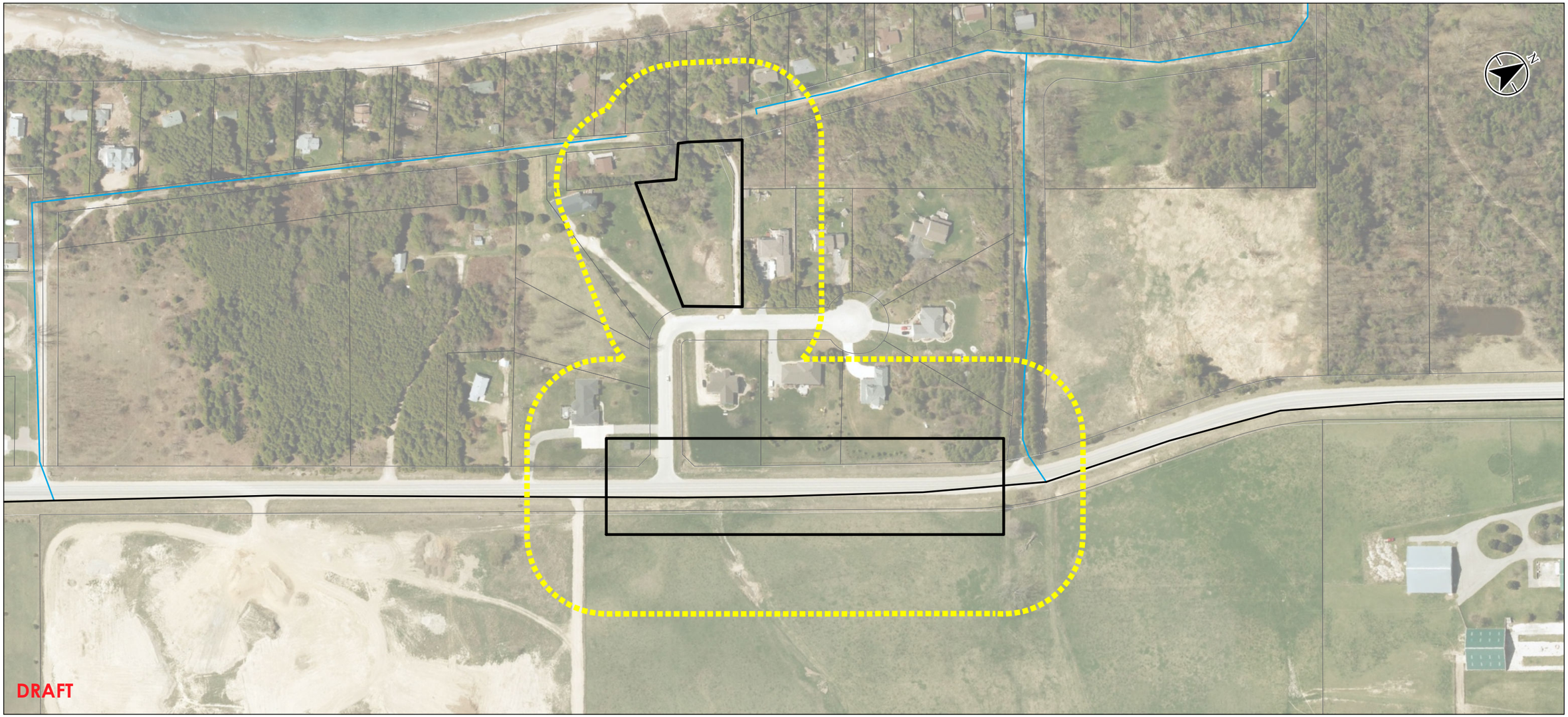
Memo

To:	Adam Weishar Municipality of Kincardine	From:	Jenn Como and Meaghan Rivard Stantec Consulting Ltd.
Project/File:	165630238	Date:	September 13, 2023

Reference: Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment Study

1 Introduction

To support the Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment (MCEA), the Municipality of Kincardine retained Stantec Consulting Ltd. (Stantec) to provide a Heritage Overview. The objectives of this Heritage Overview are to identify known and potential built heritage resources and cultural heritage landscapes within, or crossed by, the Project Location, including a 50 metre buffer (the Study Area)(Figure 1). This will determine if the Project requires subsequent cultural heritage studies, such as a *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment* (CHR) or site-specific *Cultural Heritage Evaluation Reports* (CHERs) or *Heritage Impact Assessments* (HIAs). This Heritage Overview follows the *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (the Checklist) published by the Ministry of Citizenship and Multiculturalism (MCM) in 2016.



Legend

- 100 - 250 mm
- 300 - 400 mm
- Existing Watermain
- Future Watermain
- Study Area
- 50m Buffer
- parcels

0 50 100 m

1:2,500 (At original document size of 11x17)

Stantec

Project Location
Municipality of Kincardine

165630178 REVA
Prepared by JWW on 2023-08-17

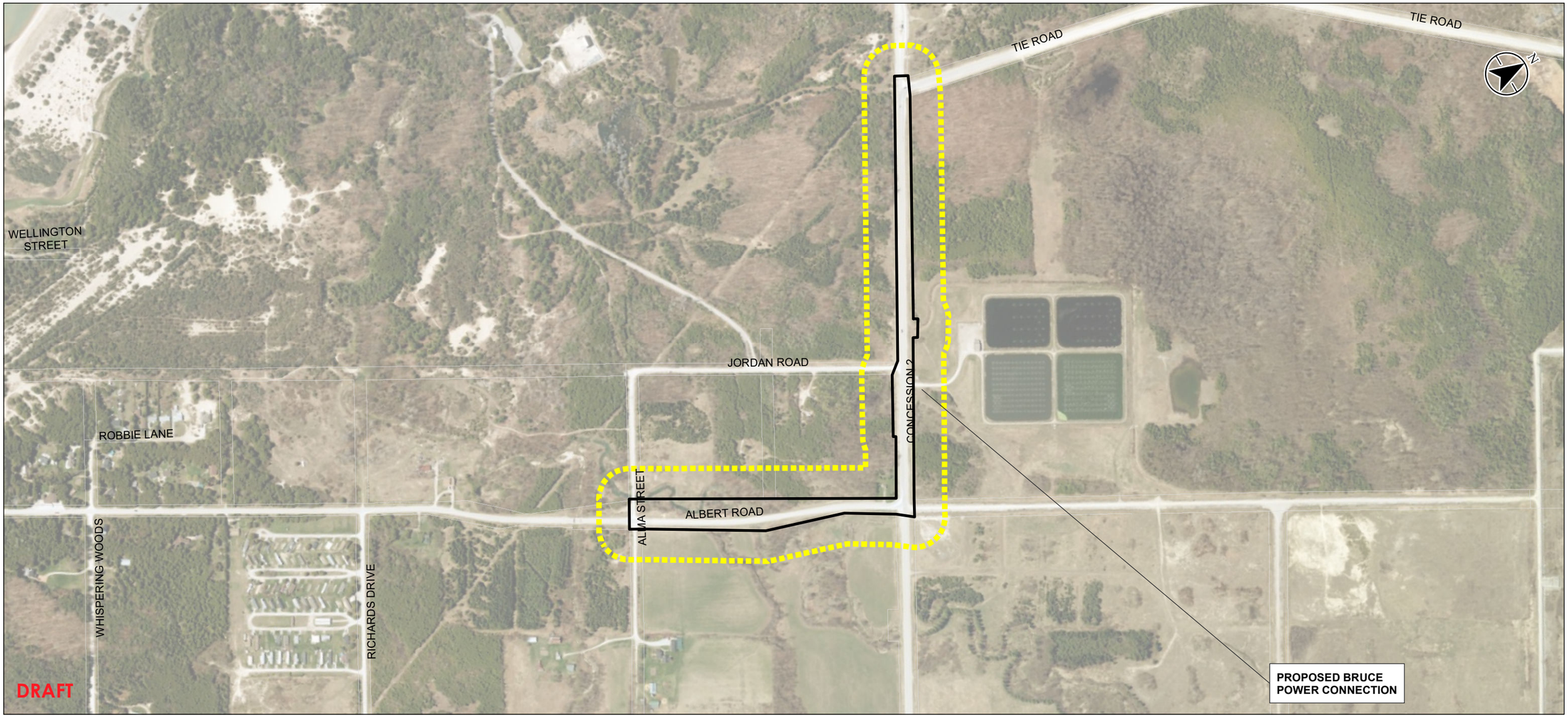
Client/Project
MUNICIPALITY OF KINCARDINE
WATER SYSTEM EXPANSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Figure No.
1a

DRAFT

Title
Location of Study Area

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2010.



Legend

50m Buffer

StudyArea

0 100 200 m

1:6,500 (At original document size of 11x17)

Stantec

Project Location
Municipality of Kincardine

165630178 REVA
Prepared by JWW on 2023-08-18

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

Figure No.
1b

DRAFT

Title
Location of Study Area

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2010.

2 Methodology

The Checklist provides a tool to identify known or recognized built heritage resources and cultural heritage landscapes in the Study Area, as well as commemorative plaques, cemeteries, Canadian Heritage River watersheds, properties with buildings 40 or more years old, and potential cultural heritage landscapes. Since cultural heritage is linked to real property under the *Ontario Heritage Act* (OHA), this analysis included all parcels within or crossed by the Study Area boundaries.

2.1 Regulatory Requirements

The requirement to consider cultural heritage in MCEAs is discussed in the *Municipal Class Environmental Assessment Manual* (MCEA Manual) (Municipal Engineers Association 2015) and the revised 2020 *Provincial Policy Statement* (PPS) (Government of Ontario 2020). The MCEA Manual considers cultural heritage, including built heritage resources and cultural heritage landscapes as well as archaeological resources, as one in a series of environmental factors to be considered when undertaking an MCEA, particularly when describing existing and future conditions, development alternatives, and determination of the preferred alternative.

The MCEA Manual further suggests that 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 resources 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.

In addition to requirements outlined in the MCEA Manual, provisions made under the PPS were also considered in the preparation of the memo. 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 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. In order to confirm and/or identify the presence of previously identified and potential built heritage resources and cultural heritage landscapes within the Study Area, the *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (the Checklist) published by the Ministry of Citizenship and Multiculturalism (MCM) in 2016 was completed (MCM 2016).

2.2 Municipal Policy Framework

The Official Plan of the Municipality of Kincardine (2021a) applies to settlement areas including the Town of Kincardine, Villages of Tiverton and Inverhuron, and the Lakeshore area. The Study Area falls partially within these settlement areas and partially within rural portions of the municipality governed by Bruce County's Official Plan (Municipality of Kincardine 2021b).

As such, the following objectives and policies from Section C3 of the Official Plan of the Municipality of Kincardine are relevant to this project:

> *C3.2.1 Buildings and sites in the Municipality which are of particular historic or aesthetic value will be protected through the co-operation of Council and the Municipal Heritage Committee, Heritage Kincardine. This will be accomplished through the establishment of a Heritage Register to identify properties of potential cultural heritage value and interest.*
>
> *C3.2.2 Sites in Kincardine of archaeological significance will be protected and conserved through the cooperation of Council and the applicable Provincial Ministry. Council will therefore facilitate survey by Government or private agencies should those agencies deem it necessary, and will encourage the preservation or rescue excavation of archaeological resources which may be entailed in any future development.*
>
> *C3.2.3 Significant built cultural heritage resources and significant cultural heritage landscapes shall be conserved. This may be achieved through designation of properties under the Ontario Heritage Act, through Official Plan policies, a conservation plan, or site-specific assessments undertaken in conjunction with a development proposal.*
>
> *C3.2.4 Council may pursue the preparation of an Archaeological Master Plan and / or Cultural Heritage Master Plan / Action Plan in order to assist with the identification and conservation of significant archaeological resources, built heritage resources and cultural heritage landscapes.*
>
> *C3.2.5 Council shall encourage the adaptive re-use and conversion of heritage buildings for compatible purposes, in order to help ensure their continued use and vitality.*
>
> *C3.3.4 The purpose of heritage groups is to assist the Municipality in identifying buildings and districts suitable for historic designation. The following guidelines may be considered by such groups and Council when assessing the value of buildings and districts for historic designation:*
>
> > *a) has the building or property been associated with the life of an historic person;*
> >
> > *b) is the building an important example of the architectural or construction style of a specific period, or the work of an important builder, designer, or architect;*
> >
> > *c) are comparable structures rare;*
> >
> > *d) does the Community support the designation of the building or property based on its architectural and visual values.*
> >
> > *e) does the building or the property retain a large part of its original character and craftsmanship; f) the value of the building as a landmark or as an integral part of a distinctive area or neighbourhood of the Community;*

> *g) the building's architectural features such as style, plan, and the sequence of spaces; use of materials and details including windows, doors, signs, ornaments; colours, textures, and lighting; and, the relationships of all these to neighbouring buildings.*
>
> *Based on work undertaken to identify buildings, cultural heritage landscapes and / or heritage conservation districts suitable for heritage designation, Council, with the support of Heritage Kincardine, may pursue designation of such resources under the Ontario Heritage Act as applicable.*
>
> *C3.3.7 Development and site alteration may be permitted on adjacent lands to protect the heritage property 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. Mitigative measures and/or alternative development approaches may be required in order to conserve the heritage attributes of the protected heritage property affected by the adjacent development or site alteration.*
>
> (Municipality of Kincardine 2021)

In addition, the following objectives from Section 4.10 of Bruce County's Official Plan are relevant to this project:

- *Encourage the conservation of land, buildings and sites of historic, architectural and archaeological value.*
- *County Council encourages the identification, acquisition, restoration and conservation of the historical, cultural, architectural and archaeological assets of the County.*
- *In accordance with the Ontario Heritage Act, the County encourages Local Councils to support the creation of Local Architectural Conservation Advisory Committees to inventory and designate buildings, sites and districts of historical, cultural or architectural merit.*
- *Development on lands containing possible archaeological resources or areas of archaeological potential, should occur in such a manner as to avoid destruction or alteration of these resources. Where this is not possible, the development proponent shall conserve the resources through removal and documentation in accordance with the Ontario Heritage Act.*

(Bruce County 2013)

2.3 Municipal and Agency Consultation

Agency consultation was conducted to determine the presence of previously identified protected properties within or adjacent to the Study Area. Forms of protection range from inclusion on a municipal register or list of potential heritage resources to designation under the OHA or a provincial easement made under the OHA. In order to determine the presence of any of these protected properties, consultation included correspondence with the following:

- MCM
- Ontario Heritage Trust (OHT)
- The Municipality of Kincardine

3 Existing Conditions

3.1 Site Description

For the purposes of this Heritage Overview, the Study Area includes two project components:

- The proposed booster pumping station (BPS) for which the precise location is still to be determined. Ideally, it will be located within the Study Area along Bruce Road 23 near its intersection with Stoney Island Crescent. As an alternate location, the BPS could be installed on Assessment Parcel 410821000428324 (no civic address). If the alternate location is selected, the BPS will be located northwest of the existing stormwater management pond on the property and will require a short connecting pipe between the BPS and Bruce Road 23 that is expected to make use of road right of way (ROW) on Stoney Island Crescent.
- A watermain extension to be constructed inside the existing ROW along Albert Road and Concession Road 2. The proposed watermain extension originates at the intersection of Alma Street and Albert Road and travels east along Albert Street before turning north then traveling along Concession Road 2 where it ends at the Bruce Power property line (at the intersection of Tie Road and Concession Road 2).

The proposed BPS location is on the west side of Stoney Island Crescent which is located off Bruce Road 23 north of Kincardine. Stoney Island Crescent appears to contain primarily contemporary residences with lake houses along the shore of Lake Huron located to its west and agricultural land to its east. The proposed watermain extension is located in a rural portion of the Municipality of Kincardine adjacent to agricultural lands and wooded areas including the Inverhuron Provincial Park.

3.2 Municipal and Agency Consultation

Consultation occurred via email and included mapping of the Study Area. At the provincial level, Karla Barboza, Team Lead, Heritage with MCM, responded that there are no properties designated by the Minister or provincial heritage properties within the Study Area. Samuel Bayefsky, Real Property Coordinator with the OHT confirmed that the OHT does not have conservation easements or Trust-owned properties within or adjacent to the Study Area. As of the date of this Memo, a response from the Municipality has not been received. However, the Municipality's heritage registry is available online and was reviewed and no resources were identified within or adjacent to the Study Area (Municipality of Kincardine 2022).

3.3 Review of Historical Mapping

The 1880 Township of Kincardine map from the Bruce County supplement in the *Illustrated of the Dominion of Canada* was reviewed to identify the location of 19th century structures, settlements, and other potential resources within the Study Area (H. Belden & Co. 1880). The Study Area for the BPS is situated on parts Lots 33 and 34, Concession A, in the former Township of Kincardine and the Study Area for the proposed watermain extension is situated on parts of Lot A, Concession 2; Lot A, Concession 3; and Lots 8-11 on the Lake Range, in the former Township of Bruce. Table 1 provides 1880 settlement data for the lots within the Study Area.

It is possible that one of the structures illustrated on the 1880 map and its associated outbuildings remains extant within the Study Area, however the age of the structures on this property parcel could not be visually confirmed as they are obscured by distance from the road and vegetation.

Table 1 1880 Townships of Kincardine and Bruce Map Review

Lot	Concession	Landowner	Parcel	Comment
33	Concession A	D. Rowan	N/A	Structure depicted on west side of lot near shoreline.
34	Concession A	None Listed	N/A	No structure depicted.
A	Concession 2	None Listed	N/A	No structure depicted. This lot is part of the shaded area associated with the Inverhuron settlement area and depicts a planned street grid.
A	Concession 3	Matthew Allison	N/A	Structure depicted on the south end of the lot along Concession Road 2.
8	Lake Range	None Listed	N/A	No structure depicted. This lot is part of the shaded area associated with the Inverhuron settlement area and depicts a planned street grid.
9	Lake Range	None Listed	N/A	No structure depicted. This lot is part of the shaded area associated with the Inverhuron settlement area and depicts a planned street grid.
10	Lake Range	None Listed	N/A	No structure depicted. This lot is part of the shaded area associated with the Inverhuron settlement area and depicts a planned street grid.
11	Lake Range	None Listed	N/A	No structure depicted.

3.4 Review of Topographic Mapping

Topographic mapping from the 20th century was also reviewed to confirm a date range for the structures in the Study Area. Specifically, mapping material was reviewed from 1946. The Study Area for the BPS is adjacent to two properties that each have one structure depicted on the 1946 topographic mapping (Department of National Defence 1946a). 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 (Department of National Defence 1946b). Inverhuron Provincial Park, though not labeled as such, is depicted as a wooded area with a trail system.

4 Results

4.1 MCM Checklist

The Checklist was completed for the Study Area based on the results of background research, a review of historical and topographic maps, and agency consultation. The results are presented in Table 2 and Figure 2.

Table 2: MCM Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist.

Screening Criteria for Known and Potential Built Heritage Resources and Cultural Heritage Landscapes	Identified within the Study Area
PART A	
Is the property (or Study Area):	
Identified, designated or otherwise protected under the OHA as being of cultural heritage value	Not Identified
A National Historic Site (or part of)	Not Identified
Designated under the *Heritage Railway Stations Protections Act*	Not Identified
Designated under the Heritage *Lighthouse Protection Act*	Not Identified
Identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office	Not Identified
Located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site	Not Identified
PART B	
Does the property (or Study Area) contain a parcel of land that:	
Is the subject of a municipal, provincial or federal commemorative or interpretative plaque	Not Identified
Has or is adjacent to a known burial site and/or cemetery	Not Identified
Is in a Canadian Heritage River watershed	Not Identified
Contains buildings or structures that are 40 or more years old	Identified
PART C	
Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or Study Area):	
Is considered a landmark in the local community or contains structures or sites that are important in defining the character of the area	Not Identified
Has a special association with a community, person, or historical event	Not Identified
Contains or is part of a cultural heritage landscape	Identified

4.2 Summary of Results

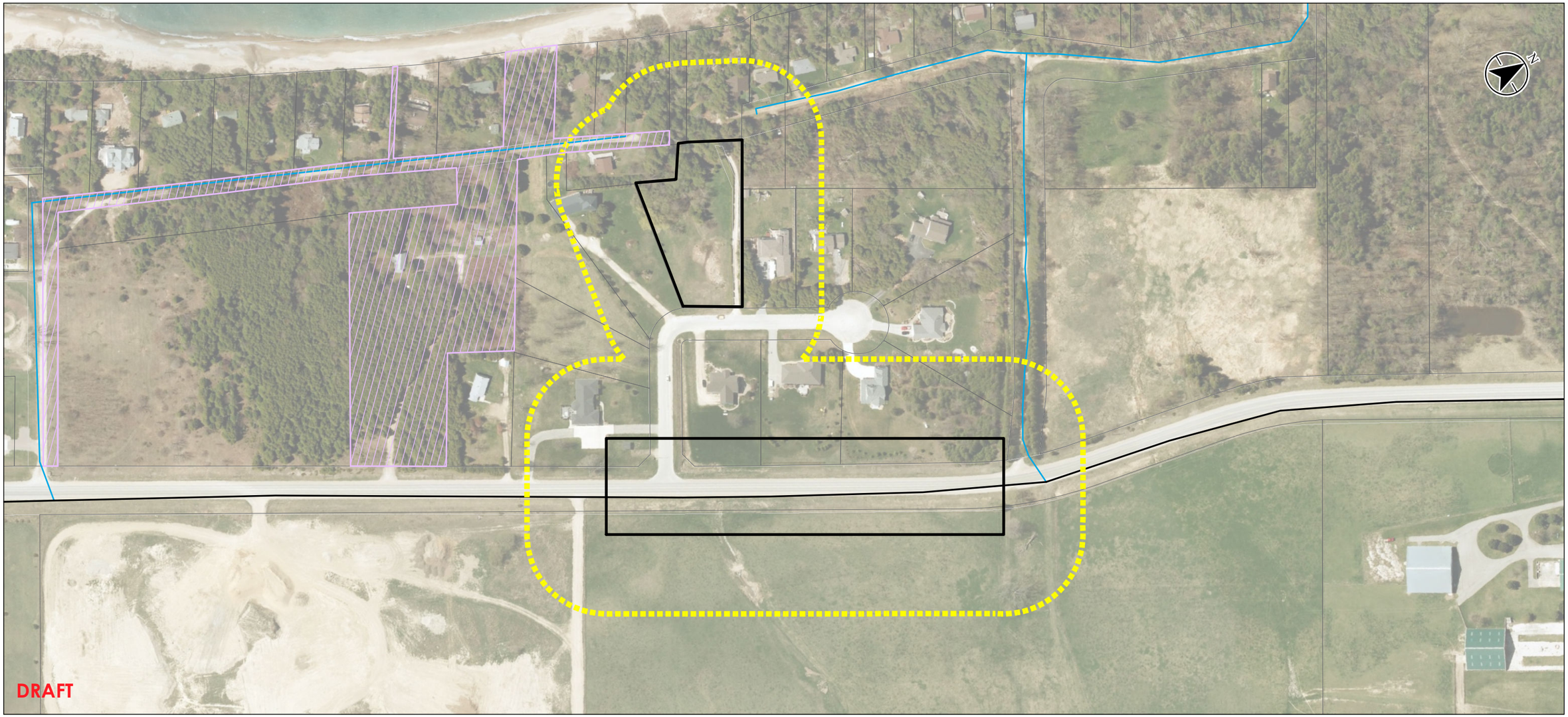
No built heritage resources or cultural heritage landscapes were identified within or adjacent to the Study Area for the BPS that is located along Bruce Road 23 near its intersection with Stoney Island Crescent. The alternate location for the BPS on Assessment Parcel 410821000428324 was determined to be adjacent to two properties (363 Bruce Road 23 and 11 Stoney Island Crescent) that may meet one criteria of the Checklist as they appear to contain structures that are 40 or more years old. The Inverhuron Provincial Park is located within the 50 metre buffer around the proposed watermain extension Study Area and may meet

one criteria of the Checklist as a potential cultural heritage landscape. However, no direct or indirect impacts to these potential resources are anticipated as part of the Project.

For 363 Bruce Road 23, the parcel is irregularly shaped and includes a portion of a private road and multiple structures. The property appears to contain four structures, but their age could not be confirmed from a desktop review due to the setback and tree cover on the property. However, the portion of the property parcel which abuts the proposed BPS site is a private roadway. The nearest structure at 363 Bruce Road 23 is situated approximately 125 south metres from the location of the proposed BPS. Given this distance, it is not anticipated that the Project will interact with the structures on the adjacent property.

The residence at 11 Stoney Island Crescent is less than 50 metres from the property parcel for the alternate location of the BPS. However, the current proposed location for the BPS within the parcel places it more than 50 metres from the residence. Therefore, no vibration monitoring is recommended at this time. It is recommended that if the alternate location is selected instead of the location along Bruce Road 23, the distance between the residence and proposed construction activities should be confirmed during detailed design. It is also recommended that the BPS and all associated construction activities are limited to more than 50 metres from the residence at 11 Stoney Island Crescent, that the potential heritage resource is depicted on construction mapping, and that a 50 metre buffer for the residence is demarcated using temporary fencing, staking, flagging or another similar method prior to and during construction.

A portion of Inverhuron Provincial Park falls within the 50 metre buffer around the proposed watermain extension. Based on topographic mapping and the interactive mapping available from the Bruce County GIS website, there do not appear to be any structures or potential cultural heritage landscapes located within this section of the park (Department of Defence 1946 and Bruce County 2022). 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.



Legend

- 100 - 250 mm
- 300 - 400 mm
- Existing Watermain
- Future Watermain
- Study Area
- 50m Buffer
- parcels
- Potential Built Heritage Resource

0 50 100 m

1:2,500 (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. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2010.

Stantec

Project Location
Municipality of Kincardine

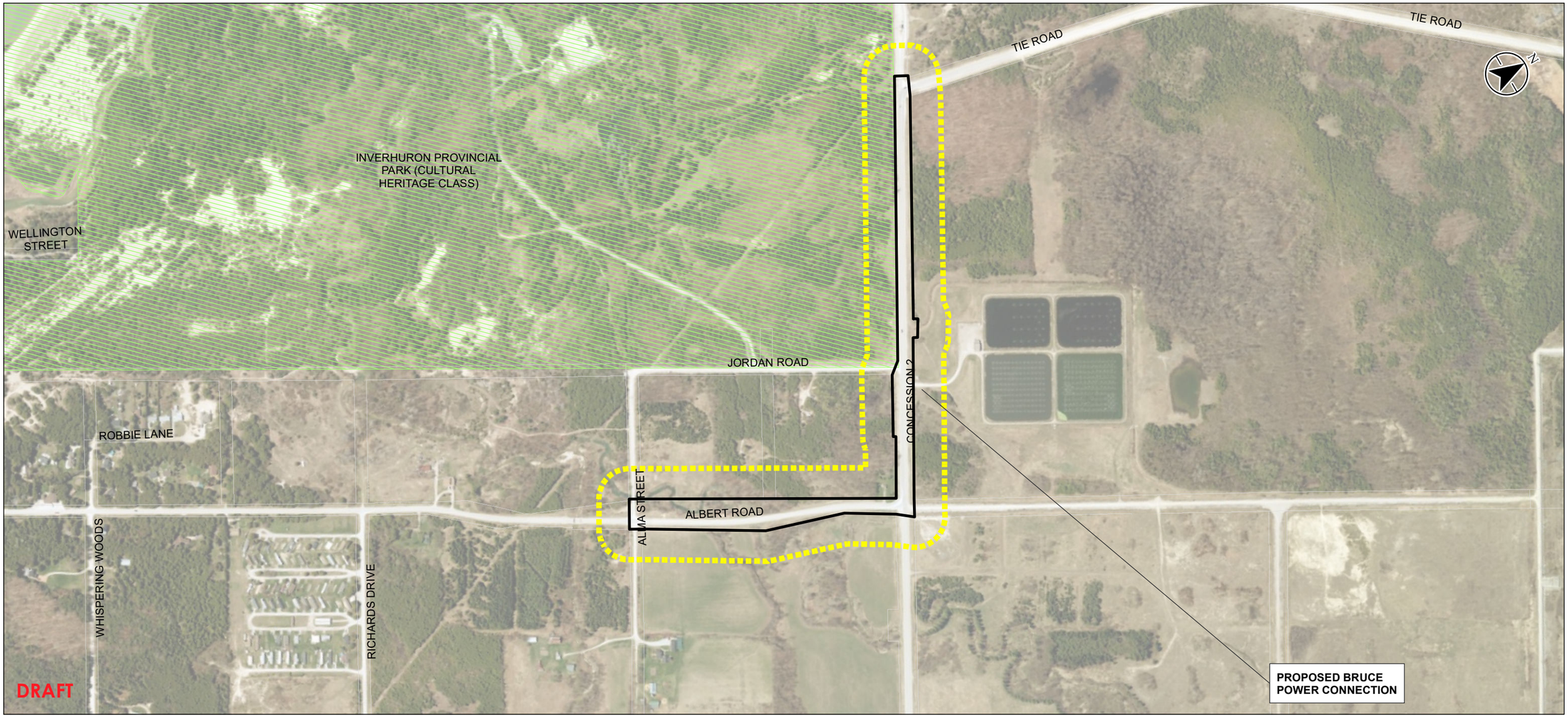
165630178 REVA
Prepared by JWW on 2023-08-17

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

Figure No.
2a

DRAFT

Title
Identified Potential Built Heritage Resources and Cultural Heritage Landscapes



Legend

50m Buffer | StudyArea | Potential Cultural Heritage Landscape

0 100 200 m

1:6,500 (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. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2010.

Stantec

Project Location
Municipality of Kincardine

165630178 REVA
Prepared by JWW on 2023-08-18

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

Figure No.
2b

DRAFT

Title
Identified Potential Built Heritage Resources and Cultural Heritage Landscapes

Reference: **Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment Study**

5 Recommendations

The Checklist identified two potential built heritage resources and one potential cultural heritage landscape within 50 metres of the Study Areas associated with the Project. Based on the current understanding of Project details, no direct or indirect impacts are anticipated for these potential resources. Therefore, no additional studies are required at this time. Should the design require use of additional lands in closer proximity to 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.

Regards,

STANTEC CONSULTING LTD.

Jenn Como BA (Hons)
Cultural Heritage Specialist
Phone: (226) 927-5319
Jenn.Como@stantec.com

Meaghan Rivard MA, CAHP
Senior Cultural Heritage Specialist
Phone: (226) 268-9025
Meaghan.Rivard@stantec.com

Attachments: A: MCM Checklist
B: Supplementary Documentation

6 References

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Municipality of Kincardine. 2021b. *Schedule 'A' – Official Plan.* Electronic Document: https://www.kincardine.ca/en/build-invest-grow/resources/Documents/2021-Official-Plan/Kincardine-Official-Plan-Amendments-with-updates---2022.pdf. Last Accessed: August 11, 2023.

Reference: Expansion of the Kincardine Water System and Treatment Plant Schedule C Municipal Class Environmental Assessment Study

Municipality of Kincardine. 2022. Designated Properties. Electronic Document: https://www.kincardine.ca/en/play-and-explore/designated-properties.aspx. Last Accessed: August 11, 2023.

Attachment A MCM Checklist

Project or Property Name

Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study

Project or Property Location (upper and lower or single tier municipality)

Municipality of Kincardine

Proponent Name

Municipality of Kincardine

Proponent Contact Information

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☑	☐

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Attachment B Supplementary Documentation

From:	Barboza, Karla (MCM) on behalf of Registrar (MCM)
To:	Como, Jenn
Cc:	Registrar (MCM); Harvey, Joseph (MCM)
Subject:	MCM Response: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study
Date:	Monday, July 24, 2023 4:54:28 PM
Attachments:	booster pumping station.png Kincardine Watermain Extension.png

MCM File 0018478 - Expansion of the Kincardine Water System and Treatment Plant

Hi Jenn

Hope this email finds you well.

As you may know, the Ministry developed screening checklists to assist property owners, developers, consultants and others to identify known and potential cultural heritage resources:

- Criteria for Evaluating Archaeological Potential
- Criteria for Evaluating Marine Archaeological Potential
- Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

I have used the document above (Built Heritage and Cultural Heritage Landscapes) in order to respond to your question:

- Question 3a. i. Is the property (or project area) identified, designated or otherwise protected under the Ontario Heritage Act as being of cultural heritage value e.g. a property that is designated by order of the Minister of Citizenship and Multiculturalism as being of cultural heritage value or interest of provincial significance [s.34.5]?
  MCM Response: To date, no properties have been designated by the Minister.
- Question 3a.v. Is the property (or project area) identified, designated or otherwise protected under the Ontario Heritage Act as being of cultural heritage value included in the Ministry of Citizenship and Multiculturalism's list of provincial heritage properties?
  MCM Response: At this time, we are not aware of any provincial heritage properties within or adjacent to the study area.

  Please note that if the subject lands or parts of the subject lands are owned or controlled by an Ontario Ministry or Prescribed Public Body (PPB) on behalf of the Crown (the list of PPBs is available as O. Reg. 157/10), a Ministry or PPB may have responsibilities under the Standards and Guidelines for Conservation of Provincial Heritage Properties.

Regarding other protected heritage properties (e.g., designated under Part IV or V of the OHA) within or adjacent to the study area, you should contact the Ontario Heritage Trust, Provincial Heritage Registrar at registrar@heritagetrust.on.ca or 416-212-7104 and the municipal clerk and/or planner.

MCM would appreciate if any technical cultural heritage studies (e.g., Cultural Heritage Assessment Report, Cultural Heritage Evaluation Report, Heritage Impact Assessment) be sent for our review as

part of the regulatory process.

I hope this helps. Let me know if you have any questions.

Regards,
Karla

Karla Barboza, RPP, MCIP, CAHP
Team Lead, Heritage | Heritage Planning Unit | **Ministry of Citizenship and Multiculturalism** | 416-660-1027 |
karla.barboza@ontario.ca

From: Como, Jenn <Jenn.Como@stantec.com>
Sent: July-21-23 6:39 PM
To: Registrar (MCM) <Registrar@ontario.ca>
Subject: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study

Dear Registrar,

Reference: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study

Stantec Consulting Ltd. has been retained by the Municipality of Kincardine to prepare a Class Environmental Assessment for the Expansion of the Kincardine Water System and Treatment Plant (the Project). The project will include construction of a booster pumping station off Stoney Island Crescent and a proposed watermain extension. The proposed watermain extension originates at the intersection of Alma Street and Albert Road and travels east along Albert Street before turning north then traveling along Concession Road 2 where it ends at the Bruce Power property line (at the intersection of Tie Road and Concession Road 2). The Study Area includes a 50 metre buffer around the location of the proposed booster pumping station and the proposed watermain extension.

The Study Area is located within the following Lots and Concessions in the former Bruce Township, now part of the Municipality of Kincardine, Bruce County:

- Lots 33 and 34, Concession A
- Lot A, Concession 2
- Lot A. Concession 3
- Lots 8-11, Lake Range

Could you please advise if there are any properties designated by the Minister or identified as provincial heritage properties within or adjacent to the Study Area?

For the ease of review, mapping has been provided depicting the proposed Study Area. The approximate location of the booster pumping station is indicated as a blue square on one of the attached images, while the proposed route for the watermain extension is depicted using a dotted pink line on the other. These maps appear in draft form and may contain confidential information not yet released to the public. We ask that you maintain confidentiality when responding to this inquiry.

Regards,

STANTEC CONSULTING LTD.

Jenn Como
Cultural Heritage Specialist and Material Culture Analyst

[she/her]
Cell: 226-927-5319
Jenn.como@stantec.com

From: Samuel Bayefsky
To: Como, Jenn
Subject: RE: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study
Date: Monday, July 24, 2023 12:09:35 PM
Attachments: image001.png

Hi Jenn,

I can confirm that the Ontario Heritage Trust does not own, nor protect via conservation easement, any properties within the or adjacent to the study areas provided.

Kind regards,

Sammy Bayefsky (he/him)
Real Property Coordinator
416-728-5104

ONTARIO HERITAGE TRUST
FIDUCIE DU PATRIMOINE ONTARIEN

From: Como, Jenn <Jenn.Como@stantec.com>
Sent: Friday, July 21, 2023 6:40 PM
To: Samuel Bayefsky <Samuel.Bayefsky@heritagetrust.on.ca>
Subject: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study

Dear Sammy,

Reference: Expansion of the Kincardine Water System and Treatment Plant Schedule C MCEA Study

Stantec Consulting Ltd. has been retained by the Municipality of Kincardine to prepare a Class Environmental Assessment for the Expansion of the Kincardine Water System and Treatment Plant (the Project). The project will include construction of a booster pumping station off Stoney Island Crescent and a proposed watermain extension. The proposed watermain extension originates at the intersection of Alma Street and Albert Road and travels east along Albert Street before turning north then traveling along Concession Road 2 where it ends at the Bruce Power property line (at the intersection of Tie Road and Concession Road 2). The Study Area includes a 50 metre buffer around the location of the proposed booster pumping station and the proposed watermain extension.

The Study Area is located within the following Lots and Concessions in the former Bruce Township, now part of the Municipality of Kincardine, Bruce County:

- Lots 33 and 34, Concession A
- Lot A, Concession 2
- Lot A. Concession 3
- Lots 8-11, Lake Range

Are you aware of any properties with an OHT conservation easement or any OHT-owned properties within or adjacent to the Study Area?

For the ease of review, mapping has been provided depicting the proposed Study Area. The approximate location of the booster pumping station is indicated as a blue square on one of the attached images, while the proposed route for the watermain extension is depicted using a dotted pink line on the other. These maps appear in draft form and may contain confidential information not yet released to the public. We ask that you maintain confidentiality when responding to this inquiry.

Regards,
STANTEC CONSULTING LTD.

Jenn Como
Cultural Heritage Specialist and Material Culture Analyst

[she/her]
Cell: 226-927-5319
Jenn.como@stantec.com

Stage 1 Archaeological Assessment: Municipality of Kincardine Water Supply Schedule C Class Environmental Assessment

Part of Various Lots and Concessions, Geographic Township of Kincardine and Geographic Township of Bruce, now Municipality of Kincardine, Bruce County, Ontario

January 24, 2024

Prepared for:
Municipality of Kincardine
1475 Concession 5, R.R. #5
Kincardine, Ontario N2Z 2X6

Prepared by:
Stantec Consulting Ltd.
300W-675 Cochrane Drive
Markham, Ontario L3R 0B8

Licensee: Darren Kipping
Licence Number: P422
Project Information Form Number:
P422-0040-2023
Project Number: 165630238

ORIGINAL REPORT

Table of Contents

List of Tables

List of Figures

Executive Summary

The Municipality of Kincardine retained Stantec Consulting Ltd. (Stantec) to conduct a Stage 1 archaeological assessment in support of the Municipality of Kincardine Water Supply Schedule C Class Environmental Assessment in the Municipality of Kincardine, County of Bruce, Ontario (the Project). The study area for the Project consists of five proposed site alternatives for a new booster pump station and a watermain extension along Albert Street between Alma Street and Concession Road 2, and along Concession Road 2 from Albert Street to Tie Road. The study area is in part of Lot 20, Concession A; Lots 33 to 35, Concession A; Lots 38 to 40, Concession A; Lot 44, Concession A; and Lot 47, Concession A, in the Geographic Township of Kincardine, County of Bruce; and, part of Lot A, Concession 2; Lots 8 to 11, Lake Ridge; and, Lot A, Concession 3, in the Geographic Township of Bruce, County of Bruce. The study area comprises 48.05 hectares,

This Stage 1 archaeological assessment was conducted under archaeological consulting license P422 issued to Darren Kipping, MA, of Stantec by the MCM. The Stage 1 property inspection took place on July 7, 2023, by Darren Kipping. Based on the proximity of features indicating archaeological potential parts of the study area were determined to have archaeological potential. Parts of the study area were determined to have low to no archaeological potential, and parts of the study area were previously subjected to an archaeological assessment (Stantec 2019, 2020).

Based on the findings presented in this report, Stantec recommends:

1. No further archaeological assessment for lands evaluated as having no or low archaeological.
2. No further archaeological assessment for parts of the study area subjected to previous archaeological assessment (Stantec 2019, 2020).
3. Stage 2 archaeological assessment of lands evaluated to have archaeological potential. The Stage 2 archaeological assessment will involve a test pit survey per Section 2.1 of the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The MCM is asked to review the results presented and accept this report into the *Ontario Public Register of Archaeological Reports*.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Project Manager	Nelson Oliveira, P.Eng.
Archaeological Licensee	Darren Kipping, MA (P422)
Field Director	Darren Kipping, MA (P422)
Report Production	Paul David Ritchie, MA (P392), Hillary Schwering (R1064)
Mapping	Ida Podrug, B.Sc., GIS Certificate
Quality Review	Ragavan Nithiyanantham, MA, CAHP (P390)
Independent Review	Parker Dickson, MA (P256)

Acknowledgements

Ministry of Citizenship and Multiculturalism	Robert von Bitter, Archaeological Data Coordinator

1 Project Context

1.1 Development Context

The Municipality of Kincardine retained Stantec Consulting Ltd. (Stantec) to conduct a Stage 1 archaeological assessment to support the Municipality of Kincardine Water Supply Schedule C Class Environmental Assessment in the Municipality of Kincardine, County of Bruce, Ontario (the Project) (Figure 1-1 and Figure 1-2). The Stage 1 archaeological assessment was triggered by the *Environmental Assessment Act* (Government of Ontario 1990a).

The study area for the Project consists of five proposed site alternatives for a new booster pump station and a watermain extension along Albert Street between Alma Street and Concession Road 2, and along Concession Road 2 from Albert Street to Tie Road (Figure 2-1 to Figure 2-5). The study area is in part of Lot 20, Concession A; part of Lots 33 to 35, Concession A; part of Lots 38 to 40, Concession A; part of Lot 44, Concession A; and part of Lot 47, Concession A, in the Geographic Township of Kincardine, County of Bruce; and, part of Lot A, Concession 2; part of Lots 8 to 11, Lake Ridge; and, part of Lot A, Concession 3, in the Geographic Township of Bruce, County of Bruce, Ontario.

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out by the Ministry of Citizenship and Multiculturalism (MCM) in the 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of Stage 1 archaeological assessment are to:

- Provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions
- Evaluate the study area's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property
- Recommend appropriate strategies for the Stage 2 survey.

To meet these objectives, Stantec archaeologists:

- Reviewed relevant archaeological, historical, and environmental literature pertaining to the study area
- Reviewed land use history, including pertinent historical maps
- Examined the *Ontario Archaeological Sites Database* to determine the presence of registered archaeological sites in and around the study area
- Queried the *Ontario Public Register of Archaeological Reports* to determine if previous archaeological assessments have occurred within the study area or 50 metres from the study area.

The Municipality of Kincardine provided permission to enter the study area to identify features of archaeological potential.

1.2 Historical Context

The term "contact" is commonly employed as a temporal reference point in discussions concerning Indigenous archaeology in Canada, specifically referring to encounters between Indigenous and European cultures. It signifies a continuous and evolving process rather than a distinct moment. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016).

1.2.1 Pre-contact Indigenous Resources

It has been demonstrated that Indigenous people began occupying southern Ontario as the Laurentide glacier receded as early as 11,000 years ago (Ellis and Ferris 1990, 13). Much of what is understood about the lifeways of these Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based on observed changes to formal lithic tools. They are separated into the Early Paleo, Late Paleo, Early Archaic, Middle Archaic, Late Archaic, and Terminal Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration.

It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. The current understanding of Indigenous archaeological culture is summarized in Table 1, based on Ellis and Ferris (1990). The provided periods are based on the years “Before Present” (BP) calendar notation system, wherein BP stands for the years before the present. The “Present Year” is set in the calendar year 1950.

Table 1: Generalized Cultural Chronology of the Study Area

Period	Characteristics	Time Period	Comments
Early Paleo	Fluted Projectiles	10,950 – 10,350 BP	Spruce parkland/caribou hunters
Late Paleo	Hi-Lo Projectiles	10,350 – 9,950 BP	Smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	9,950 – 7,950 BP	Slow population growth
Middle Archaic	Brewerton-like points	7,950 – 4,450 BP	Environment similar to present
Late Archaic	Narrow Points	4,450 – 3,750 BP	Increasing site size
	Broad Points	3,750 – 3,450 BP	Large chipped lithic tools
	Small Points	3,450 – 3,050 BP	Introduction of bow hunting
Terminal Archaic	Hind Points	3,050 – 2,900 BP	Emergence of true cemeteries
Early Woodland	Meadowood Points	2,900 – 2,350 BP	Introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	2,350 – 1,400 BP	Increased sedentism
	Princess Point	1,400 – 1,050 BP	Introduction of corn
Late Woodland	Early Late Woodland	1,050 – 650 BP	Emergence of agricultural villages
	Middle Late Woodland	650 – 550 BP	Long longhouses (100+ metres)

Period	Characteristics	Time Period	Comments
	Late Late Woodland	550 – 350 BP	Tribal warfare and displacement

Between 10,950 and 9,950 BP, Indigenous populations were sustained by hunting, fishing, and foraging and lived a relatively nomadic existence across an extensive geographic territory. Despite these wide territories, social ties were maintained between groups. One method of maintaining social ties was through gift exchange, evident through exotic lithic material documented on many sites (Ellis 2013, 35-40).

By approximately 9,950 BP, evidence existed and became more common for producing ground-stone tools such as axes, chisels, and adzes. These tools themselves are believed to be indicative specifically of woodworking. This evidence can be extended to indicate an increased craft production and, arguably, craft specialization. This latter statement is also supported by evidence dating to approximately 8,950 BP of ornately carved stone objects which would be laborious to produce and have explicit aesthetic qualities (Ellis 2013, 41). This indirectly indicates changes in the social organization, which permitted individuals to devote time and effort to craft specialization. Since 9,950 BP, the Great Lakes basin experienced a low-water phase, with shorelines significantly below current lake levels (Stewart 2013, Figure 1.1.C). It is presumed that the majority of human settlements would have been focused along these former shorelines. At approximately 8,450 BP, the climate had warmed considerably since the recession of the glaciers, and the environment had grown more similar to the present day. By approximately 6,450 BP, evidence exists from southern Ontario for using native copper, i.e., naturally occurring pure copper metal (Ellis 2013, 42). The recorded origin of this material along Lake Superior's north shore indicates extensive exchange networks across the Great Lakes basin.

At approximately 5,450 BP, the isostatic rebound of the North American plate following the melt of the Laurentide glacier had reached a point that significantly affected the Great Lakes basin watershed. Prior to this, the Upper Great Lakes had drained down the Ottawa Valley via the French and Mattawa River valleys. Following this shift in the watershed, the drainage course of the Great Lakes basin changed to its present course. This also prompted a significant increase in water-level to approximately current levels (with a brief high-water period); this change in water levels is believed to have occurred catastrophically (Stewart 2013, 28-30). This change in geography coincides with the earliest evidence for cemeteries (Ellis 2013, 46). By 4,450 BP, the earliest evidence exists for constructing fishing weirs (Ellis et al. 1990, Figure 4.1). However, the construction of fishing weirs could have occurred as early as 8,600 BP (Stevens 2004). Regardless, the construction of fishing weirs would have required a large amount of communal labour and are indicative of the continued development of the social organization and communal identity. The large-scale food procurement at a single location also has significant implications for the permanence of settlement within the landscape. This period is also marked by further population increase; by 3,450 BP, evidence exists for substantial permanent structures (Ellis 2013, 45-46).

By approximately 2,900 BP, the earliest evidence exists for populations using ceramics. Populations are understood to have continued to exploit natural resources seasonally. However, this advent of ceramic technology correlated with the intensive exploitation of seed foods such as goosefoot and knotweed and mast such as nuts (Williamson 2013, 48). The use of ceramics implies changes in the social organization of food storage, cooking, and diet. Fish also continued to be an important facet of the economy at this

time. Evidence continues to exist for the expansion of social organization (including hierarchy), group identity, ceremonialism (particularly in burial), interregional exchange throughout the Great Lakes basin and beyond, and craft production (Williamson 2013, 48-54). Indigenous economy and lifeways probably remained similar to the preceding periods. These communities living within the region of the study area are understood to have spoken an Algonquian language, probably similar to Anishinaabemowin, and possessed many cultural traits similar to the historic Odawa Nation. Summer fishing settlements, such as the Winters site approximately one kilometre from the study area, would have been the focal settlements for communities, probably occupied by groups of up to 300 people. These settlements would have broken up for the winter for family groups to move to winter hunting camps inland (Warrick 2013, 67). In the late 14th century, ancestral Wendat-Tionontate populations began settling along the southern shore of Georgian Bay (Birch 2015). This new proximity between Algonquian and Iroquoian peoples brought changes in culture and subsistence. Archaeologically, these are most visible in terms of material culture and botanical remains indicating the exchange of materials such as ceramics and foods such as maize into Algonquian communities (Fox 1990, 463; Williamson 2013, 57).

1.2.2 Post-contact Indigenous Resources

At the turn of the 17th century, the region of the study area is understood to have been occupied by the Odawa (Ottawa), possibly by the Sinago band (Fox 1990, 457-461, 473). The Odawa were Anishinaabeg-speaking agriculturalists who actively engaged in regional trade. Several archaeological settlements dating to the 17th century have been documented within northern Bruce County (Fox 1990, 461-462). In 1649, the Seneca with the Mohawk led a campaign into southern Ontario and dispersed the Huron-Wendat, Tionontati (Petun), and Atawandaron (Neutral) (Heidenreich 1978). During this period, some Odawa populations dispersed from the Bruce Peninsula and moved to the lands around the Straits of Mackinac. In 1670/1671, some Odawa populations moved to Manitoulin Island and some Mississauga populations (an Ojibway nation) (Feest and Feest 1978, 772-773; Rogers 1978, 761). Together with the Pottawatomi, the Ojibway and Ottawa constituted a political confederacy known as the Three Fires (Feest and Feest 1978, 777). In the latter part of the 17th century, the region of the study area was a contested territory between Ojibway nations and the Mohawk Iroquois Nation. Ojibway oral tradition records several pitched battles throughout Bruce County, focused up the Saugeen River Valley (Schmalz 1991, 22-23).

By the turn of the 18th century, the Ojibway people had become established across southern Ontario. Since the turn of the 18th century, the Ojibway economy has focused on fishing and the fur trade, supplemented by agriculture and hunting (Rogers 1978). The study area falls within the traditional territory of the Saugeen Ojibway Nation (SON), who continues to live in Bruce County today (Saugeen Ojibway Nation Environment Office 2021). The SON consists of the Saugeen Ojibway First Nation and the Chippewas of Nawash Unceded First Nation. The people of SON reside in the SON Traditional Territory, known as *Anishnaabekiing*. This traditional territory includes the Saugeen Peninsula (also known as the Bruce Peninsula), the waters and islands of Lake Huron and Georgian Bay and extends to the south and the east into the watersheds of Maitland and Nottawasaga Rivers (Environmental Office 2011). This traditional territory, therefore, includes the study area.

Despite the differentiation among these Algonkian groups in Euro-Canadian sources, there was a considerably different view by Algonkian groups concerning their self-identification during the first few centuries of European contact. These peoples relied upon kinship ties that cut across European notions of nation identity (Bohaker 2006, 277-283). Many British-imposed nation names, such as Chippewa, Odawa, Pottawatomi, or Mississauga, artificially separated how self-identified Anishinaabeg classified themselves (Bohaker 2006, 1-8). As a result, a number of these groups were culturally and socially more alike than contemporary European documentation might indicate.

The fur trade expansion led to increased interaction between European and Indigenous people and, ultimately, intermarriage between European men and Indigenous women. During the 18th century, the progeny of these marriages began to identify no longer with either their paternal or maternal cultures but as Métis. The ethnogenesis of the Métis progressed with establishing distinct Métis communities along the major waterways in the Great Lakes of Ontario. The Métis community in the region of the study area is first referenced historically in 1798 and was primarily focused at Southampton. By 1815, many Métis families had moved to Kincardine and elsewhere along the Lake Huron shore. The Métis people have historically lived throughout Ontario (McArthur et al. 2013, 41; McNab 2005, 11; Métis Nation of Ontario 2023; Stone and Chaput 1978, 607-608).

The study area is located within the extent of the 1836 Saugeen Treaty between the Saugeen and the English Government (“the Crown”) (Figure 3; Crown-Indigenous Relations and Northern Affairs Canada 2016). While it is difficult to delineate treaty boundaries today, Figure 3 provides an approximate outline of the treaty, also known as Treaty Number 45 ½ (identified by the letter “W”).

1.2.3 Euro-Canadian Resources

Bruce County was established in 1849 and named in honour of James Bruce, Lord Elgin, who was Governor-General of Canada at that time. Bruce County is bounded in the west by Lake Huron, in the east by Georgian Bay and Grey County, and in the south by Huron County. The northern portion of Bruce County is a peninsula separating Lake Huron and Georgian Bay. The county was divided into sixteen townships (Mika and Mika 1977:285-286). Bruce County was surveyed in 1848 and was opened to European settlers that same year. By the end of the summer of 1848, a dozen families had taken up land at the small settlement of Kincardine, in the southern end of the county. A further influx of settlers, most of them Scottish, came to the vicinity of Kincardine in 1849. Settlement in the northern portion of the county slowly followed.

1.2.3.1 Bruce Township

Bruce Township was settled by European populations in 1850, and the township was surveyed in 1851. The earliest European settlement in the township focused on the Lake Huron settlement of Inverhuron, formerly known as the distinct villages of Fort Bruce and Malta and which was a hub for the Canadian Lake Superior boat line. The municipal government in Bruce Township was created in 1855 (Belden & Co. 1880).

1.2.3.2 Kincardine Township

Kincardine Township was first settled by European populations in 1848. Early settlement began at the site of Kincardine and focused outward along Durham Road. Settlement progressed rapidly, and by 1850 every lot along Durham Road within the township was occupied. By 1880, the Town of Kincardine was the largest settlement in the township, besides which the only settlements were the villages of Armow, Bervie, and Glammis (Belden & Co. 1880).

1.2.3.3 Historical Map Review

Historical surveyors' maps from the original township surveys of Bruce and Kincardine townships (Figure 4 and Figure 5) were reviewed (Bridgland 1851; Miller 1854). These documents provided information concerning the boundaries of concessions, lots, road allowances, and geographic details such as swamps, beaver meadows, watercourses, and ridges/banks (frequently only where they intersected with the surveyor's transect). Generally, these maps provide information on the landscape of the townships before European occupancy, although the proportions and scale of some of the land features are only approximate. The study area intersects with numerous historical watercourses (Figures 4 to 7). In particular, the 1851 *Kincardine, Bruce District* map (Bridgland 1851) indicates that the study area includes an early historical clearing and farmstead and is in proximity to several cleared lands and one farmstead (Figure 4). Additionally, portions of the study area run along or are adjacent to historical transportation routes.

The 1880 *Bruce Supplement in Illustrated Atlas of the Dominion of Canada* (Belden & Co. 1880) was also reviewed for historical information related to the townships of Bruce and Kincardine (Figure 6 and Figure 7). These maps provide limited information on land tenure and historical features throughout the historical townships. Illustrated information from the 1880 maps is summarized below in Table 2 and Table 3.

Table 2: Landowner Information for Study Area based on the 1880 Kincardine Township Map

Lot	Concession	Landowner	Features
20	A	Not listed	No historical feature indicated within the study area
33	A	D. Rowan	No historical feature indicated within the study area, structure located adjacent to study area
34	A	D. Rowan	No historical feature indicated within the study area
38	A	M. McLeod	No historical feature indicated within the study area
39	A	Not listed	No historical feature indicated within the study area
40	A	J. Baird	No historical feature indicated within the study area, a structure is located across the road east of the study area
44	A	Not listed	Schoolhouse (located outside study area; see Figure 7)
47	A	J. Mather	No historical feature indicated within the study area, a structure is located on the lot near the study area

The 1880 Bruce Township map does not list the landowner information. Instead, Lot A Concession 2, Lot A Concession 3, and Lots 10 and 11 of Lake Range are indicated as “Inverhuron Town Plot”

In discussing the late 19th century historical mapping, historical county atlases were produced primarily to identify factories, offices, residences, and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997, 100). As such, structures were not accurately depicted or placed (Gentilcore and Head 1984).

A review of historical mapping also has inherent accuracy difficulties due to potential errors in georeferencing. Georeferencing is conducted by assigning spatial coordinates to fixed locations and using these points to reference the remainder of the map spatially. Due to changes in “fixed” locations over time (e.g., road intersections, road alignments, watercourses, shorelines, etc.), errors/difficulties of scale and the relative idealism of the historical cartography, historical maps may not translate accurately into real space points. This may provide obvious inconsistencies during historical map review.

1.3 Archaeological Context

1.3.1 Natural Environment

The study area is located within the Huron Fringe physiographic region within sand plain and beach landforms. The Huron Fringe physiographic region is a narrow strip stretching from Sarnia to Tobermory along the Lake Huron shore. It is a wave-cut terrace cut by glacial lakes Algonquin and Nipissing and contains associated boulder pavement, gravel bars and sand dunes. The region covers approximately 1,127 square kilometres (Chapman and Putnam 1984, 161).

Sand plains are glaciolacustrine features and are deposited by higher energy, shallow waters, and indicate former lakebeds (Karrow and Warner 1990, 5). Beaches and shorecliffs indicate former high-water levels. The sand plain and beach landforms correspond to the former lakebeds of glacial lake Algonquin and the former Nipissing-phase high-stand of Lake Huron (Chapman and Putnam 1984, 70). Lake Algonquin spanned approximately 9300 to 8500 BCE (Karrow and Warner 1990, 15), and the Nipissing-phase high-stand of Lake Huron spanned 3300-1500 BCE (Herdendorf 2013).

The study area is underlain by a variety of quaternary deposits, including coarse-textured glaciolacustrine littoral deposits, sand-silt textured stone-poor till deposits overlaying Paleozoic terrain, and Holocene-era alluvial deposits (Ontario Geological Survey [OGS] 2010). The study area is within 300 metres of shore bluffs (OGS 2010).

The study area includes a wide variety of different soils, organized here by geographic county, including Brookston clay loam, Berrien sandy loam, Listowel loam, Listowel loam – stoney phase, muck soils, Bottom Lands, and Sullivan sand (Department of Agriculture 1983). These soils are described in greater detail below.

Bottom lands occur on low-lying topography adjacent to stream courses and are subject to flooding. These soils are typically recent in deposition and lack profile development, consisting of successive layers of silt, sand, and clay intermixed with organic matter. These soils are naturally vegetated by elm, ash, willow, cedar, bulrushes, sedges, and marsh grasses (Hoffman and Richards 1954, 79).

Brookston clay loam is a poorly drained soil derived from clay till intermixed with lacustrine deposits. The soil is very fertile and occurs on very gently sloping topography. The natural vegetation consists of elm, ash, and cedar (Hoffman and Richards 1954, 51-52).

Berrien sandy loam is an imperfectly drained soil that occurs on smooth, gently sloping topography. The depth of sandy overburden above the clay till is variable. The natural vegetation comprises soft maple, elm, ash, hemlock, cedar, and spruce (Hoffman and Richards 1954, 69-70).

Listowel loam is an imperfectly drained soil that occurs on smooth, gently sloping topography. Stoniness is variable, and the soil is very resistant to erosion. The natural vegetation comprises soft maple and elm (Hoffman and Richards 1954, 42-43).

Listowel loam – stoney phase is similar in composition to Listowel loam but with a large number of stone inclusions occurring at and near the surface. Listowel loam – stoney phase is generally found near the lakeshore in Bruce and Saugeen Townships.

Muck soil consists of well-decomposed organic material and occurs in depressional areas. It is very poorly drained. The natural vegetation consists of elm, ash, white cedar, tamarack, and sedges (Hoffman and Richards 1954, 79).

Sullivan sand is a well-drained soil derived from calcareous sandy outwash material and occurs on smooth, gently sloping topography. The profile occasionally includes gravel strata. The natural vegetation consists of hard maple and beech (Hoffman and Richards 1954, 60-61):

The study area is located within 300 metres of Lorne Creek, Little Sauble River, and two unnamed tributaries of Lake Huron and Lake Huron itself (Figure 1-1 and Figure 1-2). The historical mapping also shows numerous tributaries (Figures 4-7).

1.3.2 Previously Identified Archaeological Sites and Surveys

MCM's registered archaeological site records were consulted to compile an inventory of archaeological resources. In Ontario, information concerning archaeological sites is stored in the *Ontario Archaeological Sites Database* and maintained by the MCM. In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952. The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2

kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lowercase letters. Individual sites are assigned a unique, sequential number as they are registered (Borden 1952). The study area under review is located within Borden block BbHj.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990b). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MCM will provide information concerning site location to the party or an agent of the party holding title to a property or a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown 16 registered archaeological sites within a one-kilometre radius of the study area (Government of Ontario 2023a).Table 3 details the previously registered archaeological sites within one kilometre of the study area. Sites in **bold** are located within 300 metres of the study area. These sites are described in further detail below. No sites were identified within 50 metres of the study area.

Table 3: Registered Sites within One Kilometre of the Study Area

Borden Number	Site Name	Site Type	Cultural Affiliation
BbHj-1	Fritz	Campsite	Indigenous (Late Archaic period)
BbHj-5	Archaic T7	Burial	Indigenous (Archaic period; Middle Woodland period)
BbHj-6	**Upper Mackenzie**	**Campsite**	**Indigenous (Archaic period)**
BbHj-9	**Upper Mill**	**Undetermined**	**Not on record with MCM**
BbHj-10	**McFarlane**	**Undetermined**	**Not on record with MCM**
BbHj-11	Ochre Burial	Burial mound	Indigenous (pre-Contact period)
BbHj-13	Fourth Hole	Findspot	Not on record with MCM
BbHj-16	Rocky Ridge	Undetermined	Indigenous (Archaic period)
BbHj-17	**Not applicable (n/a)**	**Burial**	**Undetermined**
BbHj-18	**Bracken**	**Camp/campsite**	**Indigenous (Late Archaic period)**
BbHj-20	**Campbell**	**Camp/campsite**	**Indigenous (Indeterminate)**
BbHj-26	**McLean**	**Farmstead**	**Euro-Canadian**
BbHj-36	Harvey Lane	Camp/campsite	Indigenous (pre-Contact period)
BbHj-54	Asin Bezhik	Findspot	Indigenous (Indeterminate)
BbHj-55	Asin Niizh	Findspot	Indigenous (Indeterminate)
BbHj-56	Asin Nswi	Findspot	Indigenous (Indeterminate)

A 1950 survey of southwestern Ontario by Thomas E. Lee, Ken Dawson and W. Taylor identified ten archaeological sites including three sites (BbHj-6, BbHj-9, BbHj-10) within 300 metres of the study area. Upper Mackenzie (BbHj-6) is an Archaic period campsite however the site information is not on record with the MCM for Upper Mill (BbHj-9) or McFarlane (BbHj-10).

Site BbHj-17 is recorded as a burial site identified by a private cottage owner in 1970 (Government of Ontario 1985). No coordinates were recorded when the site was registered. The site is described as behind a private cottage on Drop Association Road; however, this street name does not exist. The *Site Record Form* states that the registered site location is an estimate only (Government of Ontario 2023a).

The Bracken site (BbHj-18) was first recorded in 1981 by Bill Fox (Government of Ontario 1981). It was observed in Inverhuron Provincial Park and reported to consist of a surface scatter of fire-cracked rock and lithic artifacts. The site was dated to the Late Archaic period by its position relative to the Nipissing-phase Lake Huron strandline (Government of Ontario 1981). The site was revisited in 1999 by Lisa Rankin (Government of Ontario 1999). The site's size was recorded as approximately 30 square metres. The precise location of the Bracken site (BbHj-18) is unknown. The coordinates recorded by Bill Fox are rounded to the nearest degree-minute (Government of Ontario 1981), which equals a margin of error of approximately 2.62 kilometres. Lisa Rankin reports taking coordinates on her visit; however, her coordinates place the site outside of Inverhuron Provincial Park and are therefore inaccurate. The coordinates recorded in the *Ontario Archaeological Sites Database* (Government of Ontario 2023a) place the site outside Inverhuron Provincial Park within the intersection of Tie Road and Concession Road 2. These coordinates are, therefore, inaccurate. The MCM states in the *Ontario Archaeological Sites Database* that the recorded site coordinates have a margin of error of 100 metres (Government of Ontario 2023a).

Campbell (BbHj-20) is approximately 300 metres northeast of the study area however the site information is not on record with the MCM.

The McLean site (BbHj-26) is a Euro-Canadian farmstead dated to the mid-19th century. It is located approximately 200 metres northeast of the study area. First documented in 2003 during a Stage 1-2 archaeological assessment (Government of Ontario 2023a), the site has also been subject to Stage 3 assessment and Stage 4 excavations.

An examination of the *Ontario Public Register of Archaeological Reports* identified two previous archaeological assessments within 50 metres of the study area (Government of Ontario 2023b). These reports are reviewed in more detail below.

Stantec (2019) conducted a Stage 1 archaeological assessment as part of the Southern Bruce Natural Gas Pipeline project on behalf of EPCOR under the project direction of Paul David Ritchie (Project Information Form [PIF] number P392-0189-2016). The Stantec (2019) assessment evaluated part of the current study area as possessing low archaeological potential due to previous disturbance and recommended no further archaeological assessment for these areas.

Stantec (2020) conducted a Stage 1-2 archaeological assessment in the advance installation of a natural gas pipeline from as part of the Kincardine to Bruce Road 20 natural gas pipeline on behalf of EPCOR under the project direction of Arthur Figura (PIF number P084-0341-2019). The Stantec (2020) assessment evaluated part of the current study area as possessing low archaeological potential due to previous disturbance and recommended no further archaeological assessment for these areas.

Stantec (2023) conducted a Heritage Overview of the study area, their results were reviewed as part of the archaeological and heritage potential. The results indicated no heritage resources within 50 metres of the study area.

1.3.3 Existing Conditions

The study area near Inverlyn Crescent North (Figure 2-1) consists of an open field that is partially manicured and overgrown with shrubs. It is situated behind existing residential developments.

The study area near Stoney Island Crescent (Figure 2-2) has two parts. One is the parcel surrounding an active stormwater management pond and is partially manicured and overgrown with trees. It includes a private driveway which accesses cottage lots behind the property. The other part of the Stoney Island Crescent study area is a 30-metre buffer on the Bruce Road 23 right-of-way (ROW). It includes the Bruce Road 23 ROW, an existing municipal well pumphouse (Photo 2), parts of neighbouring residential properties, overgrown woodlot, and agricultural fields.

The study area located west of the intersection of Bruce Road 23 and Concession Road 7 (Figure 2-3) consists of the Stoney Island Conservation Area. The area is forested and currently used for hiking and cross-country ski trails. This part of the study area includes a large, steeply sloped glacial shorecliff running approximately northeast to southwest across the entire property.

The study area located at Kinhuron Road (Figure 2-4) consists of the graded bank of the Kinhuron Road road-cut descending from Bruce Road 23 to residential development on the lakeshore. The Kinhuron Road study area also includes a wooded portion at the top of the road-cut.

The study area at Parkwood Road (Figure 2-4) consists of a small, paved area with a small wooden shed and a Bruce Telecom utility building.

The study area along Albert Road and Concession Road 2 (Figure 2-5) consists of the Albert Road ROW from Alma Street in the south to Concession Road 2 in the north and the Concession Road 2 ROW from Albert Road in the east to Tie Road in the west.

2 Field Methods

The Stage 1 archaeological assessment compiled available information about the registered and potential archaeological resources within the study area, which included a property inspection to evaluate the study area for areas of archaeological potential, areas of disturbance, areas of poor drainage, areas of steep slope, or areas retaining low to no archaeological potential. The Stage 1 archaeological assessment was conducted under archaeological consulting license P422 issued to Darren Kipping, MA, of Stantec by the MCM. The Stage 1 archaeological assessment was completed under PIF number P422-0040-2023. The Stage 1 property inspection took place on July 7, 2023, by Darren Kipping, MA. During the property inspection, the weather was warm and sunny. The weather, visibility, and lighting conditions were sufficient for the property inspection.

Overall, the study area comprises 48.05 hectares. The entire study area and its periphery were inspected. Representative photographs were taken, where safe to do so, to document the condition of the study area with respect to archaeological potential. Photo 1 to Photo 12 document the existing conditions within the study area.

3 Analysis and Conclusions

3.1 Analysis of Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MCM (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Government of Ontario 2011).

Potable water is the single most important resource for any extended human occupation or settlement, and since water sources in Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for evaluating archaeological site potential. Distance to water is one of the most commonly used variables for predictive modelling of archaeological site locations. Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, when considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential.

As discussed above, distance to water is an essential factor in archaeological potential modelling. When evaluating distance to water, it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MCM categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, and creeks
- Secondary water sources: intermittent streams and creeks, springs, marshes, and swamps
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, and sandbars stretching into marsh.

The study area includes the Little Sauble River and is in proximity to Lorne Creek and other unnamed tributaries of Lake Huron. The study area also includes both the Spring Creek and Big Creek. The study area also includes the former shoreline of glacial lake Algonquin (Photo 5) and is in proximity to the former shoreline of the Nipissing-phase high stand of Lake Huron. Additional ancient and relic tributaries of other primary and secondary water sources may have existed but are not identifiable today or indicated on historical mapping. In addition to the proximity of Lake Huron and numerous other water sources to the study area, the soils located within the study area are suitable for early agricultural practices.

Seven archaeological sites are registered within 300 metres of the study area. Two of which (Site BbHj-17 and the Bracken site [BbHj-18]) are registered to be located within 70 metres of the study area; however, as discussed in Section 1.3.3, the exact locations of both these sites are unknown and no sites were identified within 50 metres of the study area.

Archaeological potential can be extended to areas of early settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990c) or property that local histories or informants have identified with possible historical events, activities, or occupations. Historical mapping demonstrates that the study area follows early concession roads; however, information on historical features and tenure is limited. The historical mapping does show that the study area includes an early historical clearing and farmstead. Much of the established road and rail networks and agricultural settlements from that time are still visible today.

Considering the above, the study area is considered to possess archaeological potential.

Parts of the study area were documented in the property inspection as previously disturbed (Photo 2 to Photo 4, and Photo 7 to Photo 12) or steeply sloped (Photo 5). These parts of the study area are considered to have low archaeological potential.

Parts of the study area have been previously subject to archaeological assessment (Stantec 2019, 2020), and no further archaeological assessment was recommended.

3.2 Conclusions

The Stage 1 archaeological assessment, involving background research and a property inspection, determined that parts of the study area retain archaeological potential.

Two registered archaeological sites (Sit BbHj-17 and the Bracken site [BbHj-18]) are within 70 metres of the study area. The exact locations of both these sites are unknown.

Parts of the study area have been previously assessed (Stantec 2019, 2020). These parts of the study area were recommended as not requiring further archaeological assessment.

The Stage 1 archaeological assessment also determined that portions of the study area possess low to no archaeological potential due to deep and extensive disturbance related to the construction of residential developments, civic infrastructure, or road ROWs, or being steeply sloped.

4 Recommendations

Based on the findings presented in this report, Stantec recommends:

1. No further archaeological assessment for lands evaluated as having no or low archaeological.
2. No further archaeological assessment for parts of the study area subjected to previous archaeological assessment (Stantec 2019, 2020).
3. Stage 2 archaeological assessment of lands evaluated to have archaeological potential. The Stage 2 archaeological assessment will involve a test pit survey per Section 2.1 of the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

To summarize for areas which retain archaeological potential, lands accessible for ploughing, the Stage 2 physical survey of the study area will involve the pedestrian survey method. In these instances, agricultural and accessible land must be ploughed in advance of the archaeological assessment. Ploughing must be deep enough to provide total topsoil exposure, but not deeper than previous ploughing, and must be able to ensure at least 80% ground surface visibility. For lands inaccessible for ploughing, the Stage 2 physical survey of the study area will consist of the test pit survey method. The MCM standards require that each test pit be at least 30 centimetres in diameter, excavated to at least five centimetres into subsoil, and have all soil screened through six-millimetre hardware cloth to facilitate the recovery of archaeological resources.

The MCM is asked to review the results presented and accept this report into the *Ontario Public Register of Archaeological Reports*.

5 Advice on Compliance with Legislation

In accordance with Section 7.5.9 of the MCM's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), the following standard statements are a required component of archaeological reporting and are provided from the MCM's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011).

This report is submitted to the Minister of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18 (Government of Ontario 1990c). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area of a development proposal have been addressed to the satisfaction of the MHSTCI, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* (Government of Ontario 1990c) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the *Ontario Public Register of Archaeological Reports* referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990c)

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* (Government of Ontario 1990c) 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* (Government of Ontario 1990c)

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 (Government of Ontario 2002), 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 remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990c) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

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7 Images

7.1 Photographs

Photo 1: View of study area, facing northeast

Photo 2: View of existing well pumphouse, facing northwest

Photo 3: View of existing stormwater management pond, facing northwest

Photo 4: View of existing private driveway, facing northwest

Photo 5: View of steeply sloped area from the glacial lake shorecliff, facing southwest

Photo 6: View of study area, facing northwest

Photo 7: View of Kinhuron Road road-cut bank, facing northwest

Photo 8: View of existing Bruce Telecom utility building and graded lot, facing northwest

Photo 9: View of Albert Road ROW, facing northeast

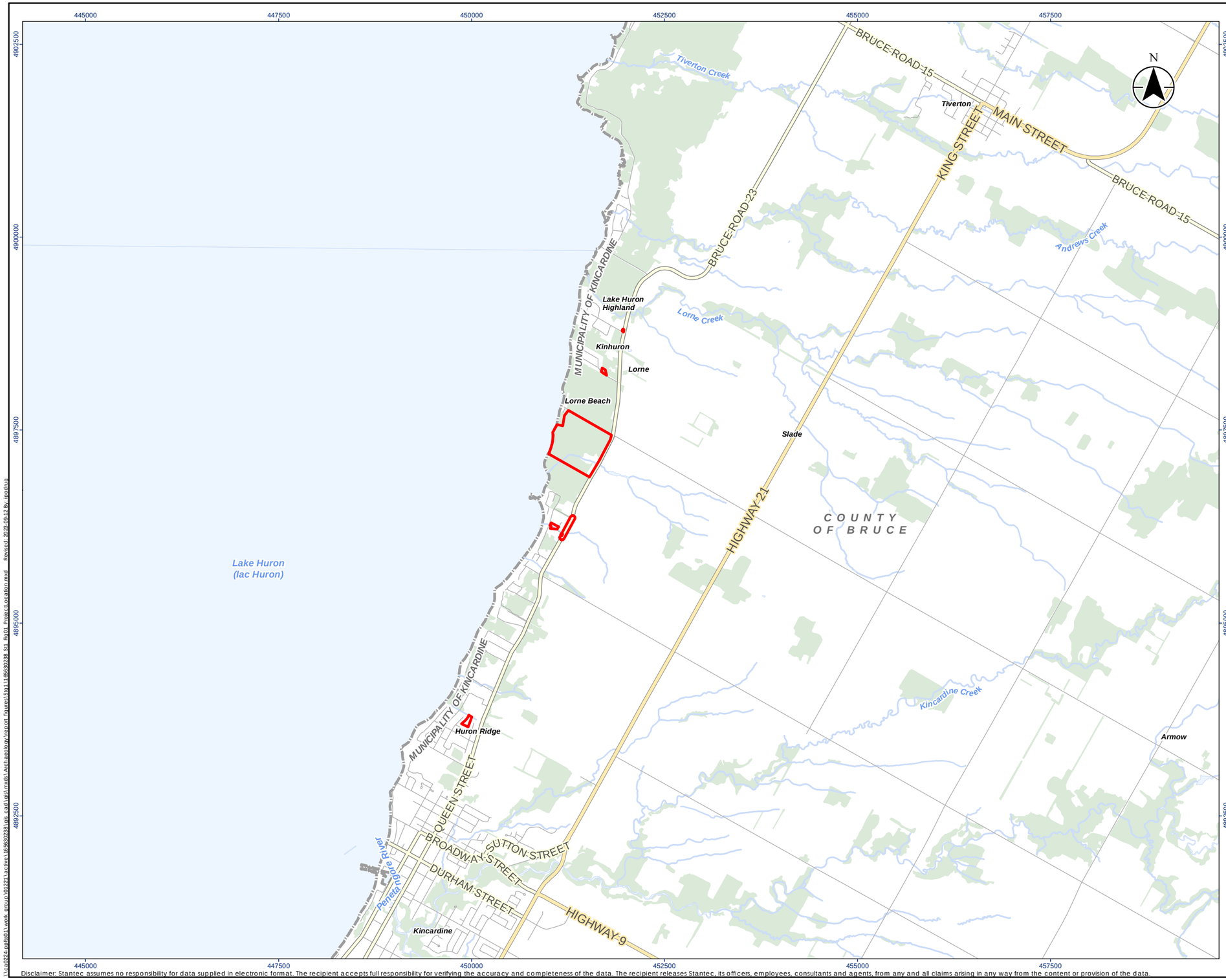
Photo 10: View of Albert Road ROW, facing southwest

Photo 11: View of Concession Road 2 ROW, facing northwest

Photo 12: View of Concession Road 2 ROW, facing southeast

8 Maps

Maps of the Stage 1 archaeological assessment of the study area follow on succeeding pages.



Stantec

Legend

- Highway
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary
- Municipal Boundary, Lower
- Waterbody
- Wooded Area
- Study Area

0 1 2 km

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Notes

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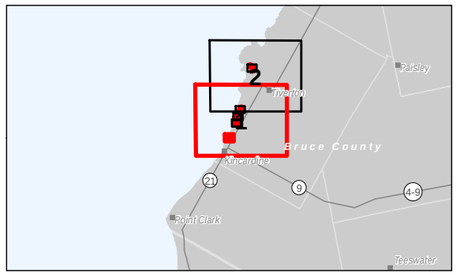


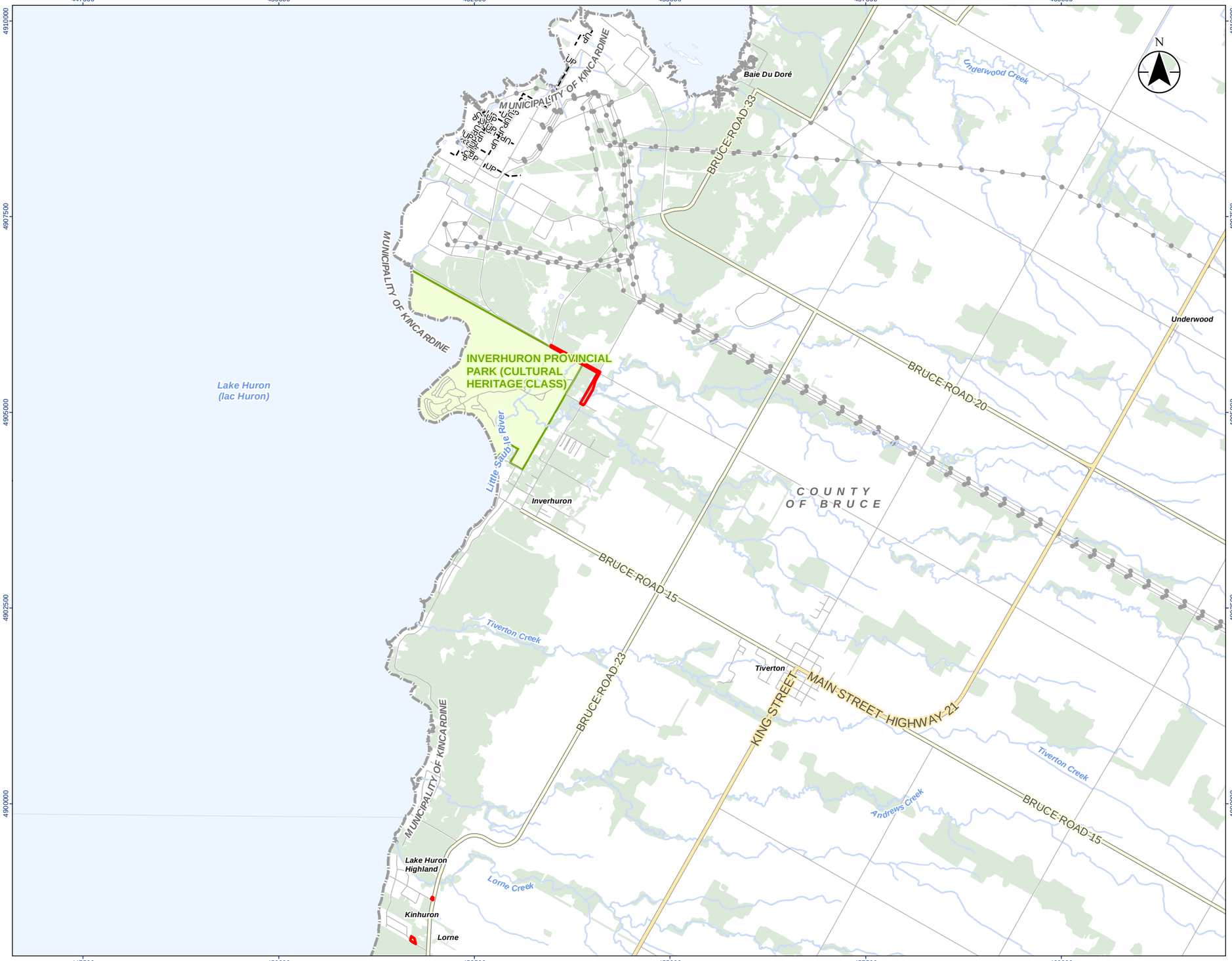
Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
1-1

Title
Approximate Location of Study Area



Stantec

Legend

- Hydro Line
- Unknown Pipeline
- Highway
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary
- Municipal Boundary, Lower
- Provincial Park
- Waterbody
- Wooded Area
- Study Area

0 1 2 km

1:50,000 (At original document size of 11x17)

Notes

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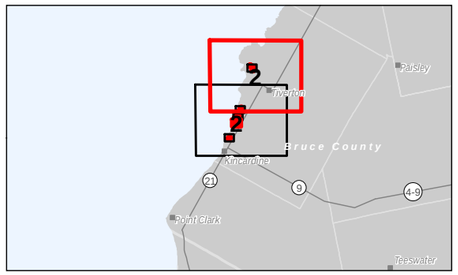

Project Location
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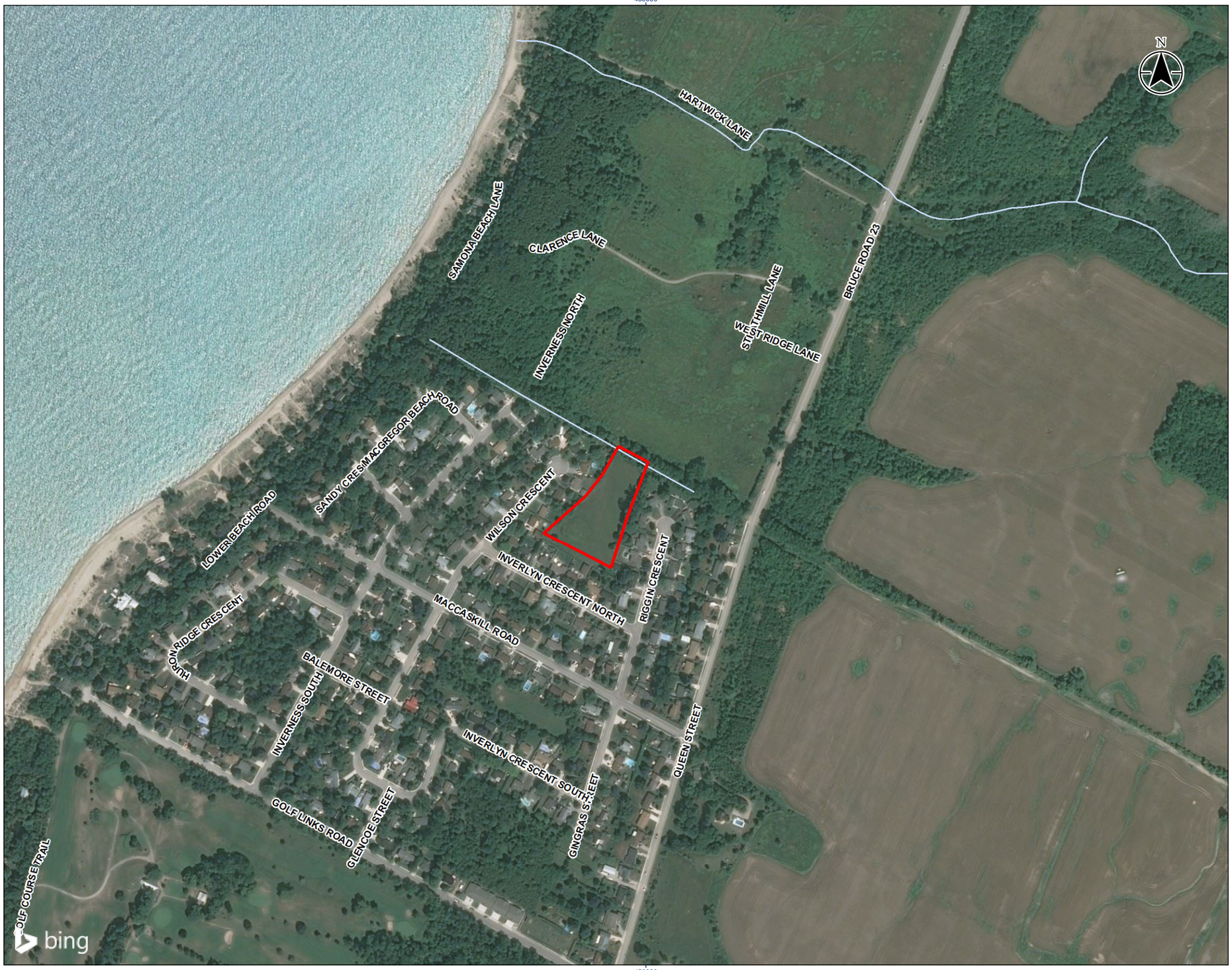
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
1-2

Title
Approximate Location of Study Area

450000



450000

Stantec

Legend

- Watercourse
- Study Area

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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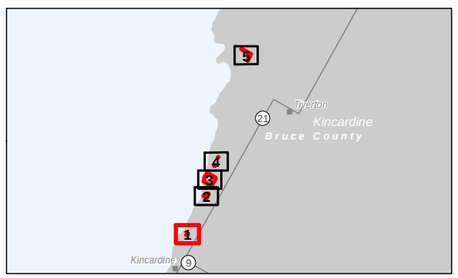

Project Location
Kincardine, ON

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Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
2-1

Title
Detailed Location of Study Area

Stantec

Legend

- Watercourse
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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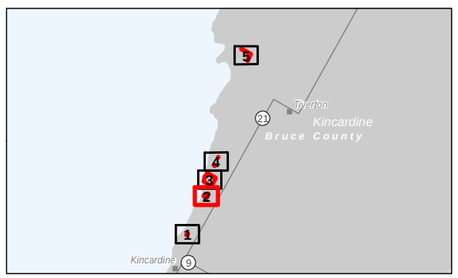

Project Location
Kincardine, ON

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Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
2-2

Title
Detailed Location of Study Area

Stantec

Legend

- Watercourse
- Wetland - Evaluated (Other)
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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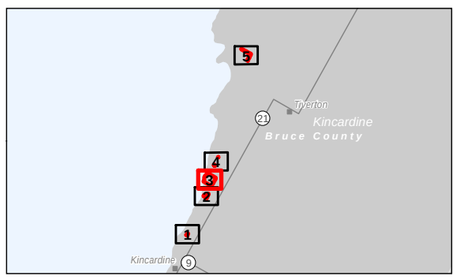

Project Location
Kincardine, ON

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MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
2-3

Title
Detailed Location of Study Area

Stantec

Legend

- Watercourse
- Wetland - Evaluated (Other)
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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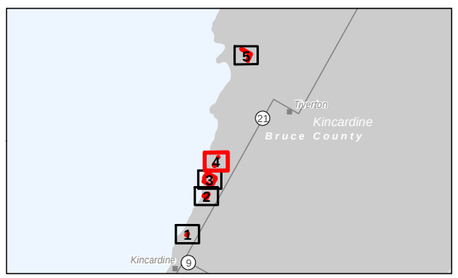

Project Location
Kincardine, ON

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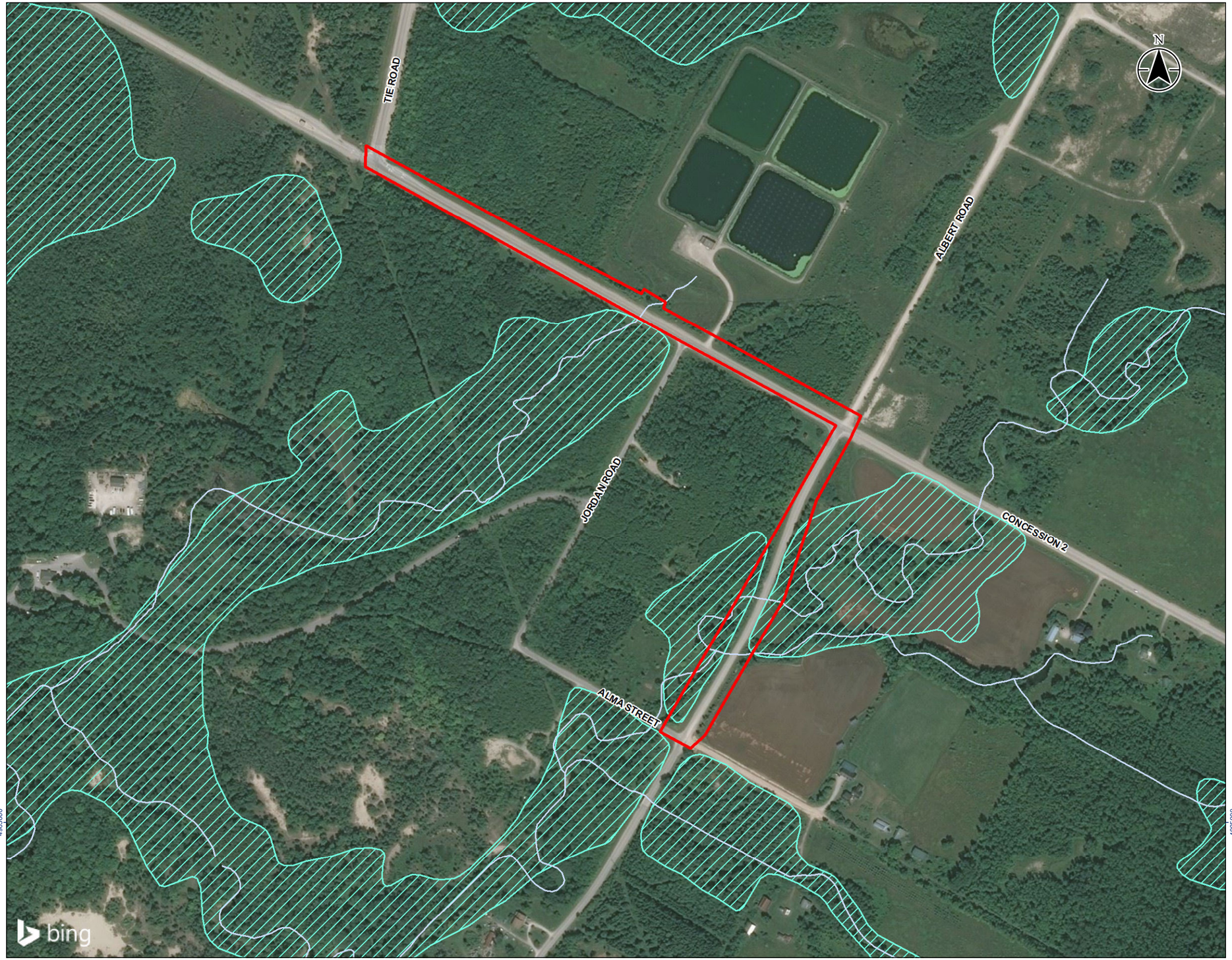
Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
2-4

Title
Detailed Location of Study Area



Stantec

Legend

- Watercourse
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area

0 100 200 Meters

1:5,000 (At original document size of 11x17)

Notes

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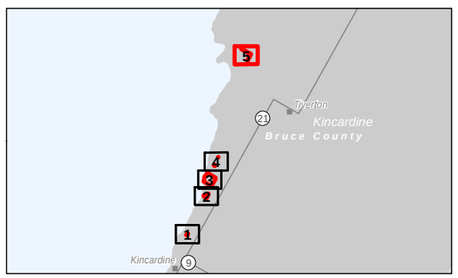

Project Location
Kincardine, ON

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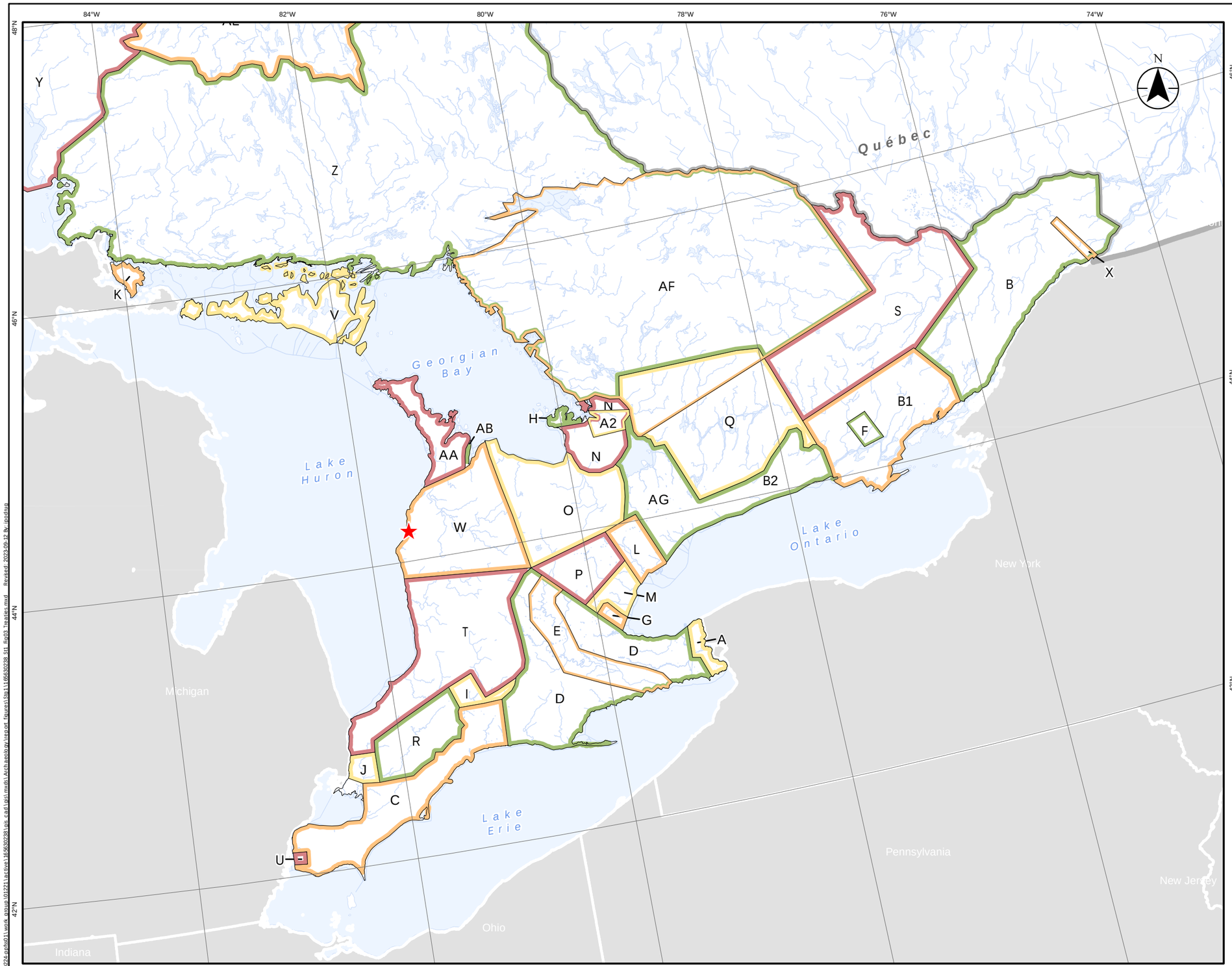
Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
2-5

Title
Detailed Location of Study Area



Stantec

Legend

- Study Area
- Waterbody

A	Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
AA	Treaty No. 72, October 30th, 1854 (Chippewa)
AB	Treaty No. 82, February 9th, 1857 (Chippewa)
AE	Treaty No. 9, James Bay 1905, 1906 (Ojibway and Cree)
AF	Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG	Williams Treaty, October 31st, 1923 (Chippewa)
A2	John Collins' Purchase, 1785 (Chippewa)
B	Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1	Crawford's Purchase, October 9th, 1783 (Mississauga)
B2	Crawford's Purchase, 1783, 1787, 1788 (Mississauga)
C	Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D	Treaty No. 3, December 2nd, 1792 (Mississauga)
E	Haldimand Tract: from the Crown to the Mohawk, 1793
F	Tyendinaga: from the Crown to the Mohawk, 1793
G	Treaty No. 3 3/4: from the Crown to Joseph Brant, October 24th, 1795
H	Treaty No. 5, May 22nd, 1798 (Chippewa)
I	Treaty No. 6, September 7th, 1796 (Chippewa)
J	Treaty No. 7, September 7th, 1796 (Chippewa)
K	Treaty No. 11, June 30th, 1798 (Chippewa)
L	Treaty No. 13, August 1st, 1805 (Mississauga)
M	Treaty No. 13A, August 2nd, 1805 (Mississauga)
N	Treaty No. 16, November 18th, 1815 (Chippewa)
O	Treaty No. 18, October 17th, 1818 (Chippewa)
P	Treaty No. 19, October 28th 1818 (Chippewa)
Q	Treaty No. 20, November 5th, 1818 (Chippewa)
R	Treaty No. 21, March 9th, 1819 (Chippewa)
S	Treaty No. 27, May 31st, 1819 (Mississauga)
T	Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U	Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V	Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W	Treaty No. 45½, August 9th, 1836 (Saugeen)
X	Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Y	Treaty No. 60, Robinson, Superior, September 7th, 1850 (Ojibwa)
Z	Treaty No. 61, Robinson, Huron, September 9th, 1850 (Ojibwa)

0 50 100 Km

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

Notes

1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.
3. Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

Project Location
Kincardine, ON

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Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

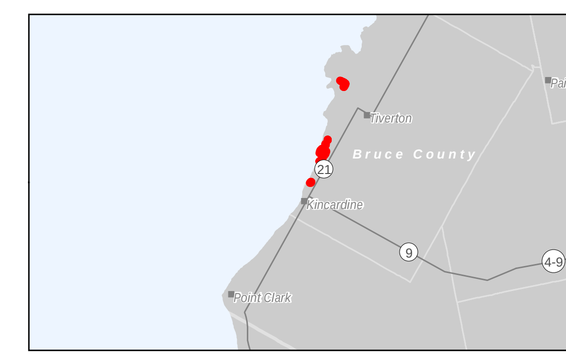
Figure No.
3

Title
Treaties and Purchases (Adapted from Morris 1943)

Legend

Study Area

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, 2018.
3. Source: Bridgland, James W. 1851. Kincardine, Bruce District. Map on file with Ministry of Natural Resources and Forestry, Peterborough, Ontario.



Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
4

Title
Part of 1851 Map of Kincardine Township

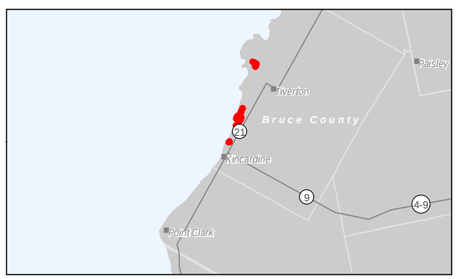
Stantec

Legend

Study Area

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, 2018.
3. Source: Brough, A.P. 1852. Plan of Part of Bruce. Map on file with Ministry of Natural Resources and Forestry, Peterborough, Ontario.



Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
5

Title
Part of 1852 Map of Bruce Township

Stantec

Legend

Study Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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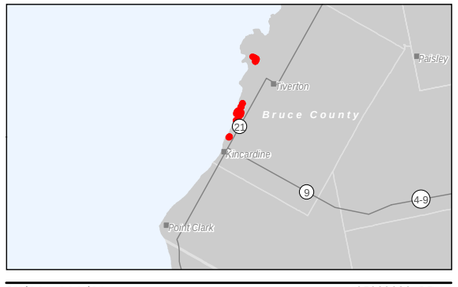
3. Source: H. Belden & Co. 1880. Bruce Supplement in Illustrated Atlas of the Dominion of Canada. Toronto: H. Belden & Co.



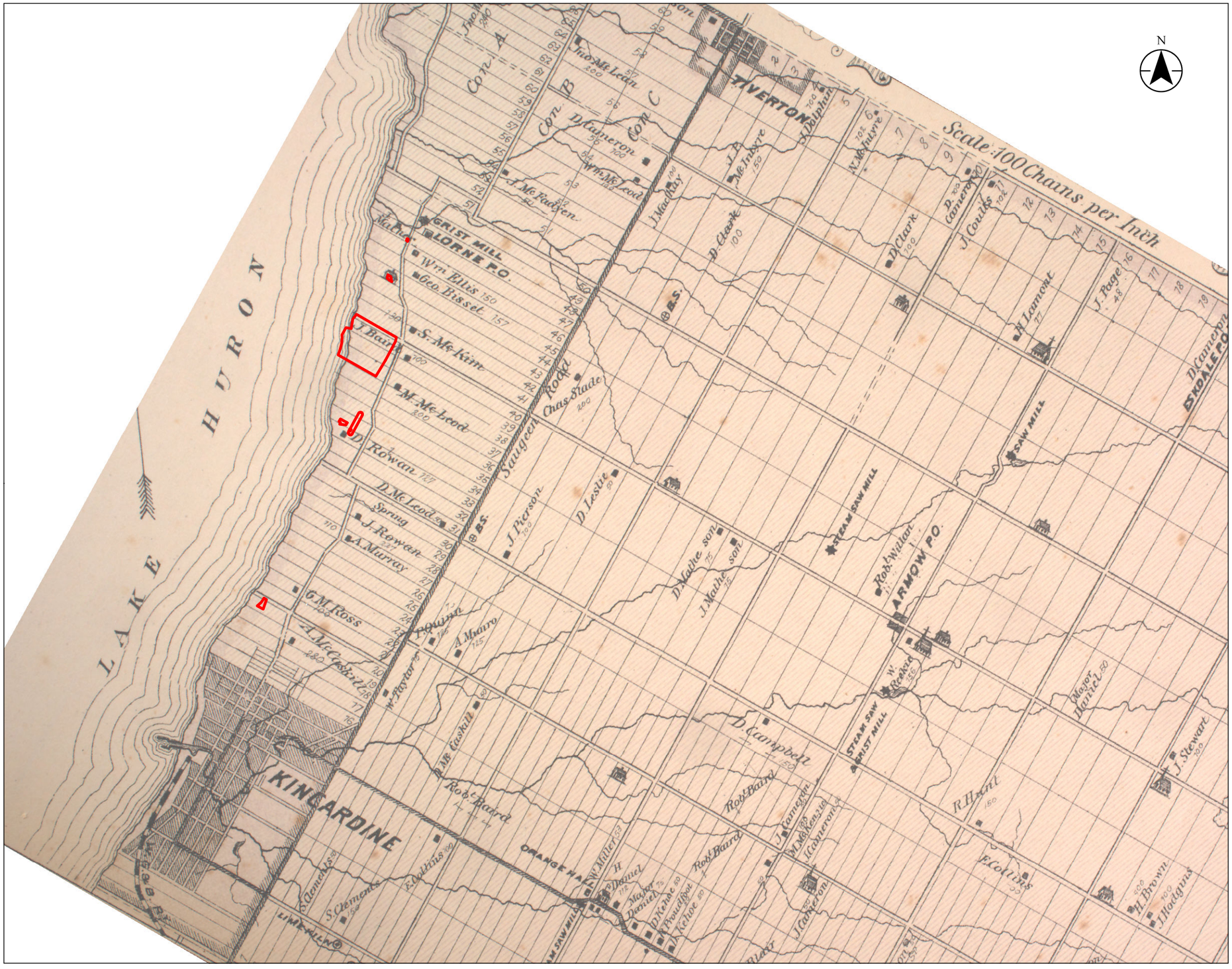
Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
6

Title
Part of 1880 Map of Bruce Township



Stantec

Legend

Study Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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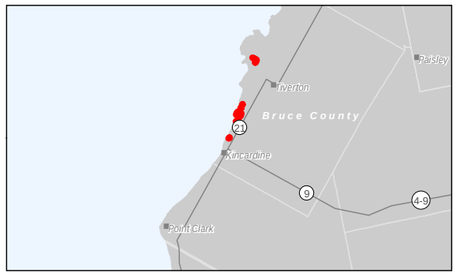
3. Source: H. Belden & Co. 1880. Bruce Supplement in Illustrated Atlas of the Dominion of Canada. Toronto: H. Belden & Co.



Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
7

Title
Part of 1880 Map of Kincardine Township

Stantec

Legend

- Archaeology Photo Log
- Watercourse
- Study Area
- Area of Archaeological Potential; Further Assessment Recommended; Stage 2 Archaeological Assessment

0 100 200 Meters
1:5,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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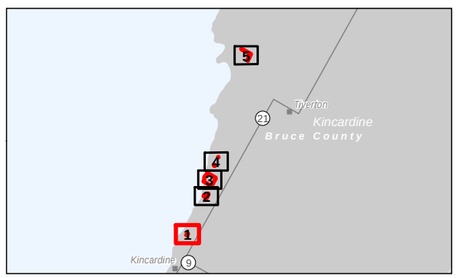

Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
8-1

Title
Stage 1 Archaeological Assessment Methods and Results

Stantec

Legend

- Archaeology Photo Log
- Watercourse
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area
- Area of Archaeological Potential; Further Assessment Recommended; Stage 2 Archaeological Assessment
- Low Archaeological Potential (Previously Disturbed); No Further Assessment Recommended
- Previously Assessed (Stantec 2019, 2020); No Further Assessment Recommended

0 100 200 Meters

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Notes

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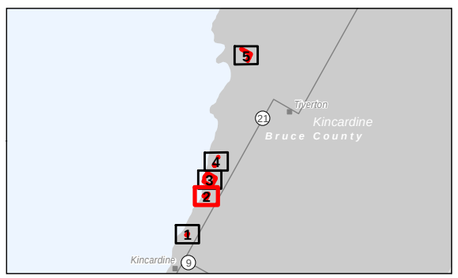


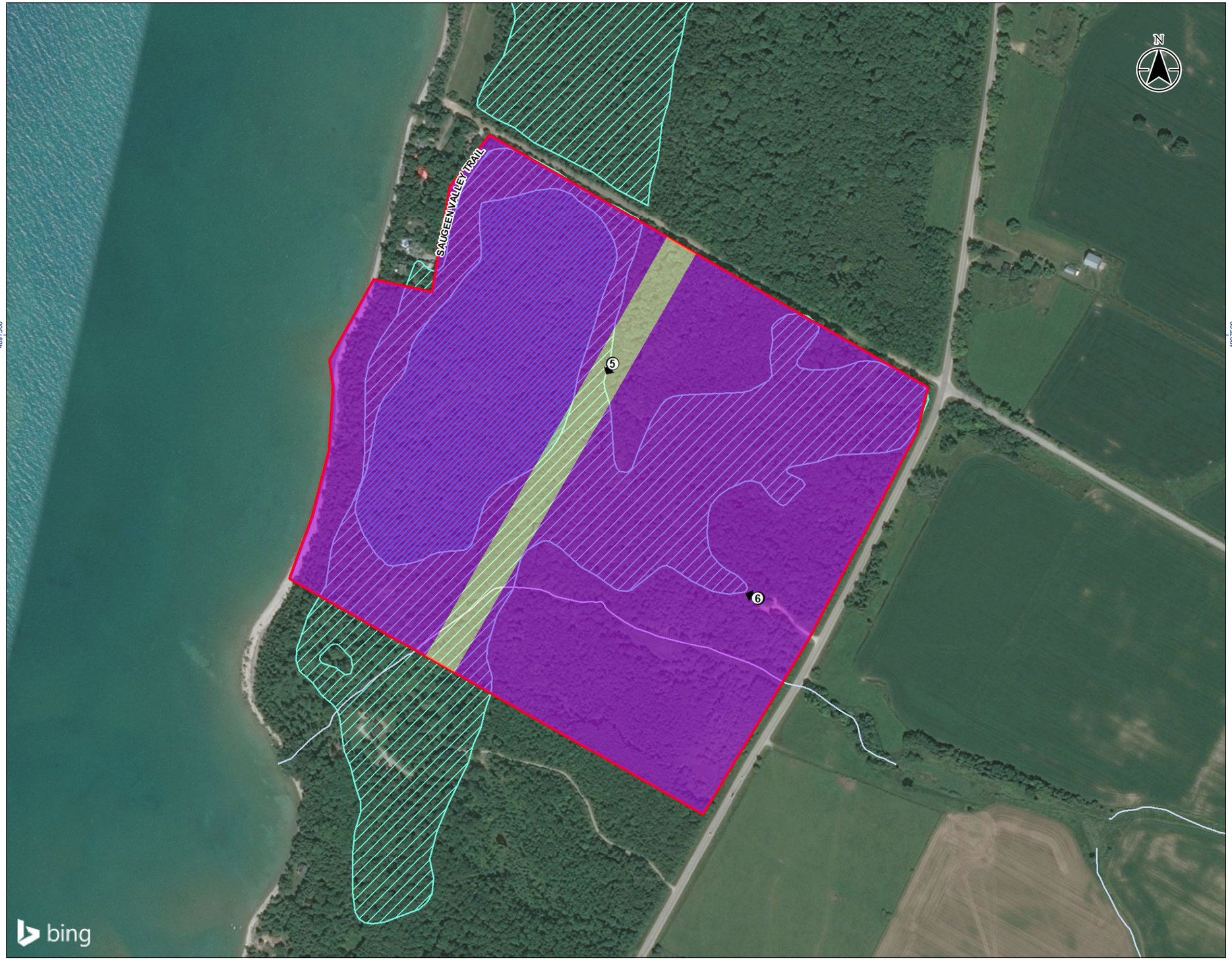
Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
8-2

Title
Stage 1 Archaeological Assessment Methods and Results



Stantec

Legend

- Archaeology Photo Log
- Watercourse
- Wetland - Evaluated (Other)
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area
- Area of Archaeological Potential; Further Assessment Recommended; Stage 2 Archaeological Assessment
- Low Archaeological Potential (Steeply Sloped); No Further Assessment Recommended

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Notes
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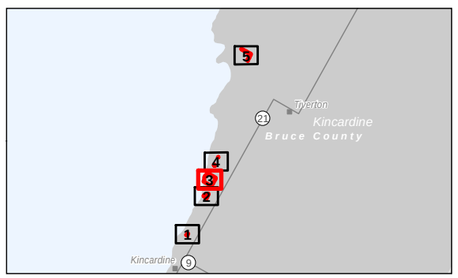

Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
8-3

Title
Stage 1 Archaeological Assessment Methods and Results

452500

BIRCHWOOD AVENUE
EASTWOOD CRESCENT
PARKWOOD ROAD
NORTH CEDAR LANE
SOUTH CEDAR LANE
KINHURON ROAD

8
7

N

bing

452500

Stantec

Legend

- Archaeology Photo Log
- Watercourse
- Wetland - Evaluated (Other)
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area
- Area of Archaeological Potential; Further Assessment Recommended; Stage 2 Archaeological Assessment
- Low Archaeological Potential (Previously Disturbed); No Further Assessment Recommended

0 100 200 Meters
1:5,000 (At original document size of 11x17)

Notes
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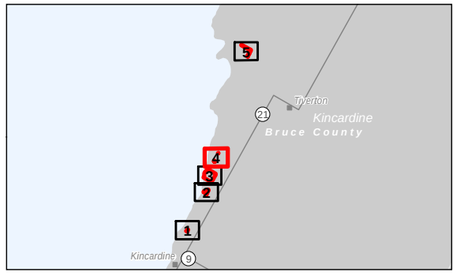


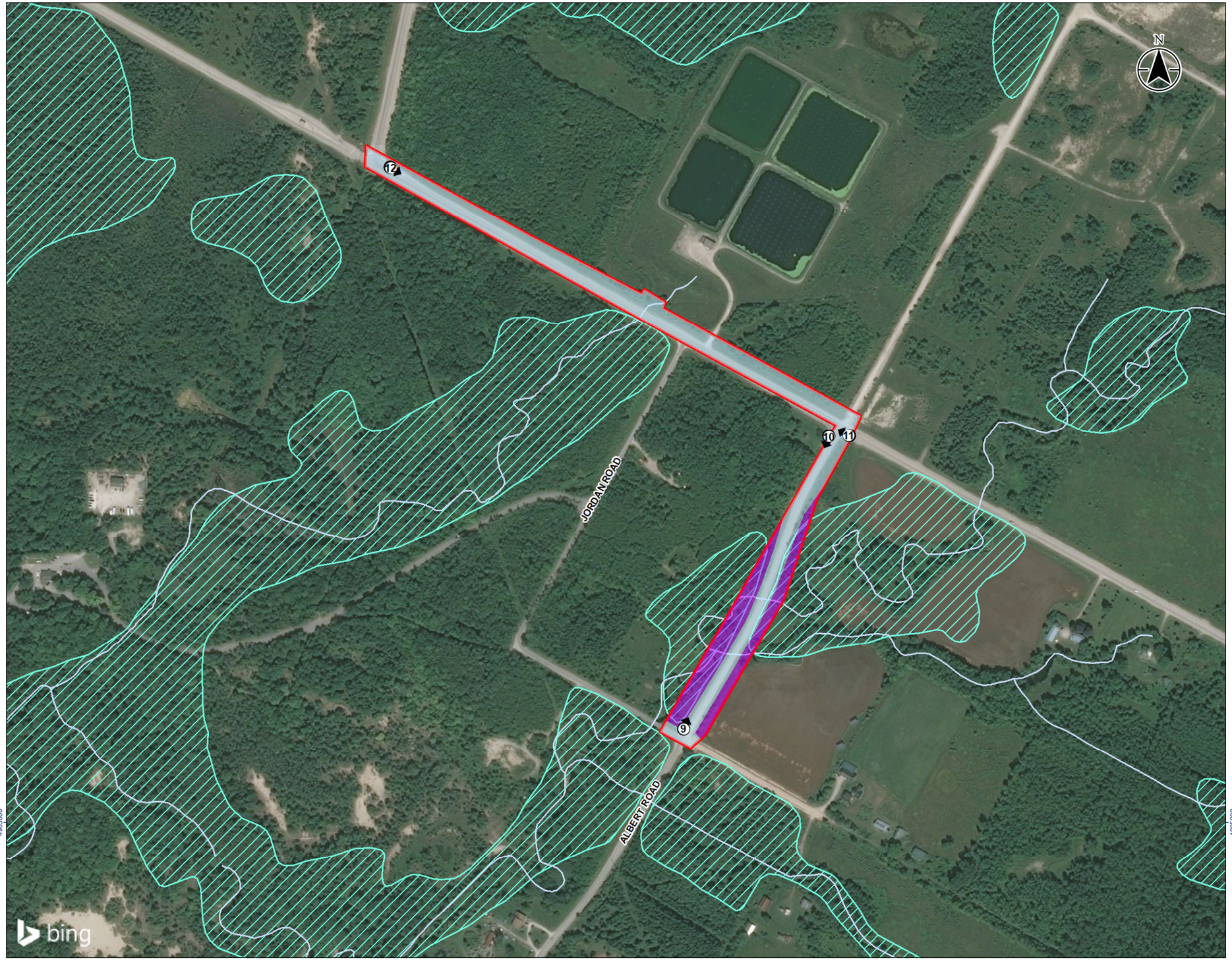
Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
8-4

Title
Stage 1 Archaeological Assessment Methods and Results



Stantec

Legend

- Archaeology Photo Log
- Watercourse
- Wetland - Not evaluated per Ontario Wetland Evaluation System
- Study Area
- Area of Archaeological Potential; Further Assessment Recommended; Stage 2 Archaeological Assessment
- Low Archaeological Potential (Previously Disturbed); No Further Assessment Recommended

0 100 200 Meters
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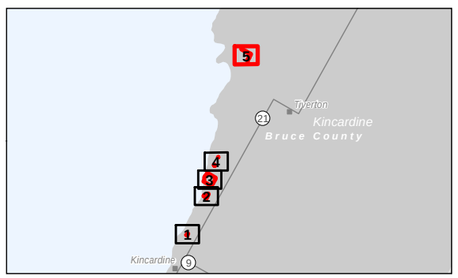

Project Location
Kincardine, ON

165630238 REVA
Prepared by IP on 2023-09-12

Client/Project
MUNICIPALITY OF KINCARDINE WATER SUPPLY SCHEDULE C CLASS ENVIRONMENT ASSESSMENT IN THE MUNICIPALITY OF KINCARDINE, COUNTY OF BRUCE, ONTARIO

Figure No.
8-5

Title
Stage 1 Archaeological Assessment Methods and Results

9 Closure

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Quality Review _____

Ragavan Nithiyanantham – Senior Archaeologist, Senior Cultural Heritage Specialist

Independent Review _____

Parker Dickson – Senior Associate, Senior Archaeologist

APPENDIX F

Technical Memos

Appendix F1: Technical Memorandum 1
Expansion of the Kincardine Water Supply System Evaluation for Comment

Stantec

Memo

To:	Mr. Adam Weishar, CET Municipality of Kincardine	From:	Nelson Oliveira, P.Eng. Stantec
File:	165630238	Date:	March 23, 2023

Reference: Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment

1.0 ALTERNATIVE SOLUTIONS

1.1 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 Municipal Class Environmental Assessment 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 Municipal Class EA 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 Water Treatment Plant (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 that it will not pursue a new WTP in the north end at this time and commenced a Schedule C Municipal Class Environmental Assessment (MCEA) study in 2022 to consider alternatives to provide water treatment capacity via expansion of the existing WTP facility including potential connection with Bruce Power. 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 Schedule C MCEA 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.

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 1: 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 statement. This alternative does not provide the required additional treatment capacity or the ability to supply Bruce Power.	Does not address the Problem/Opportunity Statement, since this approach limits planned community growth and does not support a watermain extension to the north. **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 2050 and potentially beyond, depending on the rate of community growth and phasing of the upgrades.	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**

Alternative Solutions	Description	Result
	• This alternative would not require any property acquisition.	
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 that should also be carried forward in the Alternative Design process. **Section 1.2** provides the identification and description of Alternative Solutions for Kincardine WTP Process Improvements at the existing 155 Durham Street site.

1.2 IDENTIFICATION OF ALTERNATIVE DESIGNS: IMPROVEMENT OF KINCARDINE WTP PROCESSES

1.2.1 Kincardine WTP Process Requirements

The Kincardine WTP has a current rated capacity of 11,563 cubic meters per day (m^3/d) in accordance with the MECP Certificate of Approval and Drinking Water Works Permit (DWWP No. 088-202). The peak day and average daily raw water flow rates were 6,711 and 3,102 m^3/d, respectively, based on operating records from January 1, 2018 to December 31, 2018.

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 (for CT) with contact time achieved in a multi-chambered underground reservoir. Three (3) high lift pumps supply treated water from the clear well to the distribution system.

Reference: Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment

Based on extrapolating the preliminary maximum day demand (MDD) high growth scenario for a 30-year design horizon (2053), the projected target rated capacity for Kincardine WTP is 15,500 m^3/d, which exceeds the current rated capacity by 3,937 m^3/d.

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 to disinfection targets. The CPE concluded that increasing the capacity of the Kincardine WTP to 15,500 m^3/d 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 15,500 m^3/d.

2. Increase sedimentation capacity – re-rate the ActiFlo™ process to a minimum of 57.1 m/h and install an in-line mechanical mixer to augment coagulation.

    - It is likely that the existing high-rate sedimentation process (ActiFlo™) can be re-rated to within the range of 60 to 65 m/h. Re-rating of this process is expected to be feasible as many ActiFlo™ systems have been rated for loading rates of up to 85 m/h. Re-rating will likely require upgrades to ancillary processes that support the ActiFlo™ process, including the existing hydrocyclones and sludge re-circulation pump. Some structural modifications may also be required to the sedimentation basin to accommodate a higher hydraulic grade line (HGL) to address higher flows; this requirement will be confirmed through vendor consultation.

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

    - A 5th filter basin exists at the Kincardine WTP which is not currently in service. It could be brought online with the addition of new median, new underdrains (modern shallow underdrains are recommended, to maximize the available media depth), and equipment (blowers, piping) to support air scour during backwash. The addition of a 5th filter would establish a filter loading rate of 9.8 m/h with all filters online at a plant capacity of 15,500 m^3/d, which is in line with MECP guidelines. The filter loading rate will increase to 12.3 m/h with four filters online (i.e., with one filter temporarily out of service, e.g., due to filter backwashing) at the rated capacity which is at the limit of best practices for this type of filtration process. Adjustment to disinfection set-points, or upgrade disinfection with ultraviolet light (UV) disinfection, as described below.

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

    - Increasing the chlorine dose - currently the total volume of the on-site storage reservoir (372m^3) is required to provide primary disinfection at Kincardine WTP. While the reservoir could in theory be expanded to provide additional capacity, a more efficient alternative would be to increase the minimum chlorine residual (from the current minimum of 0.95 mg/L to a future minimum of 1.11 mg/L) within the reservoir, which will increase the rate of disinfection and thereby allow the WTP to operate at the target flow of 15,500 m^3/d. This approach reduces operational flexibility, provides only one disinfection barrier in the process train and would continue to require dedicated storage to address disinfection requirements.

- Adding UV disinfection – A new UV process could be added to the process upstream of the on-site storage reservoir which would satisfy a large part of the primary disinfection requirement, and would mean that just 275 m^3 of the exiting on-site storage reservoir would be required for primary disinfection (at the existing minimum free chlorine residual of 0.95 mg/L), thereby freeing up on-site storage for available storage (equalization) purposes. The addition of UV would provide a multiple-barrier disinfection processes which is a best practice for treatment of surface water sources.

In summary, none of the four categories of process upgrades described above are expected to require a building expansion at the existing Kincardine WTP and further support the "Expansion of the Existing Kincardine WTP on the Existing Site" previously discussed in **Section 1.1**.

1.2.2 Description of Kincardine WTP Process Alternative Designs

The following list of Kincardine WTP Process Alternative Designs was developed to address the existing system supply constraints at the Kincardine WTP. Alternative Designs are developed as part of Phase 3 of the Municipal Class EA process to describe the methods of implementing the preliminary preferred Alternative Solution "Expansion of the Existing Kincardine WTP on the Existing Site" noted earlier.

Identifying these Alternative Design concepts at this stage of the project was important to ensure that sufficient water supply treatment capacity is available or can be obtained to service Kincardine and Bruce Power needs before considering the possibility a system extension.

The following Alternative Designs were considered for evaluation:

- **Alternative 1: Do Nothing –** This alternative involves maintaining the existing Kincardine WTP supply and treatment system as is. No improvements would be identified to address the existing conditions. This alternative is carried forward as a benchmark in the evaluation of other alternative solutions.

- **Alternative 2: 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, it is anticipated that a higher regulatory minimum chlorine residual would need to be maintained than the current concentration. Specifically, it is estimated that the regulatory minimum chlorine residual would need to be increased from 0.95 mg/L to 1.1 mg/L or higher. Additionally, this alternative does not make any existing on-site storage tank volume available for system storage which may result in the need for an off-site water storage system and possibly a booster station which would be associated with land acquisition and maintenance of a new property for the Municipality.

- **Alternative 3: 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 secondary disinfection. This alternative improves the multiple-barrier disinfection processes for pathogens at Kincardine WTP and would make some on-site storage tank capacity available for system storage; therefore, this alternative is not expected to require off-site storage or additional land acquisition with the proposed Bruce Power site connection.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

- Alternative 3a – This alternative could be designed to meet the current disinfection criteria of 2-log inactivation of cryptosporidium oocysts required by the Ontario Ministry of Environment, Conservation and Parks (MECP) for the Kincardine WTP.
- Alternative 3b – This alternative could be designed to meet more restrictive disinfection criteria of 3-log inactivation of cryptosporidium oocysts as outlined in the Health Canada Guidelines for Canadian Drinking Water Quality. At this time, it is uncertain if and when the MECP may adopt the Health Canada Guidelines for protozoa and if Kincardine WTP would require additional disinfection. Therefore, this alternative has been included in this evaluation to understand the feasibility of meeting potentially more stringent disinfection criteria in the future.

Alternatives 2 and 3 also 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.

1.3 EVALUATION OF KINCARDINE WTP PROCESSES

Table 2 below provides a summary of the design alternatives that are currently being considered as part of Stantec's initial assessment in Phase 3 of the EA process.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Table 2: Summary of Alternative Solutions Screening: Kincardine WTP

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
Social Environment	Minimizes impacts to existing residences, businesses and community features in the short-term	• Amount and duration of disruption (e.g., noise, air quality, odour, visual aesthetics) • Other disruptions to traffic (congestion, access, and detours) during construction.	• No amount of disruption is anticipated since there is no construction.	• Would result in the shortest construction disruption within the existing plant footprint, relative to Alternative 3.	• Would result in a moderate construction disruption within the existing plant footprint.	• Would result in a moderate construction disruption within the existing plant footprint.
	Minimizes impacts to existing residences, businesses and community features in the long-term	• Post-construction disruptions due to operations and maintenance requirements.	• No post-construction disruptions will occur since no construction is required. • Production risk associated with not increasing the capacity of the plant unit processes.	• Low post-construction additional O&M for maintaining higher chlorination residual.	• Additional O&M requirements for UV equipment related to lamp replacement and UV process equipment maintenance.	• Additional O&M requirements for UV equipment related to lamp replacement and UV process equipment maintenance.
	Potential effect on existing land uses or long-term planning	• Compliance with Municipal and County Official Plans and Policies.	• Complies with current Kincardine Official Plan and policies for municipal water supply systems. • Unable to maintain compliance with long-term growth planning.	• Complies with future long-term growth planning. • Less adaptable for potential future regulations (e.g., 3-log *Crypto* inactivation). • Does not free up clearwells for additional system storage. • May require land within system for additional storage	• Complies with future long-term growth planning. • Results in additional storage available by minimizing use of clearwells for disinfection and chlorine contact time.	• Complies with future long-term growth planning and potentially more stringent future disinfection regulations. • Results in additional storage available by minimizing use of clearwells for disinfection and chlorine contact time.
	Protects health and safety	• Ability to meet applicable water quality and taste/aesthetic standards.	• Meets current water quality and safety requirements. • Meets applicable water quality and tastes/aesthetic standards for potable water.	• Meets current water quality and safety requirements. • Less robust treatment train than alternative 3 with fewer treatment barriers for pathogens.	• Provides additional treatment barrier for pathogens with additional disinfection technology.	• Provides additional treatment barrier for pathogens with additional disinfection technology. • Meets Health Canada guideline for cryptosporidium inactivation.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
		Social Environment Summary	**Least Preferred – Cannot satisfy the problem/ opportunity statement**	**Moderately Preferred**	**Moderately Preferred**	**Most Preferred**
Cultural Environment	Protects cultural heritage resources	• Conserves cultural heritage resources (built heritage and/or cultural heritage landscapes).	• No potential to impact cultural heritage resources as no construction is required.	• Moderate potential to impact cultural heritage resources as potential for need for off-site land purchase.	• No potential to impact cultural heritage resources as no off-site construction is required.	• No potential to impact cultural heritage resources as no off-site construction is required.
	Protects archaeological resources	• Conserves archaeological resources.	• Alternative conserves archaeological resources since there is no construction impacts.	• Alternative would strive to conserve archaeological resources; however potential need for offsite construction for additional system storage.	• Alternative conserves archaeological resources since there is no construction impacts.	• Alternative conserves archaeological resources since there is no construction impacts.
		Cultural Summary	**Most Preferred**	**Moderately Preferred**	**Most Preferred**	**Most Preferred**
Natural Environment	Protects environmental features	• Potential effects to environmental features, including: • Significant woodlands • Significant wetlands • Environmentally sensitive areas • Environmental protection areas • Environmental conservation areas • Steep slopes/ hazard areas • Removal or disturbance of significant trees and/or ground flora. • Changes in vegetation composition or impacts to prime agricultural areas.	• No potential to impact sensitive environmental features, removal or disturbance of significant trees and/or ground flora, or changes in vegetation composition since there are no water supply improvements.	• Potential moderate impact sensitive environmental features, removal or disturbance of significant trees and/or ground flora, or changes in vegetation composition for off-site water supply improvements.	• No potential to impact sensitive environmental features, removal or disturbance of significant trees and/or ground flora, or changes in vegetation composition since there are no water supply improvements.	• No potential to impact sensitive environmental features, removal or disturbance of significant trees and/or ground flora, or changes in vegetation composition since there are no water supply improvements.
	Protects wildlife and Species at Risk	• Reduction or deterioration of wildlife (terrestrial or aquatic) and Species at Risk (SAR) habitat. • Effects on timing of construction on migratory bird nesting/breeding periods.	• The Alternative does not reduce or deteriorate wildlife or Species at Risk habitat since there are no water supply improvements.	• Moderate to low potential to reduce or deteriorate wildlife or Species at Risk habitat for off-site water supply improvements.	• The Alternative does not reduce or deteriorate wildlife or Species at Risk habitat since there are no water supply improvements.	• The Alternative does not reduce or deteriorate wildlife or Species at Risk habitat since there are no water supply improvements.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
	Protects groundwater, streams and rivers	• Reduction or deterioration of fish and fish habitat, and effects of construction timing on spawning periods. • Effects on erosion or flood potential. • Changes or impacts to groundwater/ surface water quality. • Changes or impacts to groundwater level. • Impacts to SVCA regulated areas should be minimized. • Aligns with *Clean Water Act* requirements.	• The Alternative does not reduce or deteriorate fish or fish habitat, or effects of construction timing on spawning periods. • No effects on erosion or flood potential. • No changes or impacts to groundwater/ surface water quality. • No changes or impacts to groundwater level. • SVCA regulated areas are present along the study area, but as no work is proposed no additional impacts are anticipated. • Existing site adheres to the Sourcewater Protection Plan enacted under the *Clean Water Act*.	• Low potential to reduce or deteriorate fish or fish habitat, or effects of construction timing on spawning periods. • Low potential effects on erosion or flood potential. • Low to moderate impacts to groundwater/ surface water quality during off-site construction • Moderate to low impacts to groundwater level. • SVCA regulated areas are present along the study area; low to moderate impacts for potential off-site construction. • Existing site adheres to the Sourcewater Protection Plan enacted under the *Clean Water Act*. • Impacts associated with possible construction for additional system storage.	• The Alternative does not reduce or deteriorate fish or fish habitat, or effects of construction timing on spawning periods. • No effects on erosion or flood potential. • No changes or impacts to groundwater/ surface water quality. • No changes or impacts to groundwater level. • SVCA regulated areas are present along the study area, but as no work is proposed no additional impacts are anticipated. • Existing site adheres to the Sourcewater Protection Plan enacted under the *Clean Water Act*.	• The Alternative does not reduce or deteriorate fish or fish habitat, or effects of construction timing on spawning periods. • No effects on erosion or flood potential. • No changes or impacts to groundwater/ surface water quality. • No changes or impacts to groundwater level. • SVCA regulated areas are present along the study area, but as no work is proposed no additional impacts are anticipated. • Existing site adheres to the Sourcewater Protection Plan enacted under the *Clean Water Act*.
	Minimizes climate change impacts	• Minimizes greenhouse gas emissions. • Resiliency of alternatives to impacts due to climate change. • Reducing energy consumption. • Reduction in carbon footprint (efforts to move towards carbon neutrality).	• Minimizes greenhouse gas emissions. • No change to climate change resiliency. Ongoing climate change vulnerability to water supply as all wells cannot be used at the same time if wells become degraded. • No change to energy consumption of existing system. • No reduction in carbon footprint.	• Minimizes greenhouse gas emissions. • No change to energy consumption of existing system. • No reduction in carbon footprint.	• Higher energy use and therefore higher GHG emissions than Alternative 1 or 2. • More resilient than Alternative 1 or 2 as disinfection strategy provides multiple-barrier protection against potentially higher source water pathogen loads during storm events. • Does not reduce energy consumption. • Does not reduce carbon footprint	• Highest energy use and therefore highest GHG emissions than other alternatives. • Most resilient alternative as disinfection strategy provides highest degree of protection and multiple-barrier protection against potentially higher pathogen loads during storm events. • Does not reduce energy consumption. • Does not reduce carbon footprint

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
		Natural Environment Summary	**Most Preferred**	**Least Preferred**	**Moderately Preferred**	**Moderately Preferred**
Technical Environment	Minimizes land requirements	• Number and type of properties or easements required. • Amount of land required, including temporary/ permanent easements.	• No properties or easements are required. • No land is required.	• Potential for properties or easements are required for water supply system off-site. • Potential for land acquisition required.	• No properties or easements are required. • No land is required.	• No properties or easements are required. • No land is required.
	Operations and Maintenance (Operability)	• Requirement of additional resources or supplies, new technology or training requirements, parts or equipment supplies or replacements. • Increase or reduction in complexity to operate the new system compared to current treatment processes.	• Additional resources or supplies, and technology would be required to maintain compliance at the existing WTP site, due to increased demands on the facility up to the current rated capacity. • Over a 20-year planning timeframe, anticipated maximum and peak demands will stress the existing system and ability to service lands to the north without significant pressure and supply issues. • No change in complexity based on current regulations and rated capacity of the system. • An increase in demands beyond the current rating may impact disinfection capabilities of existing system and ability to meet flow/pressure requirements to meet planned growth and servicing extensions	• Generally, similar technology configuration to the existing process; with additional off-site storage potential. • Initially, Actiflo process to be uprated and additional filter brought online. • Moderate increase in complexity to operate new system with additional filter and uprated Actiflo, and off-site storage.	• Introduction of new technology and training required for UV disinfection; however the technology is a proven system widely practiced across Ontario and has low complexity. • New UV technology will be associated with additional maintenance and monitoring procedures. • Moderate to high increase in complexity to operate new system with UV disinfection.	• Introduction of new technology and training required for UV disinfection; however the technology is a proven system widely practiced across Ontario and has low complexity. • New UV technology will be associated with additional maintenance and monitoring procedures. • Moderate to high increase in complexity to operate new system with UV disinfection.
	Provides consistent and reliable service and water quality performance	• Ability to provide reliable water quality for the potable water system.	• Low ability to provide a safe and reliable water supply system over the long-term due to demand and pressure issues primarily to service lands to the north. Increase in demands up to current WTP rated capacity would stress the distribution system. Supply to Bruce Power would not be possible as pressures would be well below minimum guidelines.	• Moderate ability to provide reliable service. Additional operational challenge to maintain chlorine residual with only one disinfection barrier. • Addition of 5th filter will improve reliability and redundancy of system over Alternative 1.	• System will have higher reliability than Alternative 2 with multiple-barrier disinfection process.	• System will have highest reliability than Alternative 2 or 3 with multiple-barrier disinfection process.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
	Meets existing and future water supply quantity needs	• Ability to provide water supply servicing for the current and projected population of Kincardine service area. • Ability for the site to meet future water supply demands or expansion requirements.	• Able to provide water supply servicing for the current population. Not capable of providing servicing for projected population, including Bruce Power. • Does not address future demands or expansion requirements to service areas to the north. Projected demands anticipated to exceed current capacity of the watermain without additional infrastructure.	• Will meet water supply servicing needs for current and projected population. May not comply with future regulations for Cryptosporidium control for surface water treatment (potential for regulations to increase from 2-log to 3-log inactivation) • Low to moderate ability to meet future supply demands or expansion.	• Will meet water supply servicing needs for current and projected population. May not comply with future regulations for Cryptosporidium control for surface water treatment (potential for regulations to increase from 2-log to 3-log inactivation) • May require building expansion to meet higher demands than anticipated.	• High ability to provide water supply servicing for the current and projected population and service area. • High ability to meet future water supply demands. May require building expansion to meet higher demands than anticipated.
	Meets Agency standards, permits and approvals	• Ability to meet Agency standards, permits or approvals.	• The current system is able to meet the Municipality and Agency standards, permits and approvals. • Does not provide capacity necessary to meet demands which drive future standards, permits and approval decisions.	• The current system is able to meet the Municipality and Agency standards, permits and approvals.	• The current system is able to meet the Municipality and Agency standards, permits and approvals.	• The current system is able to meet the Municipality and Agency standards, permits and approvals. • Ability to meet future anticipated increasingly stringent standards for Cryptosporidium inactivation
	Aligns with existing and planned infrastructure improvements	• Ability to coordinate with existing and planned water, wastewater and transportation infrastructure improvements.	• Poor ability to coordinate with existing and planned Municipality water, wastewater and transportation infrastructure improvements. • Lack of supply and system capacity would impact planned improvements that also address servicing for growth.	• Low to moderate ability to coordinate with planned water infrastructure improvements as water storage at WTP required for disinfection strategy.	• High ability to coordinate with planned water infrastructure improvements to make additional water storage available at WTP.	• High ability to coordinate with planned water infrastructure improvements to make additional water storage available at WTP.
	Aligns with existing and future land use	• Ability of sites to comply with existing and future land use/zoning. • Ability of a site to maintain/not negatively affect community cohesiveness.	• The existing site complies with existing land use and zoning. • No change to the availability of land for a water supply system location. • No change to the existing site's ability to maintain or negatively affect community cohesiveness.	• The existing site complies with existing land use and zoning. • No change to the availability of land for a water supply system location. • No change to the existing site's ability to maintain or negatively affect community cohesiveness.	• The existing site complies with existing land use and zoning. • No change to the availability of land for a water supply system location. • No change to the existing site's ability to maintain or negatively affect community cohesiveness.	• The existing site complies with existing land use and zoning. • No change to the availability of land for a water supply system location. • No change to the existing site's ability to maintain or negatively affect community cohesiveness.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Component	Criteria	Key Indicators	Alternative 1: Do Nothing	Alternative 2: Chlorination Disinfection Only	Alternative 3A: UV Upgrade to Meet 2-log Crypto Inactivation	Alternative 3B: UV Upgrade to Meet 3-log Crypto Inactivation
	Constructability	• Technical considerations for location, depth of excavation, soil conditions, groundwater control, construction duration, ease of integration into existing water supply system. • Ability to maintain service level during construction. • Effect on existing utilities and infrastructure (number and type of potential conflicts).	• No impacts to constructability technical considerations, service levels, or existing utilities and infrastructure since there is no construction or water supply improvements.	• Construction is feasible. Uncertain feasibility associated with offsite storage / booster station requirements and construction. • Moderate feasibility to maintain service level during construction. • Moderate impact on existing utilities and infrastructure.	• Construction is highly feasible. • High feasibility to maintain service level during construction. • Minimal impact on existing utilities and infrastructure.	• Construction is highly feasible. • High feasibility to maintain service level during construction. • Minimal impact on existing utilities and infrastructure.
	System Redundancy	• Improvement in redundancy of supply/service to allow continuous water supply and proper maintenance	• Does not provide improvements in redundancy of supply/service to allow continuous water supply and proper maintenance	• Improves redundancy for clarification and filtration processes. • Does not improve redundancy for disinfection.	• Improves redundancy for clarification and filtration processes. • Improves redundancy for disinfection.	• Improves redundancy for clarification and filtration processes. • Significantly improves redundancy for disinfection.
		Technical Environment Summary	**Least Preferred – Cannot satisfy the problem/opportunity statement**	**Moderately Preferred**	**Moderately Preferred**	**Most Preferred**
Financial	Provides low lifecycle costs	• Total project costs (design/construction).	• No design/ construction costs associated with the Do Nothing Alternative • No ability to meet future demands without limited growth. • System would require regular operation and maintenance work including replacement of components due to lifecycle issues.	• Low to moderate life-cycle costs associated with proposed process upgrades. • Potential for additional distribution system maintenance associated with additional property, storage, booster station.	• Moderate life-cycle costs associated with proposed process upgrades.	• Highest life-cycle costs associated with proposed process upgrades.
	Estimated capital cost	• Cost associated with capital costs	• Low costs associated with capital costs, as it is assumed that only regular maintenance and lifecycle replacement would be undertaken.	• Moderate capital costs associated with proposed upgrades; land acquisition, storage, and booster station.	• Moderate to high capital costs associated with proposed upgrades.	• Highest capital costs associated with proposed upgrades.
	Identifies property acquisition cost	• Costs associated with any required property acquisitions.	• Potential property acquisition required for additional system storage.	• Potential property acquisition required for additional system storage.	• Not applicable.	• Not applicable.
		Financial Summary	**Least Preferred – Cannot satisfy the problem/ opportunity statement**	**Least Preferred**	**Most Preferred**	**Moderately Preferred**

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

1.4 PREFERRED ALTERNATIVE DESIGN FOR THE KINCARDINE WTP

Based on preliminary screening and discussions with equipment vendors, the preliminary preferred solution is Alternative 3A UV Upgrade to Meet 2-Log Crypto Inactivation. However, it is noted that the evaluation of Alternative 3B was essentially similar to Alternative 3A.

This preliminary Alternative Design will be further considered following additional review of the proposed UV upgrades, including confirmation on the footprint and cost impacts associated with upgrading treatment to 3-log crypto inactivation. Should the impacts be minimal, the Municipality may want to decide to provide this additional level of protection.

1.5 SELECTION 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, water projects that “construct new water treatment plant or expand existing water treatment plant beyond existing rated capacity” are classified as Schedule C activities requiring completion of Phases 1 to 4 of MEA process and completion of an Environmental Study Report. Given that capacity expansion of the WTP may be required, this project will follow the Schedule C process.

Should no increase be required to the Kincardine WTP rated capacity and no property required, the appropriate Municipal Class EA schedule may need to be re-examined.

1.6 IDENTIFICATION OF ALTERNATIVE SOLUTIONS: WATERMAIN BOOSTER PUMPING STATIONS

Booster pumping stations (BPS) are required for any proposed extension to service Bruce Power due to the presence of elevation changes between the Kincardine WTP and the facility. These elevation changes require water pressure considerations to enable water to overcome these changes, while not impacting the end users or those along the route.

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, establishing a new water system (new WTP). The 2018 Master Plan considered how to address these elevation changes, however it determined that any future connection to Bruce Power would likely be to 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.

As the Municipality opted to not continue to consider a new facility site, as described in **Section 1.1,** improving the existing water system to include booster pumping stations was the remaining technical solution to utilize the existing Kincardine WTP water source while providing access to Bruce Power. Hydraulic modeling was completed to refine the area where a BPS facility could be sited without negatively impacting water pressures upstream and downstream of the BPS. 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 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.
- **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 1**.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

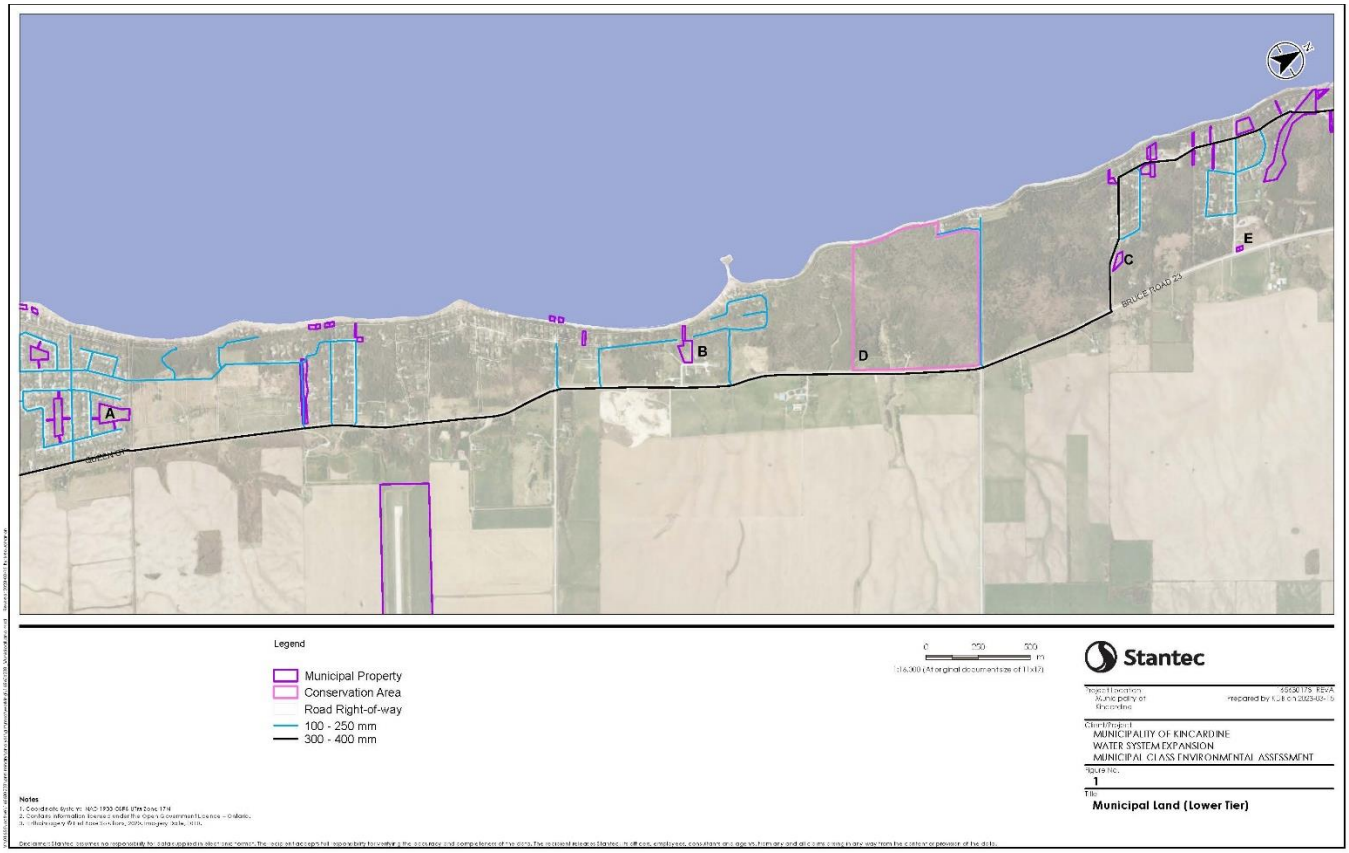

Figure 1: Municipal Land Identifying Booster Pumping Station Locations Evaluated

1.7 PRELIMINARY SCREENING OF THE LONG LIST OF ALTERNATIVE SOLUTIONS: KINCARDINE WATERMAIN AND BOOSTER PUMPING STATIONS

A high-level screening process was used to screen the long list of potential alternative solutions based on their ability to address their problem and opportunity statement.

A critical consideration for placement of a BPS is the ability to provide 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 conditions and were screened out. These sites also have space challenges that may require them to be widened to accommodate a BPS, and were therefore also excluded.

Table 3 provides a summary of preliminary screening and recommendation on whether the alternative solution should be carried forward for further evaluation.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Table 3: Preliminary Screening of 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. • 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 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.

1.8 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 4** shows the evaluation ratings used for this project.

Table 4: 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

An assessment of each alternative is conducted based on the criteria outlined in the **Table 5**. 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 5 Provides the Assessment of Alternatives for the BPS locations which enable future expansion of the existing watermain on Bruce Road 23.

Table 5: Short List of Location Alternatives for the Booster Pumping Station

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
Social Environment	Minimizes impacts to existing residences, businesses and community features in the short-term	• Amount and duration of disruption during construction (e.g., noise, odour, visual aesthetics and other disruptions to traffic (congestion, access, and detours) during construction.	• No amount of disruption is anticipated since there is no construction.	• Short-term disruption (noise, dust, traffic, aesthetics) to residents, businesses and community features during construction to interconnect the new BPS with the existing watermain route on Bruce Road 23). This disruption would be addressed through standard construction mitigation. • Potential for moderate, but temporary traffic impacts along local roadways for construction access and construction of new watermain from the BPS and as part of the extension to Bruce Power. • Least potential disruption in vicinity of BPS site to residential properties and traffic if using the Blue Trail, although there would be short-term impacts to access/use of the trail during construction. • Additional impacts associated with construction of chambers to provide pressure zone delineation at W Ridge Line, Hartwick Line, Wickham Cove Line, Dawson Drive, and Craig Drive.	• Short-term disruption (noise, dust, traffic, aesthetics) to residents, businesses and community features during construction to interconnect the new BPS with the existing watermain route on Bruce Road 23). This disruption would be addressed through standard construction mitigation. • Potential for moderate, but temporary traffic impacts along local roadways for construction access and construction of new watermain from the BPS and as part of the extension to Bruce Power. • Higher potential for disruption to residential properties and traffic relative to Site A for residents of Stoney Island Crescent.
	Minimizes impacts to existing residences, businesses, and community features in the long-term	• Post-construction disruptions due to ongoing operations and maintenance requirements.	• No amount of disruption is anticipated since there is no construction. • Some operational and maintenance risk associated with not finding another source of water for Bruce Power.	• Low potential for operations and maintenance disruption to residents, businesses and community features. Long-term temporary routine operations and maintenance may affect vehicle traffic on a limited basis.	• Low potential for operations and maintenance disruption to residents, businesses and community features. Long-term temporary routine operations and maintenance may affect vehicle traffic on a limited basis. • Location of BPS on the SWM block would impact existing open space.
	Potential effect on existing land uses or long-term planning	• Compliance with Municipal and County Official Plans and Policies.	• Complies with current Municipality of Kincardine Official Plan and policies for municipal water supply systems. • Unable to maintain compliance with long-term growth planning.	• Complies with current Municipality of Kincardine Official Plan and policies for municipal water supply systems. • The site is in a public park • Ability to maintain compliance with existing and long-term growth planning based on site selection. • Location of BPS structure or watermain infrastructure has the ability to comply with sourcewater protection provisions included in	• Complies with current Municipality of Kincardine Official Plan and policies for municipal water supply systems. • The site is zoned (Zone OS – Other) and includes a stormwater management pond. • Ability to maintain compliance with existing and long-term growth planning based on site selection. • Location of BPS structure or watermain infrastructure would need to comply with sourcewater protection provisions

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
				the Official Plan and mitigation measures are available. • Lower impact to upstream pressures given site location, in comparison to Site B.	included in the Official Plan and mitigation measures are available. • Higher impact to upstream pressures given site location, in comparison to Site A.
	Protects health and safety	• Ability to meet or maintain applicable water quality and taste/aesthetic standards.	• Meets current water quality and safety requirements. • Meets applicable water quality and tastes/aesthetic standards for potable water.	• New BPS would help ensure upstream water pressures are maintained above MECP guidelines. • No change would be required to the water supply and the water supply would still meet applicable taste/aesthetic standards. • Rechlorination facilities within the BPS to provide added means to ensure sufficient secondary disinfection is maintained.	• New BPS would help ensure upstream water pressures are maintained above MECP guidelines. • No change would be required to the water supply and the water supply would still meet applicable taste/aesthetic standards. • Rechlorination facilities within the BPS to provide added means to ensure sufficient secondary disinfection is maintained.
Social Environment Summary			**Moderately preferred**	**Moderately preferred**	**Most preferred**
Cultural Environment	Protects cultural heritage resources	• Conserves cultural heritage resources (built heritage resources and/or cultural heritage landscapes).	• No potential to impact cultural heritage resources as no construction is required.	• Moderate potential to encounter structures older than 40 years at this BPS site as it is located in an established neighbourhood. Moderate potential for temporary construction related impacts, such as vibrations from machinery or directional drilling equipment if located within 50 m of cultural heritage resources (such as homes, barns or other structures older than 40 years). • Cultural Heritage checklist to be performed for the preferred site. • A cultural heritage evaluation may be required based on the proposed route if the Alternative is selected.	• Moderate potential to encounter structures older than 40 years at this BPS site as it is located in an established neighbourhood. Moderate potential for temporary construction related impacts, such as vibrations from machinery or directional drilling equipment if located within 50 m of cultural heritage resources (such as homes, barns or other structures older than 40 years). • Cultural Heritage checklist to be performed for the preferred site. • A cultural heritage evaluation may be required based on the proposed route if the Alternative is selected.
	Protects archaeological resources	• Conserves archaeological resources.	• Alternative conserves archaeological resources since there is no construction impacts.	• May have potential to encounter archaeological resources where property disturbance is required. • A Stage 1 archaeological assessment will be required to determine areas of archaeological potential at the preferred BPS site and the preferred route of an extension. Any extension is anticipated to occur within an existing road-right-of-way to reduce potential to encounter archaeological resources.	• May have potential to encounter archaeological resources where property disturbance is required. • A Stage 1 archaeological assessment will be required to determine areas of archaeological potential at the preferred BPS site and the preferred route of an extension. Any extension is anticipated to occur within an existing road-right-of-way to reduce potential to encounter archaeological resources.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
Cultural Environment Summary			**Most preferred**	**Moderately Preferred – no difference between alternatives**	**Moderately Preferred – no difference between alternatives**
Natural Environment	Protects environmental features	• Potential effects to environmental features, including: – Significant woodlands – Significant wetlands – Environmentally sensitive areas – Environmental protection areas – Environmental conservation areas – Steep slopes/ hazard areas – Changes in vegetation composition or impacts to prime agricultural areas.	• There is no construction, and therefore no impacts to environmental features.	• Low potential to impact sensitive environmental features at the BPS site. • Significant woodlands are present along the watermain extension study area, however they are not associated with this BPS location. • The BPS site is located in a municipal park. Wooded areas are nearby, but not present within the municipal park. Wooded areas may be encountered on the watermain extension route. • Two non-provincially significant wetlands (PSWs) are present in the overall study area (Lorne Beach Swamp and an unnamed wetland), however they are not near this potential BPS site. • The northern boundary of the BPS site is within SVCA Regulated Area which is a permanent watercourse. • Hazard areas noted along Bruce Road 23 and in vicinity of site and possible tie-in locations to watermain. • Moderate potential for changes in vegetation composition (such as disturbance of significant trees and/or ground flora) associated with the new BPS and watermain interconnections (primarily if a connection occurs using the Blue Trail). • Additional investigations to be completed in detailed design based on the preferred site.	• Moderate potential to impact sensitive environmental features at the BPS site. • Significant woodlands are present along the watermain extension study area, however they are not associated with this BPS location. • The BPS site is located on or adjacent to a wooded area that is part of the Natural Heritage System for the Municipality. A wooded area is also located north of the Crescent but is not anticipated to be affected by infrastructure related to the BPS since the watermain connection would occur at the intersection of the Crescent with Bruce Road 23. • Two non-provincially significant wetlands (PSWs) are present in the overall study area (Lorne Beach Swamp and an unnamed wetland), however they are not near this potential BPS site. • The site is within the SVCA Regulatory Area. • No hazard or steep slope areas near the BPS site. • Higher potential for changes in vegetation composition (such as disturbance of significant trees and/or ground flora) due to the presence of the wooded areas and marsh. • Additional investigations to be completed in detailed design based on the preferred site.
	Protects wildlife and Species at Risk	• Reduction or deterioration of wildlife (terrestrial or aquatic) and Species at Risk habitat. • Effects of timing of construction on migratory bird nesting/ breeding periods.	• The Alternative does not reduce or deteriorate wildlife or Species at Risk habitat since there are no water supply improvements.	• Moderate potential to reduce or deteriorate wildlife habitat and terrestrial SAR. • The BPS site is located near property that may have potential to be high quality habitat (woodlands, grasslands and wetlands) due to the presence of a watercourse and agricultural area to the north. • Many terrestrial SAR and SOCC potential habitat have potential to be present. Along right of ways, sensitive SAR and SOCC habitat would be less likely to occur.	• Moderate potential to reduce or deteriorate wildlife habitat and terrestrial SAR. • The BPS site is located near property that may have potential to be high quality habitat (woodlands, grasslands and wetlands) due to the presence of a watercourse and a woodland. • Many terrestrial SAR and SOCC potential habitats are present. Along right of ways,

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
				• All areas of disturbance would be located within an existing right of way (Bruce Road 23 and municipal roads) and municipally-owned property). • A SAR aquatic species in the study area, Shortnose Cisco, inhabits Lake Huron based on DFO records. No other aquatic SAR or SOCC were identified. • Site-level field assessments are required in Detailed Design once a route has been determined to verify if suitable habitat for SAR/SOCC is present, and determine mitigation measures, as required.	sensitive SAR and SOCC habitat would be less likely to occur. • All areas of disturbance would be located within an existing right of way (Bruce Road 23 and municipal roads) and municipally-owned property). • A SAR aquatic species in the study area, Shortnose Cisco, inhabits Lake Huron based on DFO records. No other aquatic SAR or SOCC were identified. • Site-level field assessments are required in Detailed Design to verify if suitable habitat for SAR/SOCC is present, and determine mitigation measures, as required.
	Protects groundwater, streams and rivers	• Reduction or deterioration of fish and fish habitat, and effects of construction timing on spawning periods. • Effects on erosion or flood potential. • Changes or impacts to groundwater/ surface water quality or quantity. • Impacts to Conservation Authority regulated areas should be minimized. • Avoids impacts to *Clean Water Act* requirements and Sourcewater Protection sensitive areas (Wellhead Protection Areas, Highly Vulnerable Aquifers. Significant Groundwater Recharge Areas, Intake Protection Zones, etc.).	• This option does not reduce or deteriorate fish or fish habitat, or effects of construction timing on spawning periods. • No effects on erosion or flood potential. • No changes or impacts to groundwater/ surface water quality. • No changes or impacts to groundwater level. • SVCA regulated areas are present (Intake Protection Zone). • Existing site adheres to the Sourcewater Protection Plan enacted under the *Clean Water Act.*	• Moderate potential for a reduction or deterioration of fish and fish habitat, or effects of construction timing on spawning periods due to the presence of a permanent watercourse near the BPS site. • Multiple water crossings are present within the overall study area for any watermain extension. Little Sauble River, Tiverton Creek are cold-water thermal regime creeks with an in-water restricted period of October 1 to May 31, to be confirmed with MNRF/SVCA. The two other creeks do not have available thermal regime information. • Many SVCA regulated areas are present in the study area, including adjacent to Riggin Park. Development in regulatory areas requires permitting to consider potential for erosion or flooding effects and mitigation. • Any water crossings required for the route are assumed to be completed by means of trenchless methods to mitigate impacts. • The BPS site is located in Riggin Park which is within a sourcewater protection area: Intake Protection Zone 2 (IPZ-2). The existing watermain is located within the Intake Protection Zone for the Kincardine WTP.	• Moderate potential for a reduction or deterioration of fish and fish habitat, or effects of construction timing on spawning periods due to the presence of a permanent watercourse near the BPS site. • Multiple water crossings are present within the overall study area for any watermain extension. Little Sauble River, Tiverton Creek are cold-water thermal regime creeks with an in-water restricted period of October 1 to May 31, to be confirmed with MNRF/SVCA. The two other creeks do not have available thermal regime information. • Many SVCA regulated areas are present in the study area, including a regulated area on the subject property at the SWM pond. Development in regulatory areas requires permitting to consider potential for erosion or flooding effects and mitigation. • Any water crossings required for the route are assumed to be completed by means of trenchless methods to mitigate impacts. • The BPS site is not located in a sourcewater protection area. The existing watermain is located within the Intake Protection Zone for the Kincardine WTP.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
	Minimizes climate change impacts	• Minimizes greenhouse gas emissions. • Reducing energy consumption. • Reduction in carbon footprint (efforts to move towards carbon neutrality).	• Minimizes greenhouse gas emissions as no infrastructure is constructed. • No change to climate change resiliency as there is no change to energy consumption. • No ability to reduce the carbon footprint by consolidating water treatment at the Kincardine WTP. No ability to decommission the Bruce Power WTP.	• Moderate potential to minimize greenhouse gas emissions as the new BPS could be built to meet current energy and water efficiency standards. • Higher energy consumption compared to Site 3 as the BPS is further upstream so additional friction losses are expected. • Low ability to reduce the carbon footprint due to operational energy inputs needed compared to Do Nothing. • Some ability to decommission or reduce service needs of the Bruce Power WTP which may lower the overall carbon footprint.	• Moderate potential to minimize greenhouse gas emissions as the new BPS could be built to meet current energy and water efficiency standards. • Lowest potential energy consumption since the BPS is located closer to the north, so reduced TDH due to lower friction losses. • Low ability to reduce the carbon footprint due to operational energy inputs needed compared to Do Nothing. • Some ability to decommission or reduce service needs of the Bruce Power WTP which may lower the overall carbon footprint.
Natural Environment Summary			**Most preferred – least impact due to no construction**	**Moderately Preferred**	**Moderately Preferred**
Technical Environment	Minimizes land requirements	• Number and type of properties or easements required. • Amount of land required, including temporary/permanent easements.	• No properties or easements are required. • No land is required.	• The BPS would be located on municipally owned land. The watermain extension would be located within a public road right-of-way. • Potential work may occur within a future ROW (Blue Trail)/easement depending on watermain interconnections. • Access off Inverlyn Crescent North would require confirmation of easement width for vehicle access.	• The BPS would be located on municipally owned land. • The watermain extension would be located within a public road right-of-way. • Proposed booster station would be located on an existing SWM block site. • No additional easements anticipated.
	Operations and Maintenance (Operability)	• Requirement of additional resources or supplies, new technology or training requirements, parts or equipment supplies or replacements. • Increase or reduction in complexity to operate the new system compared to current treatment processes.	• Additional resources or supplies, and technology would be required to maintain compliance at the existing WTP site, due to increased demands on the facility up to the current rated capacity. • Over a 20-year planning timeframe, anticipated maximum and peak demands will stress the existing system and ability to service lands to the north without significant pressure and supply issues. No ability to supply Bruce Power.	• Additional resources or supplies, and technology would be required. Extent of operational complexity not considered significant as Operations staff currently operate similar booster pumping facilities. • Long term maintenance considered standard and not complex or unique to what the Municipality currently performs.	• Additional resources or supplies, and technology would be required. Extent of operational complexity not considered significant as Operations staff currently operate similar booster pumping facilities. • Long term maintenance considered standard and not complex or unique to what the Municipality currently performs.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
	Constructability	• Increase or reduction in complexity to construct the new system. • Ability to address technical considerations related to the site location, depth of excavation, soil conditions, groundwater control, construction duration, and ease of integration into the existing water supply system. • Ability to maintain service level during construction. • Effect on existing utilities and infrastructure (number and type of potential conflicts).	• No change in complexity based on current regulations and rated capacity of the system. • Not able to address an increase in demands beyond the current rating. • An increase in demands may impact disinfection capabilities of the existing system, and the ability to meet flow/pressure requirements required to meet planned growth and servicing extensions. • No ability to service the demands for Bruce Power.	• Low increase in the complexity of constructability impacts compared to Site 3 if Blue Trail is used for new watermain interconnections. Higher complexity than Do Nothing due to the addition of rechlorination techniques. • The BPS would require the installation of pressure zone isolation chambers at approximately 5 locations, resulting in anticipated traffic impacts and possible short-term water disruption to local customers. • Able to maintain service level during construction, although short-duration and localized service impacts may be required for tie-ins with mitigation measures. • Higher potential to effect existing utilities and infrastructure if Blue Trail is used, however additional 5 site locations for chambers will require coordination to site new infrastructure.	• Moderate increase in the complexity of constructability impacts compared to Site 2 due to work in the municipal right of way at the entrance to a subdivision. Higher complexity than Do Nothing due to the addition of rechlorination techniques. • The BPS technical considerations include the need to construct new watermain feeds to the BPS site and supply from BPS along Stoney Island Crescent to connect to existing 300 mm watermain along Bruce Road 23. • Able to maintain service level during construction, although short-duration and localized service impacts may be required for tie-ins with mitigation measures. • Moderate potential to effect existing utilities due to need to construct new watermains along Stoney Creek Crescent which will impact local area.
	Provides consistent and reliable service and water quality performance	• Ability to provide reliable water quality for the potable water system. • Resilience to climate change impacts. • Improvement in redundancy of supply/service to allow continuous water supply and proper maintenance.	• Low ability to provide a safe and reliable drinking water (potable) supply system over the long-term due to anticipated growth demand, and an inability to accommodate large water users such as Bruce Power in growth scenarios. • No change in climate change resiliency. • Does not provide improvements in redundancy of supply/service to allow continuous water supply and proper maintenance since no changes are identified.	• A watermain extension with a BPS at Riggin Park would provide a safe and reliable water supply and can be sized to best manage pressure impacts on the upstream system. • No change in climate change resiliency, although water storage options may be considered in the next phase of the EA. • Provides some limited improvements in redundancy of supply and service for select areas of the distribution system.	• BPS could be sized to meet downstream system demands, however impact to upstream system as it relates to pressures is more significant that Site 2 due to location of this site. • No change in climate change resiliency, although water storage options may be considered in the next phase of the EA. • Provides some limited improvements in redundancy of supply and service for select areas of the distribution system.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
	Meets existing and future water supply quantity needs	• Ability to provide water supply servicing volume for the current and projected population of Kincardine. • Ability to meet future water supply demands or expansion requirements.	• Able to provide water supply servicing for the current population, however the system cannot provide servicing for projected population growth with added Bruce Power demand. • Does not address future demands or expansion requirements to service areas to the north.	• Able to provide water supply servicing for the current population, in addition to planned growth and proposed supply to Bruce Power. • Site capable of allowing for future expansion.	• Able to provide water supply servicing for the current population, in addition to planned growth and proposed supply to Bruce Power. • Site capable of allowing for future expansion.
	Meets Agency standards, permits and approvals	• Ability to meet Agency standards, permits or approvals.	• The current system is able to meet the Municipality and Agency standards, permits and approvals. • Does not provide capacity necessary to meet demands which drive future standards, permits and approval decisions.	• Able to meet required standards, permits and approvals. • Would require amendment to the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL). • Site Plan approval may be required for new booster station site. • Additional agency approvals (including SVCA and MECP) will be required.	• Able to meet required standards, permits and approvals. • Would require amendment to the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL). • Site Plan approval may be required for new booster station site. • Additional agency approvals (including SVCA and MECP) will be required.
	Aligns with existing and planned infrastructure improvements	• Ability to coordinate with existing and planned water, wastewater and transportation infrastructure improvements (ie. Master Plans).	• No ability to coordinate with existing and planned Municipality water, wastewater and transportation infrastructure improvements. • Lack of supply and system capacity would impact planned improvements that also address servicing for growth and Bruce Power demands.	• High ability to coordinate proposed works with other potential Municipal projects required in vicinity of the project area. • Need for zone separation will require new chambers at 5 locations, which will require adequate spacing and may encounter utility conflicts.	• High ability to coordinate proposed works with other potential Municipal projects required in vicinity of the project area. • Watermain upgrades to and from site will impact existing residential area in the short term. Potential to improve local pressures depending on connection to system (before or after new BPS).
	Aligns with existing and future land use	• Ability of sites to comply with existing and future land use/zoning. • Ability of a site to maintain/not negatively affect community cohesiveness.	• The existing site complies with existing land use and zoning. • No change to the existing systems ability to maintain or negatively affect community cohesiveness.	• Some ability to address future growth requirements in the Municipality, although this may be limited by surplus available from an adjacent system over time. • Some potential to negatively affect community cohesiveness if the BPS will impact activities in the municipal park or trail over the long-term, or the presence of a BPS building gains a negative perception among residents.	• Some ability to address future growth requirements in the Municipality, although this may be limited by surplus available from an adjacent system over time. • Some potential to negatively affect community cohesiveness if the BPS building gains a negative perception among residents.

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

Category	Criteria	Key Indicators	Do Nothing (for comparison only)	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station at Stoney Island Crescent Stormwater Management Pond Lands
Technical Environment Summary			**Least Preferred – Cannot satisfy the problem/opportunity statement**	**Moderately Preferred**	**Most Preferred**
Financial	Provides low lifecycle costs	• Costs associated with operations and maintenance.	• Operations and maintenance costs would not change, except for additional treatment-related costs at the Kincardine WTP. • No ability to meet servicing demands for Bruce Power. • The system would require regular operation and maintenance work including replacement of components due to lifecycle issues.	• Total project costs (design/construction) anticipated to be higher in comparison to Site B assuming the use of the Blue Trail area which would need to be built to act as an access road. Pressure zone separation chambers are also included which will require restoration in those areas. • Anticipated larger pumps required to pump over the longer distance, increasing energy costs, in additional to higher maintenance costs for chambers over time.	• Total project costs (design/construction) anticipated to be lower in comparison to Site A, with higher costs associated with watermain work near BPS, but no requirement for additional chamber installations. • Anticipated smaller pumps, reducing energy costs. • No chambers anticipated for this option, compared to Site A.
	Estimated capital cost	• Cost associated with capital costs for design and construction.	• Low costs associated with capital costs, as it is assumed that only regular maintenance and lifecycle replacement would be undertaken.	• Total cost associated with capital costs comparable to Site B specifically if Blue Trail area is used, although access along this path would need to be improved for operations staff. Additional need for chamber installations	• Highest cost associated with capital costs due to additional watermain work along roadway and possibility of site-specific design requirements based on proximity to nearby residential homes.
	Need for Property Acquisition	• Ability to minimize or reduce property acquisition.	• No property acquisition costs required.	• No property acquisition anticipated	• No property acquisition anticipated.
Financial Summary			**Least Preferred**	**Moderately Preferred**	**Most Preferred**

Reference: **Technical Memorandum 1 - Expansion of the Kincardine Water Supply System – Alternative Solution Evaluation for Comment**

1.9 PREFERRED ALTERNATIVE DESIGN FOR THE BOOSTER PUMP STATION

Based on screening of the various alternative solutions, the preferred solution is Alternative Site B Booster Pumping Station at Stoney Island Crescent.

This preliminary Preferred Solution will include new watermain construction to and from the new BPS to the existing 300 mm diameter watermain on Bruce Road 23. In addition, extension of the existing 300mm diameter watermain at Alma Street and Albert Road to Concession Road 2, extending northwest to Tie Road and Concession Road 2 (near Bruce Power property line) will also be required to provide supply to Bruce Power. The proposed watermain will be located within the existing municipal right-of-way.

Figure 2: Proposed Watermain Extension to Service Bruce Power

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Appendix F2: Kincardine Water System Hydraulic Model

Stantec

Memo

To:	To File	From:	Nelson Oliveira London, ON
File:	165630238	Date:	July 20, 2023

Reference: Technical Memorandum #2 - Kincardine Water System Hydraulic Model

1. DISTRIBUTION SYSTEM ANALYSIS

The Kincardine water system hydraulic model that was updated as part of the recent Water and Wastewater Servicing Master Plan (WWWSMP) 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 information on the results of additional hydraulic modeling undertaken by Stantec to assess the ability of the distribution system to meet the future demand conditions with the Bruce Power site, and to identify potential system upgrades.

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

PIPE NETWORK

The Kincardine water distribution system includes pipes that range in diameter from 100 mm to 400 mm and are constructed of several different materials based on a review of the existing WaterCad model. All pipes are assigned Hazen-Williams C-Factors based on the guidance presented in Design Guidelines for Drinking Water Systems (MOE, 2008), as summarized in the following table.

Table 1 – Assigned C-Factors

Pipe Diameter	Hazen-Williams C-Factor
150 mm	100
200 mm – 250 mm	110
300 mm – 600 mm	120

The available information suggests that a portion of the network is constructed of cast iron pipe. Field measurements on previous projects in other systems have shown that the actual C-Factors in these pipes are often significantly lower than the MECP guideline values. However, in the absence of field test data, the MECP values were used for this hydraulic analysis. This may result in discrepancies between modeled results and observed HGLs and flows throughout the system.

Reference: **Technical Memorandum #2 - Kincardine Water System Hydraulic Model**

SUPPLY

Water is supplied from Lake Huron to the network at the WTP. Treated water is supplied by three high lift pumps. Under typical operating conditions, only a single pump is required to fill the standpipe.

STORAGE

An existing standpipe provides equalization and fire storage. Based on the dimensions presented in the model, the total standpipe capacity is approximately 3,360 m^3, with an effective volume of about 3,005 m^3 based on operation of an on-site BPS. A summary of the modelled design elevations is presented in the following table.

Table 2 – Standpipe Design Elevation Summary

Level	Elevation (m)
Base	207.5
Low Water Level	243
Maximum Water Level	248

DEMANDS

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

Table 3 – Demand Summary (Scenario and Development Area)

Scenario	MDD (L/s)	PHD (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

Notes:

1. Planned future growth includes planned development in the Kincardine, Lakeshore, Inverhuron & Concession 2 areas.

2. MDD and PHD demands for Bruce Power equivalent to 32 L/s. This assumes supply to Bruce Power to meet PHD would not exceed the MDD target of 32 L/s and that local storage and pumping facilities within Bruce Power would address peak hour demands.

FUTURE CONDITIONS ANALYSIS

In order to assess the impacts associated with a potential connection to the Bruce Power site, hydraulic modeling analysis was undertaken. 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 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 presented in Appendix A to this memorandum. Modeling of supply to the Bruce Power site assumed a termination at the Concession Road 2 & Tie Road intersection. In addition to the operational settings noted above, modeling also assumed the following:

- Supply to the Bruce Power site assuming no additional booster pumping stations.
- Supply to the Bruce Power site assuming a new booster pump station (BPS) at various locations.

As previously noted, the future conditions scenario without the additional Bruce Power site demands was used as the baseline condition. Results with the Bruce Power site demands were then compared to baseline to assess relative change. 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 Bruce Power site servicing should be kept at a 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 Water Treatment Plant (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, only two (2) sites were shortlisted for further detailed analysis. These included:

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

A third site, off Kinhuron Road, was initially shortlisted however further modeling indicated that this site was located too far from the WTP and would result in significant pressure issues on the upstream side of the distribution system should a pump station be constructed at that location. Refer to HGL Profile 1: Kincardine WTP to Bruce Power in Appendix A which depicts the hydraulic grade line (HGL) for each location. Under future peak hour with Bruce Power demands, the hydraulic grade line approaches the 40 psi (276 kPa) threshold and represents a significant drop in pressure over baseline conditions.

Figure 1 shows the location of each of the shortlisted sites. The HGL profile includes results under various demand and operational conditions (baseline, Site A BPS, Site B, BPS), in addition to ground elevation reference and pressure offsets from ground elevation corresponding to the 40 psi (276 kPa), 80 psi (552 kPa), and 100 psi (689 kPa) thresholds noted above.

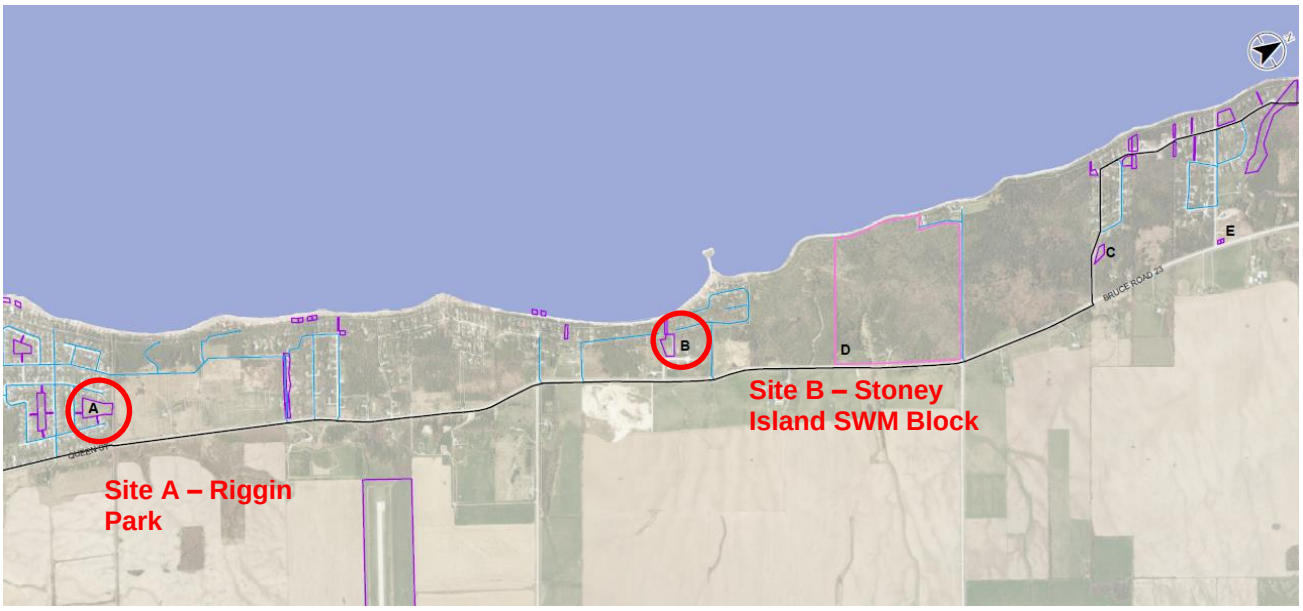

Figure 1 – Available Municipal Parcels and Location of Shortlist Sites

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 Bruce Power to convey flows throughout the site and therefore pressure requirements at property line are considered to be approximately 45 psi (310 kPa), 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.

Reference: **Technical Memorandum #2 - Kincardine Water System Hydraulic Model**

KEY FINDINGS AND CONCLUSION

Based on the above operating scenarios, key findings related to each of the shortlisted site 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 (70 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 (70 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. Appendix A includes the HGL profile under the varying supply conditions and shows the general areas along the supply route where pressures are anticipated to exceed this pressure value. While there are no concerns with regards to the ability of the watermain to operate at this pressure, local PRVs may be required to protect residential plumbing systems.

- For reference, current estimated system flows were also modeled with the added Bruce Power site demand of 32 L/s which represents their maximum day flow requirement. For this scenario in which other planned future development within Kincardine is not yet in place, results indicate that pressures should remain above the 40 psi (276 kPa) minimum threshold. This scenario would more closely match near-term conditions. Furthermore, should initial demands for the Bruce Power site be noticeably below the targeted 32 L/s (future maximum day demand), pressure impacts along the distribution system will be further minimized. Under this assumption, the construction of the BPS could be deferred in the short-term.

- 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 was 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.

Reference: **Technical Memorandum #2 - Kincardine Water System Hydraulic Model**

- 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 B (figures) and Appendix C (tables) and summarized briefly above, there appears to be areas in which pressures are more significantly impacted as a result of placement of a BPS at Site A. As a result, Site B was selected as the preferred area to site a BPS as it is capable of providing 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 off the Kincardine water supply is not intended to interconnect directly with the distribution system but is anticipated to be terminated to system storage. 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 Bruce Power are currently well 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.

Stantec Consulting Ltd.

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Vice President, Regional Business Leader, Canada East

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Fax: 519 645 6575
nelson.oliveira@stantec.com

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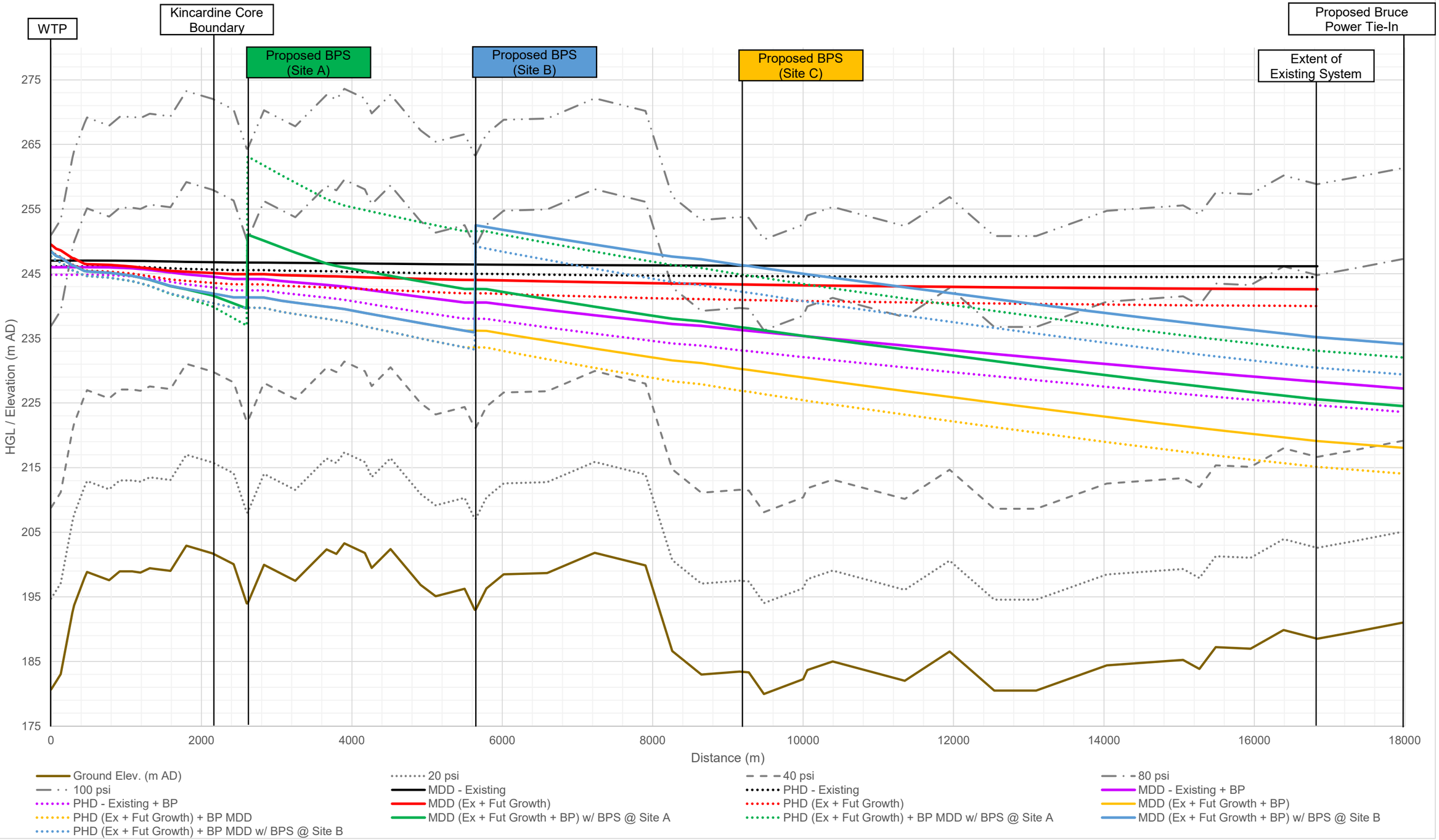
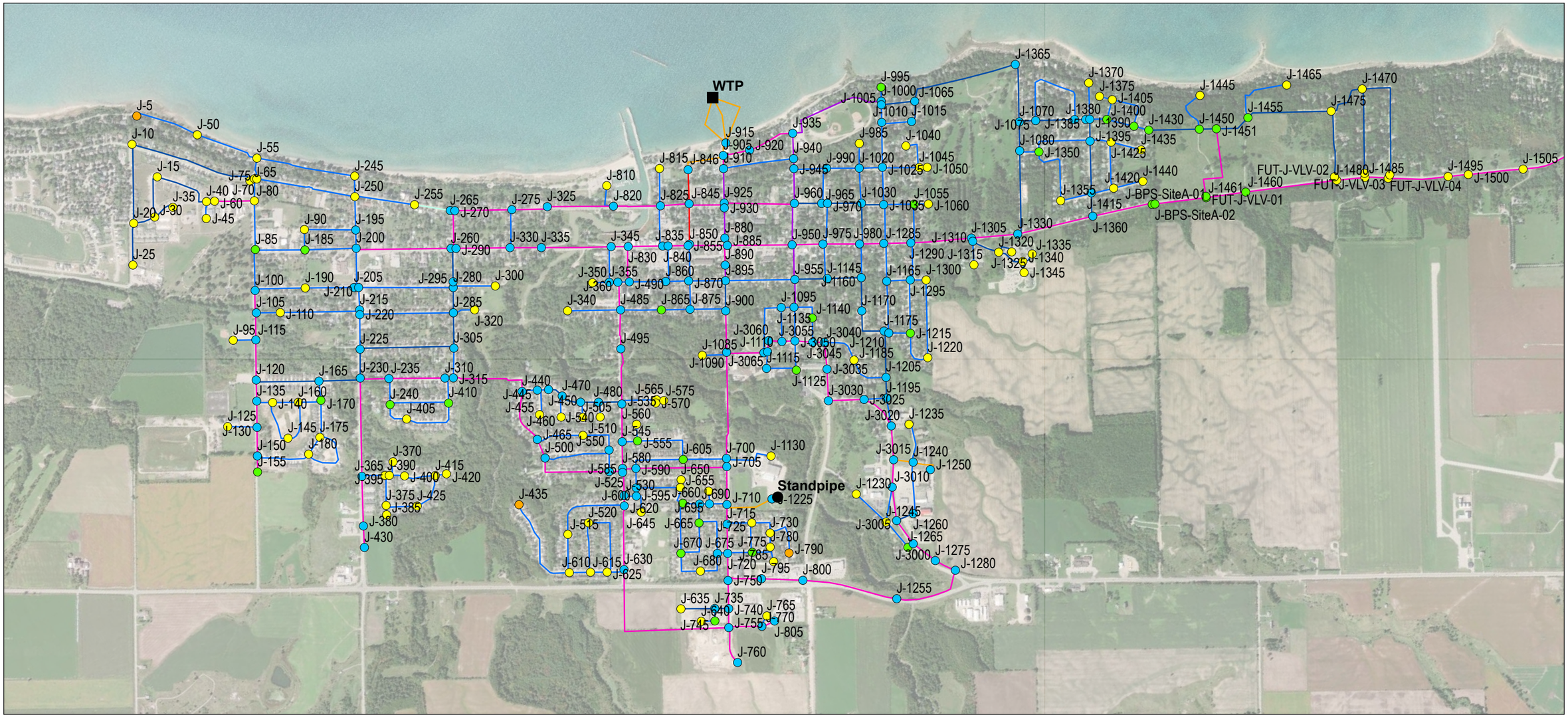
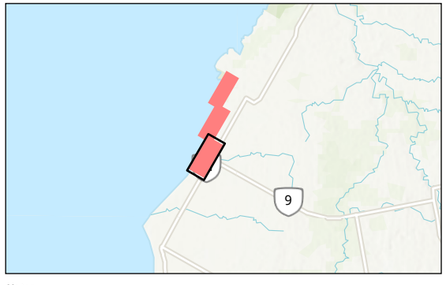
Appendix A
HGL Profile

HGL Profile 1: Kincardine WTP to Bruce Power



Appendix B
Figures





Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)
- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)
- 200
- 300

Available Fire Flow (L/s)
- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

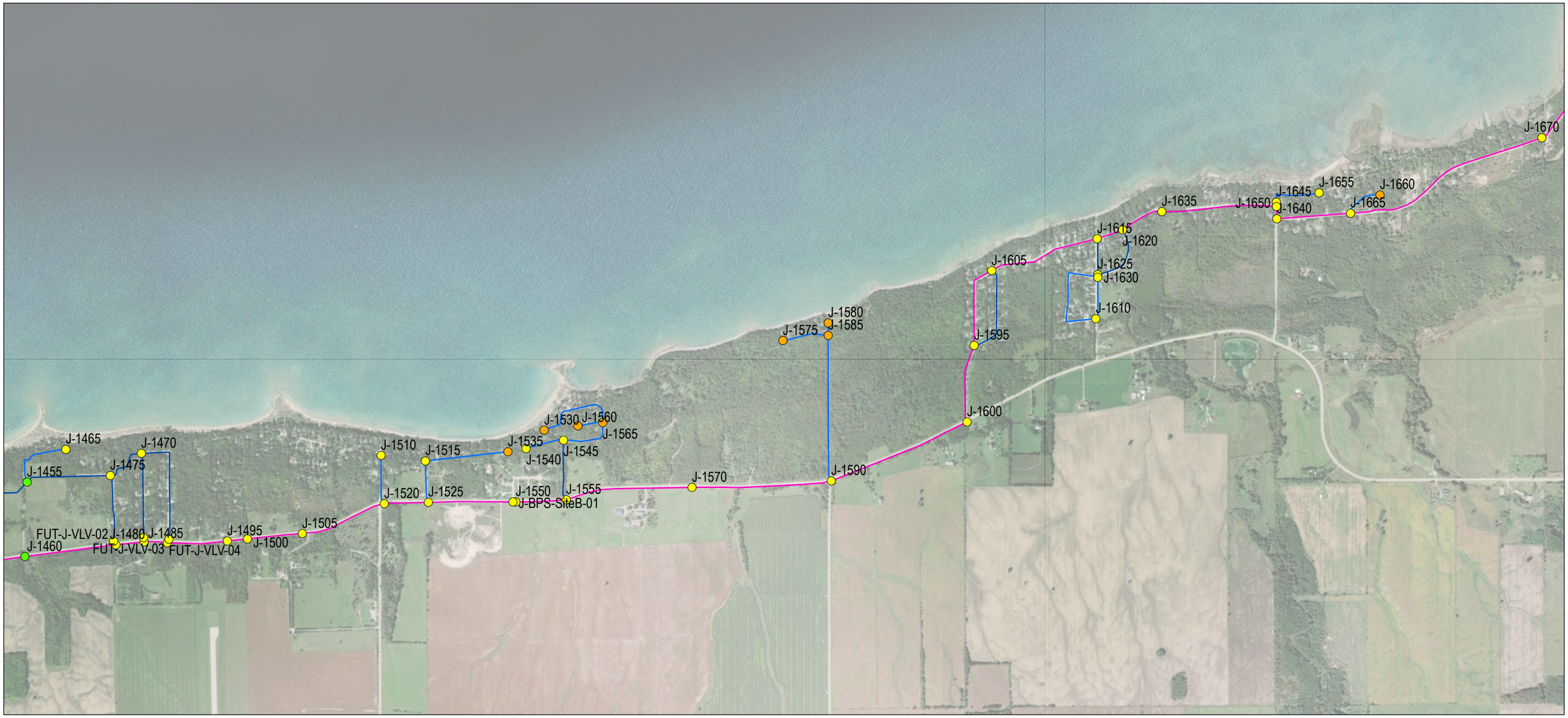
Stantec

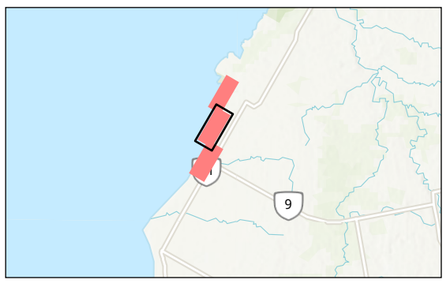
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Available Fire Flow - Future MDD+FF (No BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

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1:18,000

N

Stantec

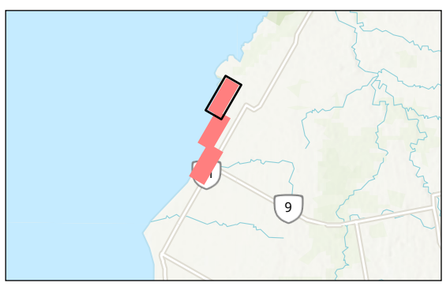
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Available Fire Flow - Future MDD+FF (No BP)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model



Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

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- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
1:17,000

N

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

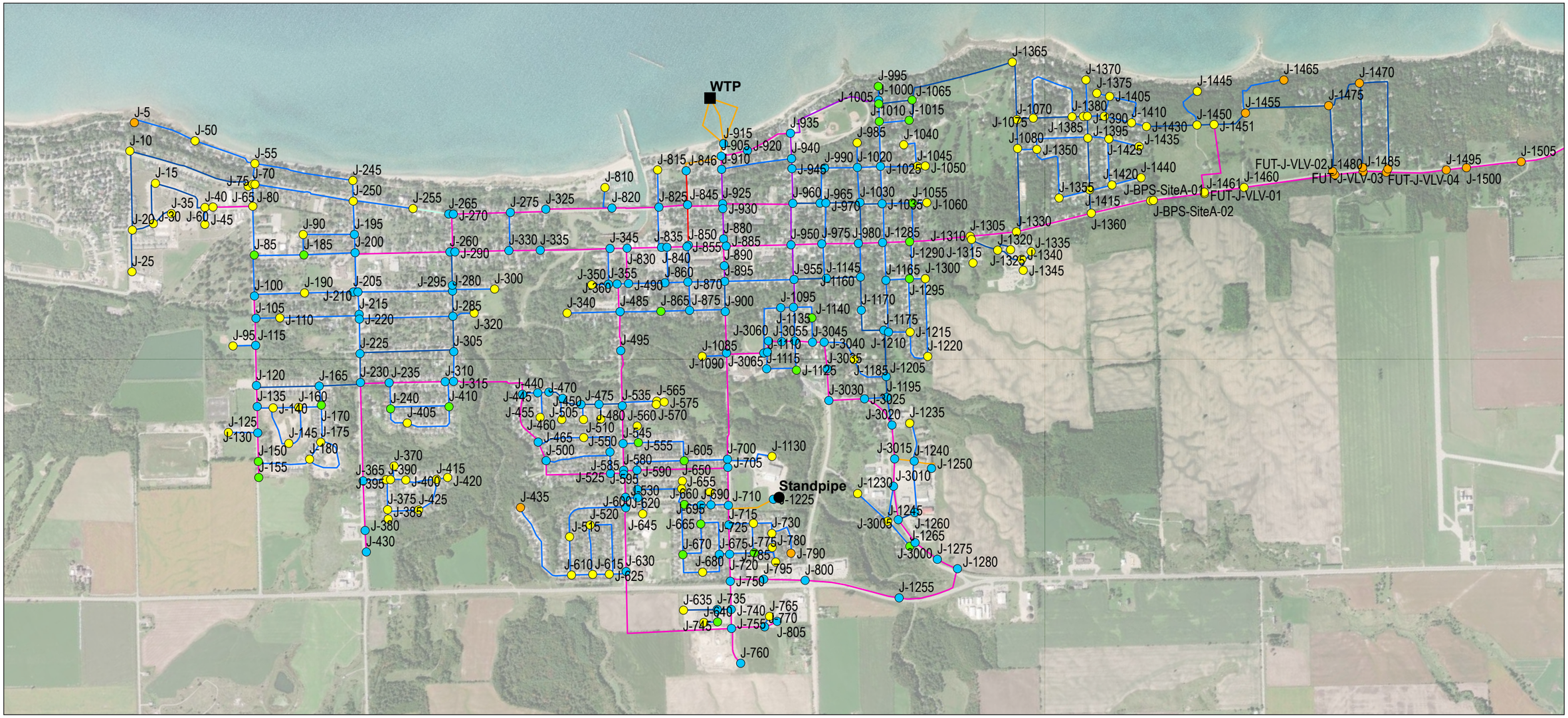
Stantec

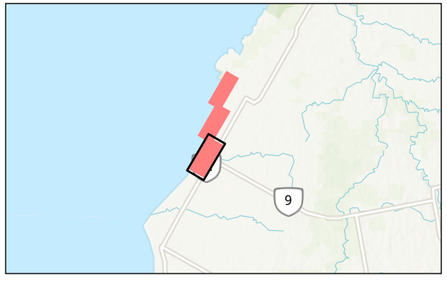
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Available Fire Flow - Future MDD+FF (No BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

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Notes
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2. Data Sources: BM Ross Hydraulic Model

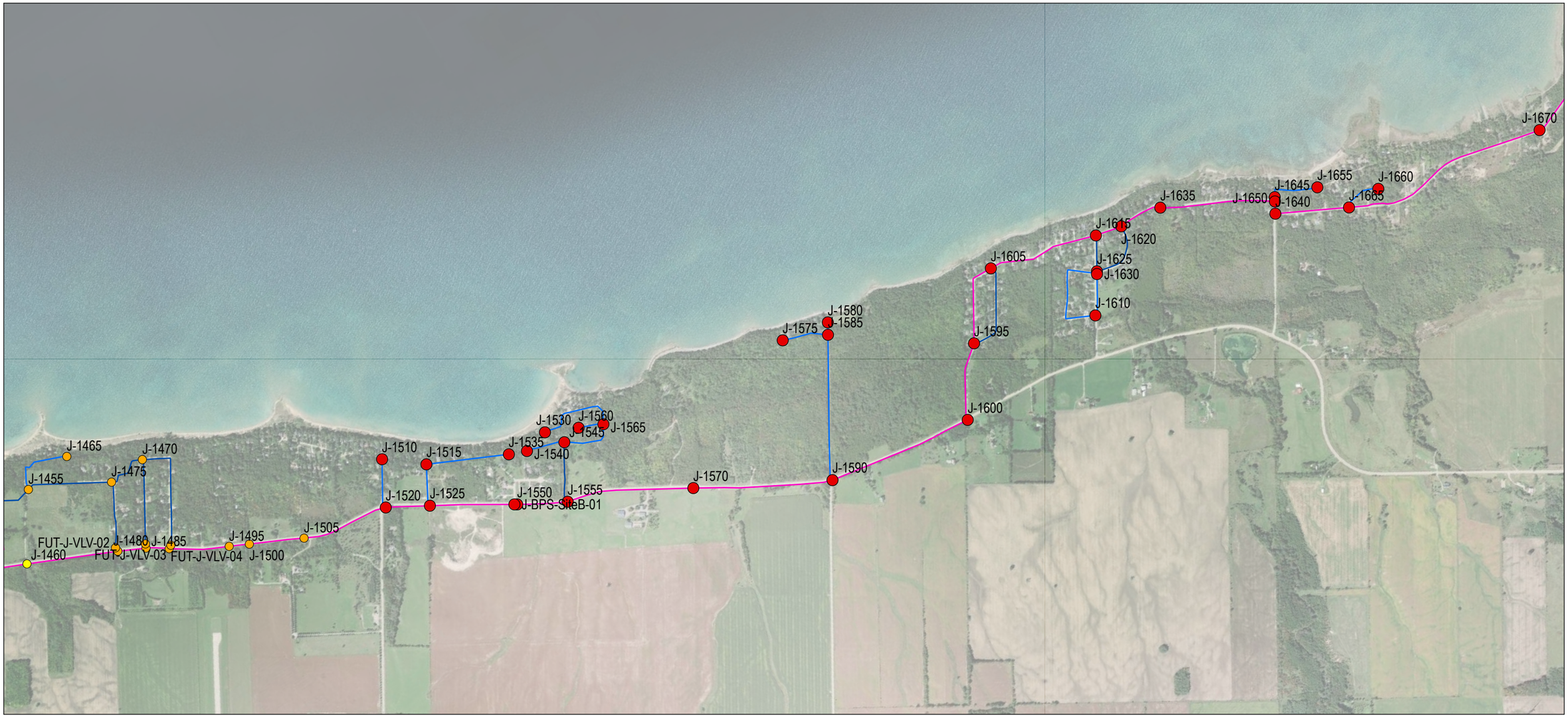
Stantec

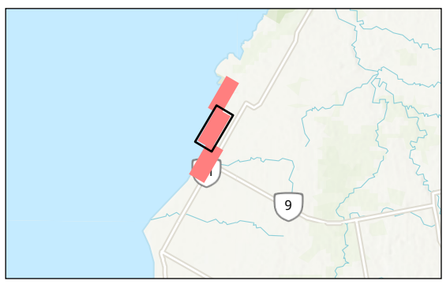
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Available Fire Flow - Future MDD+FF (With BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
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N

Notes
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2. Data Sources: BM Ross Hydraulic Model

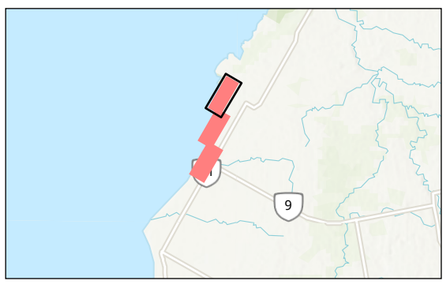
Stantec

Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Available Fire Flow - Future MDD+FF (With BP)



Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

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Notes

1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
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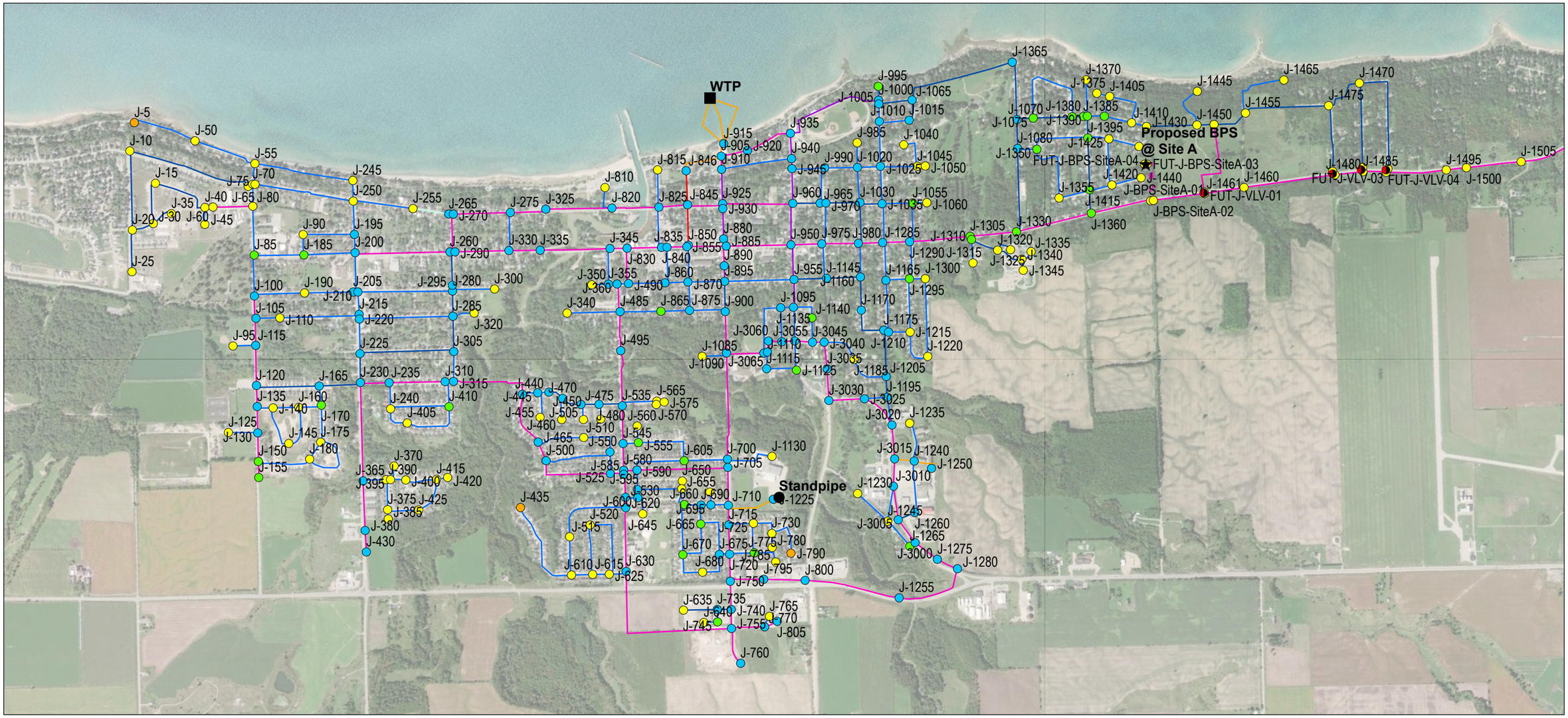
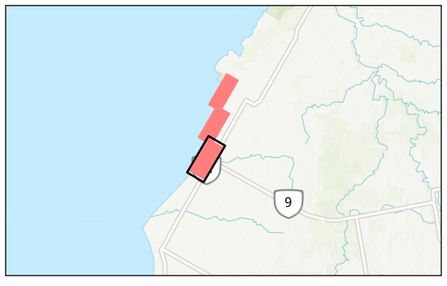
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Available Fire Flow - Future MDD+FF (With BP)





Legend

- Water Treatment Plant
- Standpipe
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
1:18,000

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

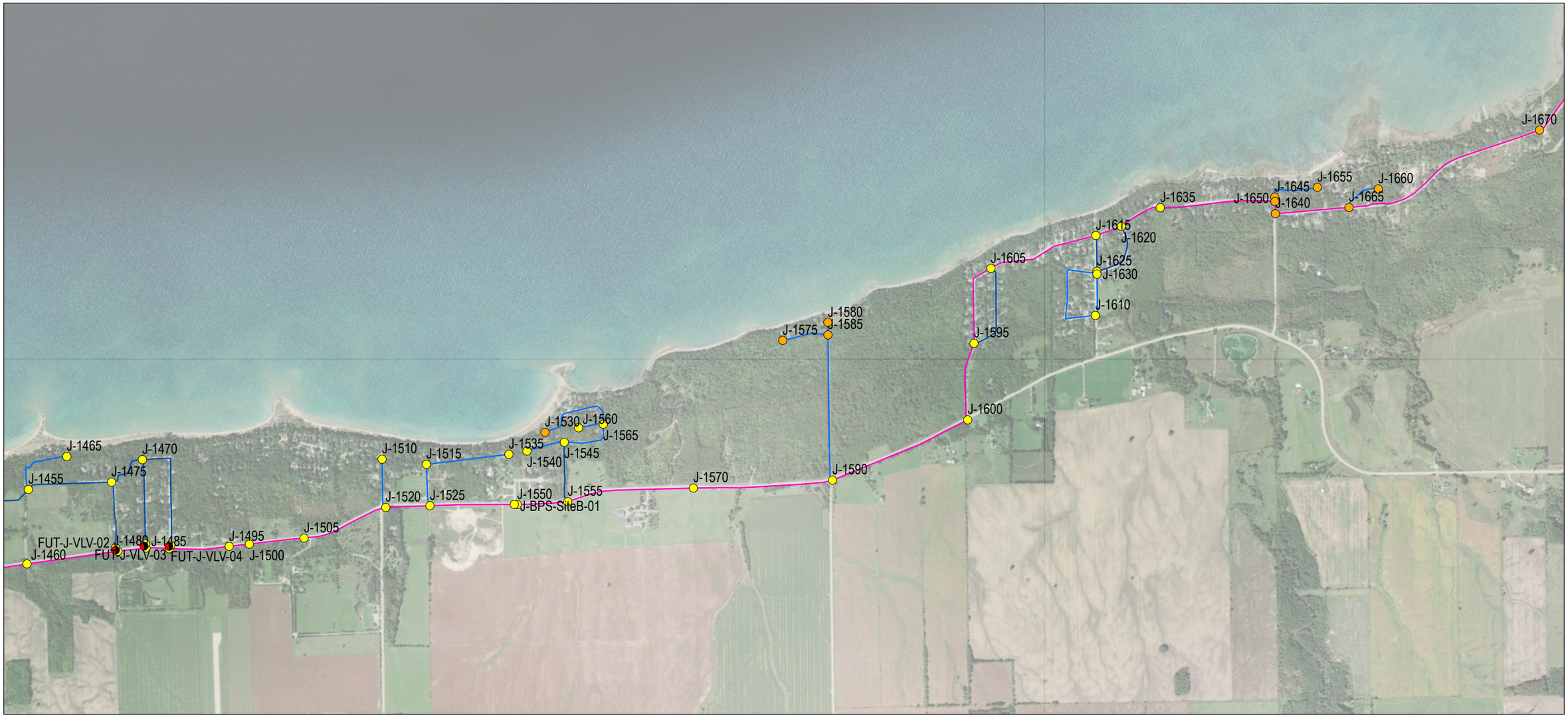
Stantec

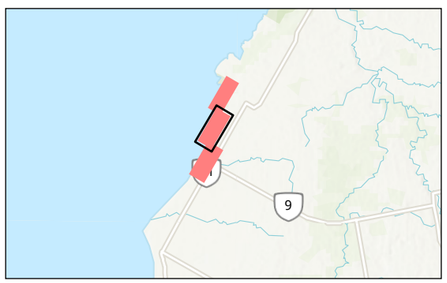
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site A)





Legend

- Water Treatment Plant
- Standpipe
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
1:18,000

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Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

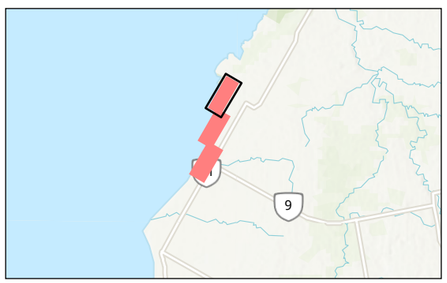
Stantec

Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site A)



Legend

- Water Treatment Plant
- Standpipe
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
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Notes

1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

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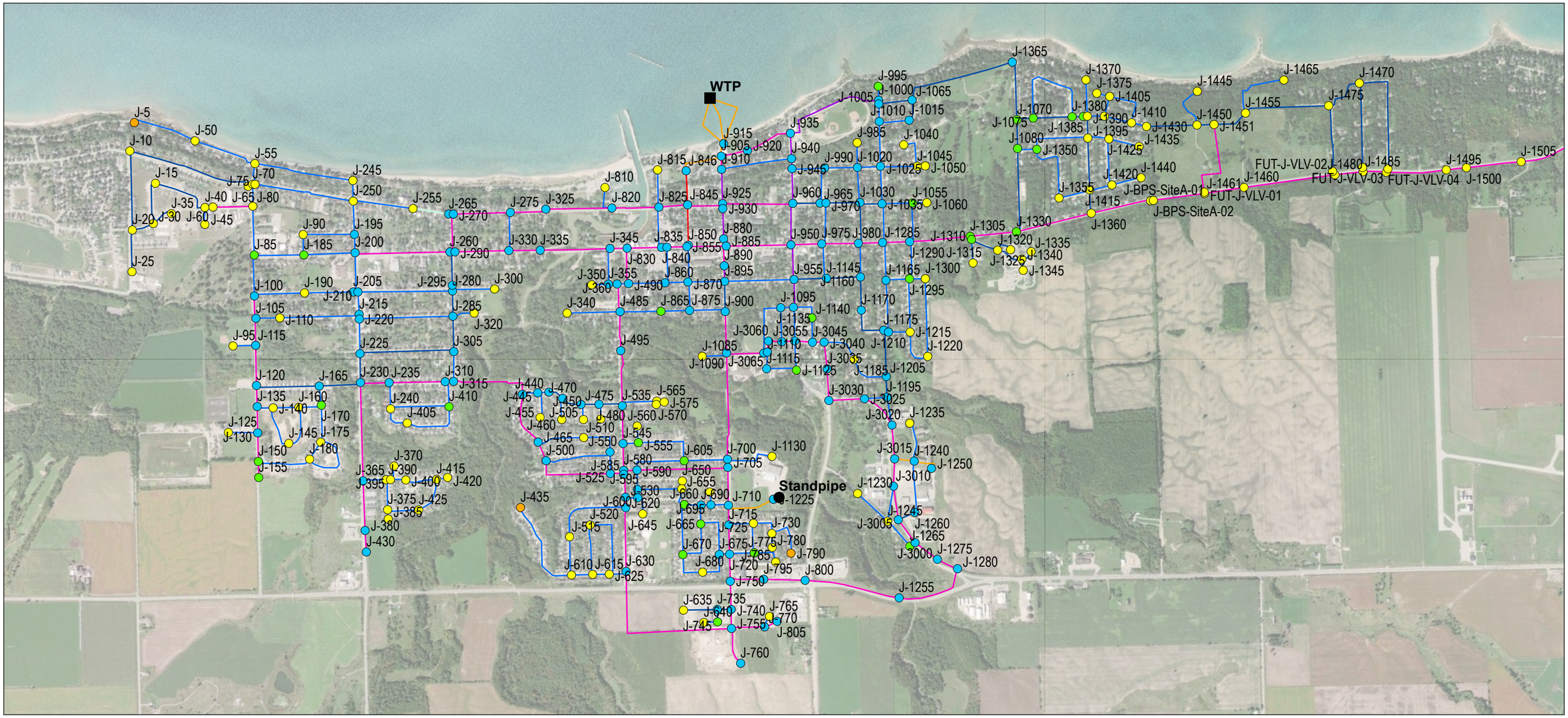
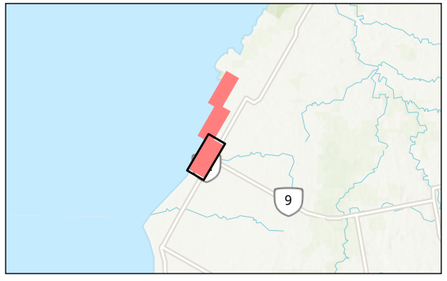
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site A)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

- 33.3 or Less
- 33.4 - 50.0
- 50.1 - 133.3
- 133.4 - 166.7
- Greater than 166.7

0 400 800 Meters

(At original document size of 11x17)
1:18,000

Notes
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2. Data Sources: BM Ross Hydraulic Model

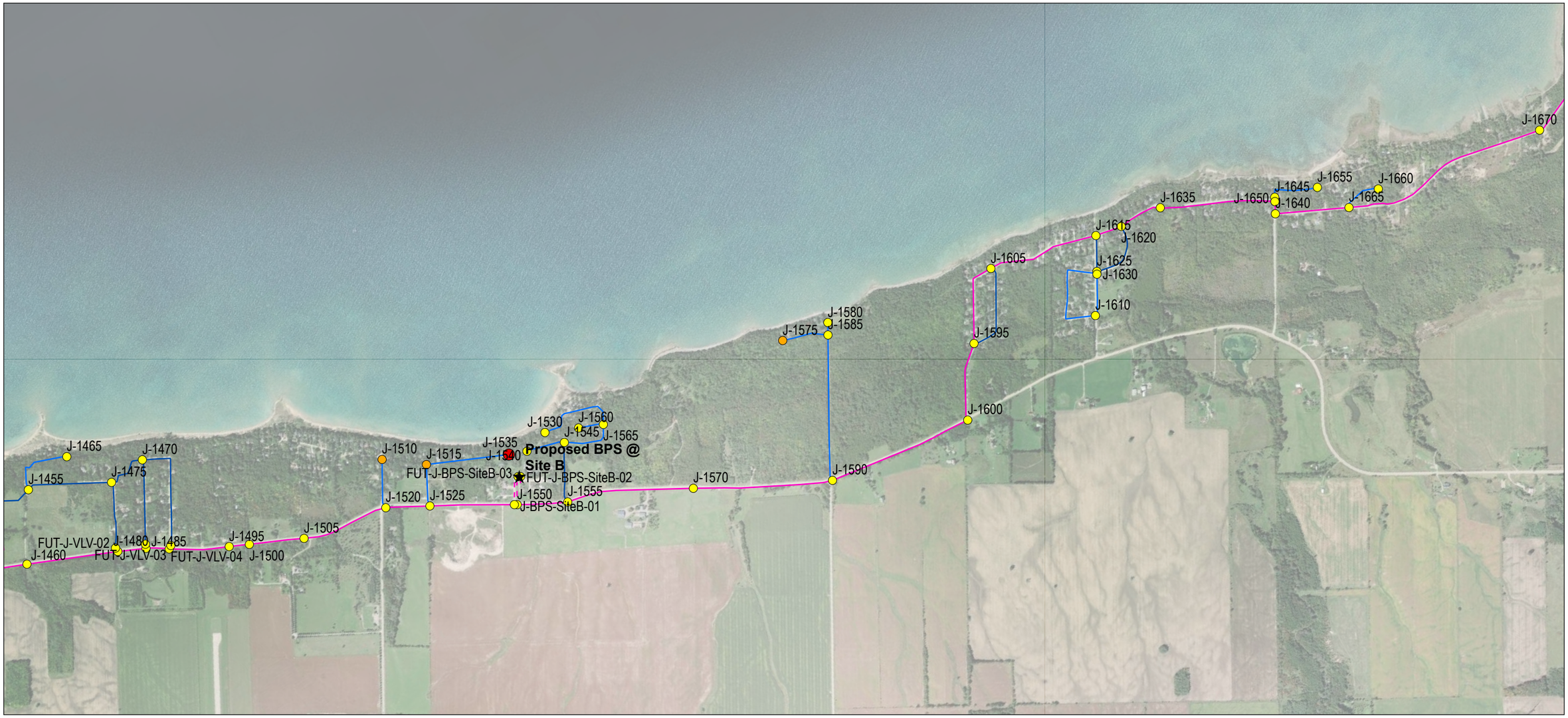
Stantec

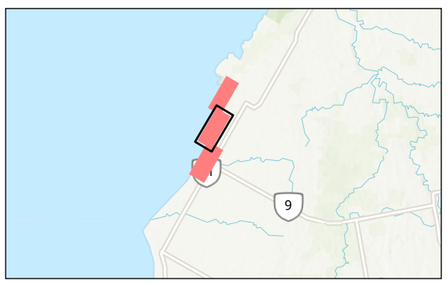
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site B)





Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)
- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)
- 200
- 300

Available Fire Flow (L/s)
- 33.3 or Less
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0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

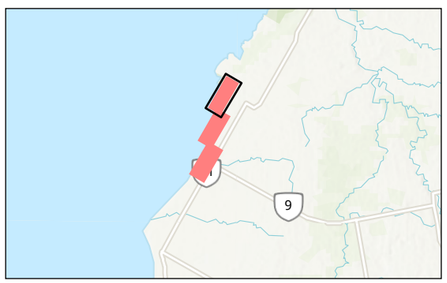
Stantec

Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site B)



Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Available Fire Flow (L/s)

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0 400 800 Meters

(At original document size of 11x17)
1:17,000

Notes

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2. Data Sources: BM Ross Hydraulic Model

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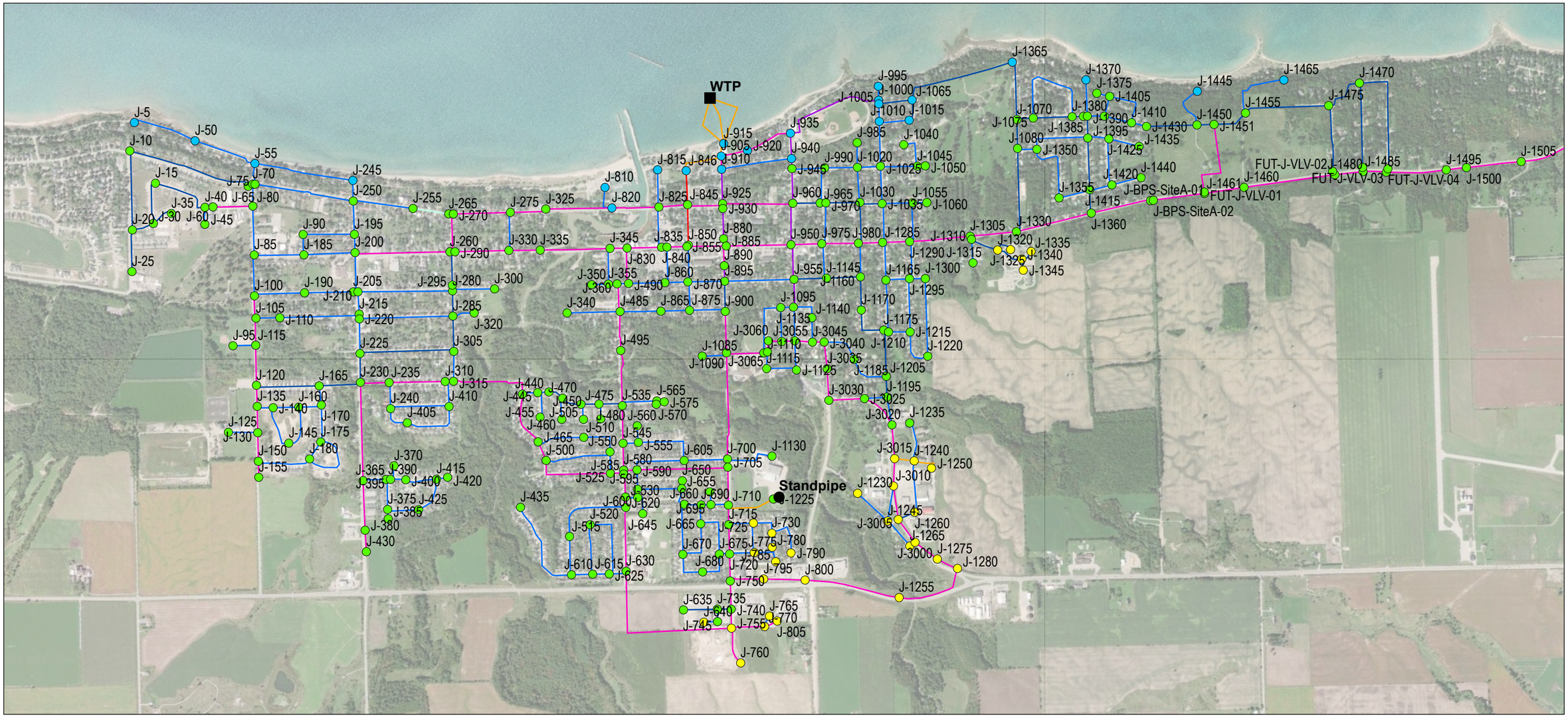
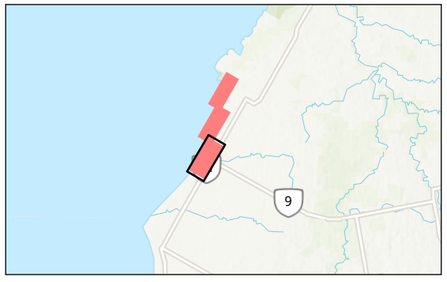
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Available Fire Flow - Future MDD+FF (With BP and BPS @ Site B)





Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)
- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)
- 200
- 300

Minimum Pressure (psi)
- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

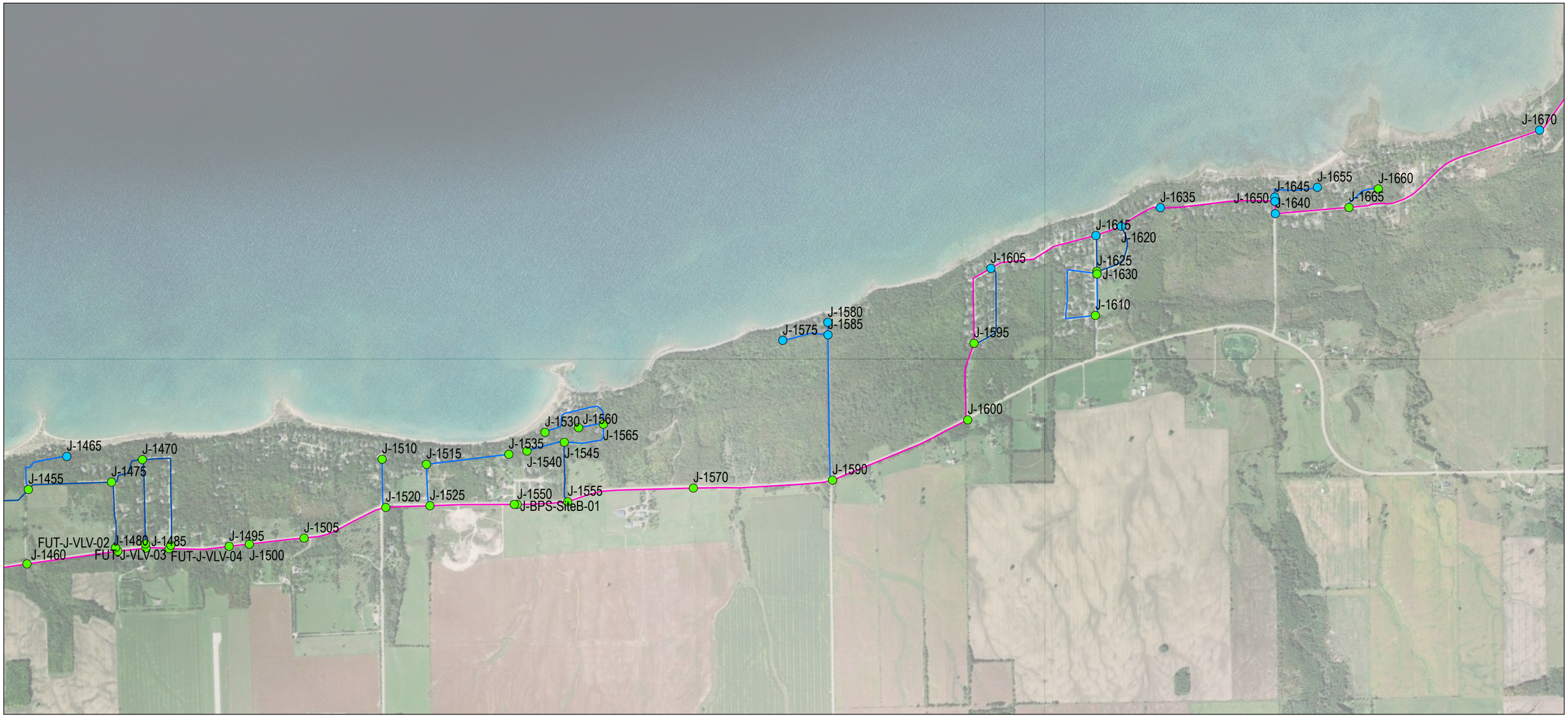
Stantec

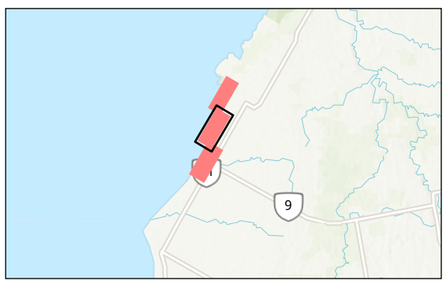
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Minimum Pressure - Future PHD (No BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

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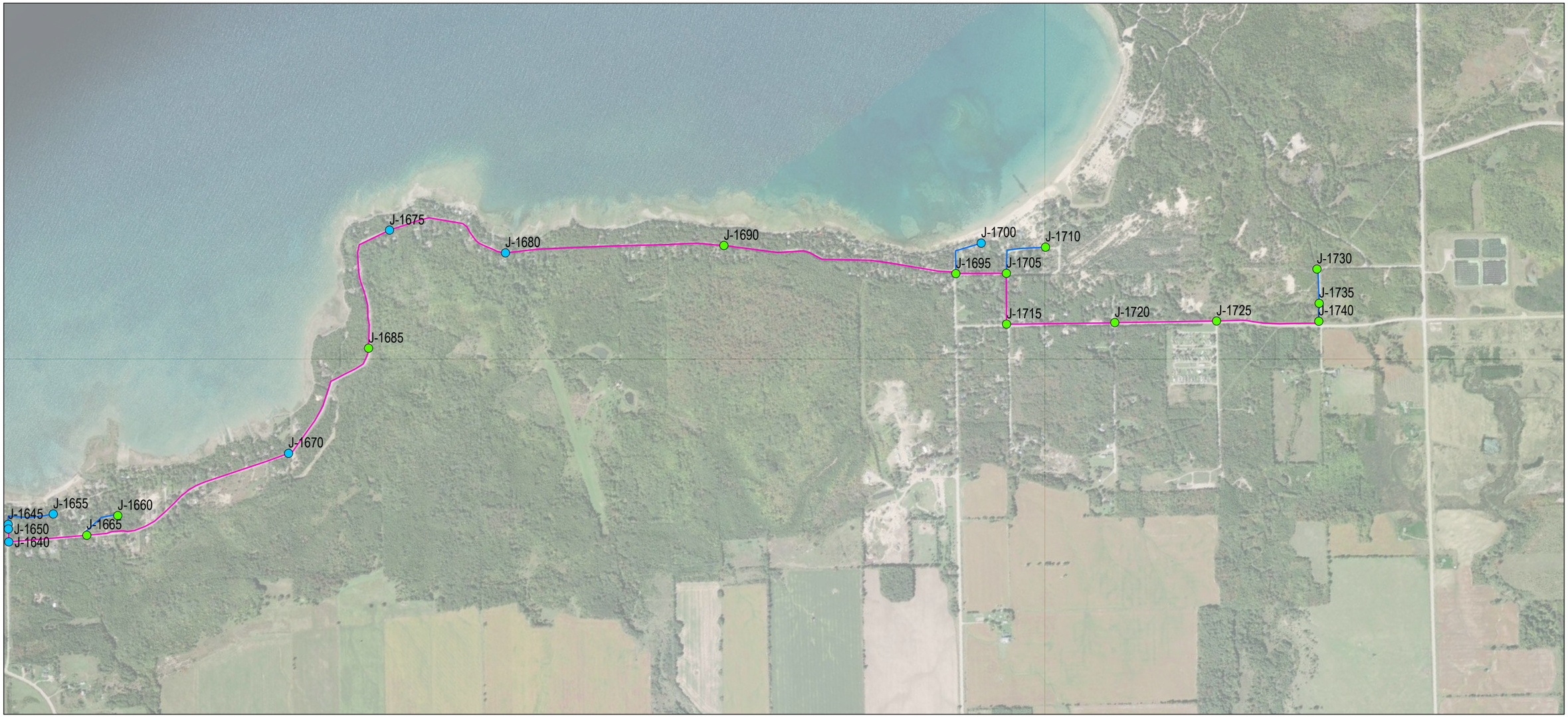
Project Location
Municipality of Kincardine

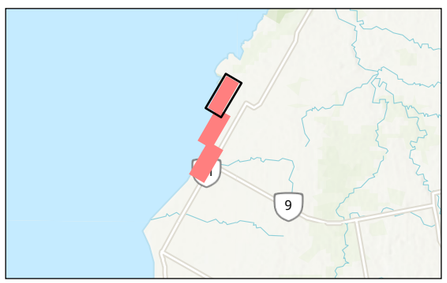
Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Minimum Pressure - Future PHD (No BP)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:17,000

N

Notes

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2. Data Sources: BM Ross Hydraulic Model

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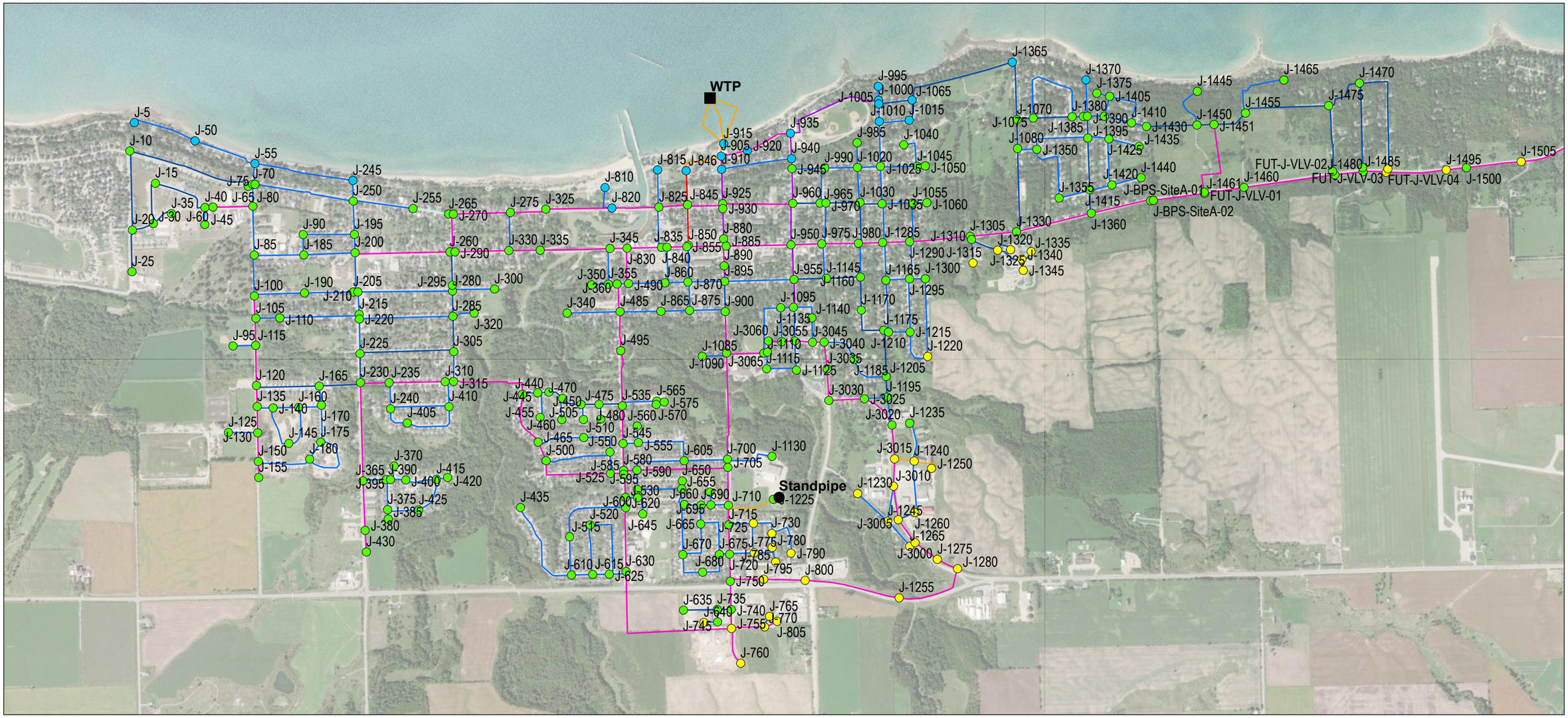
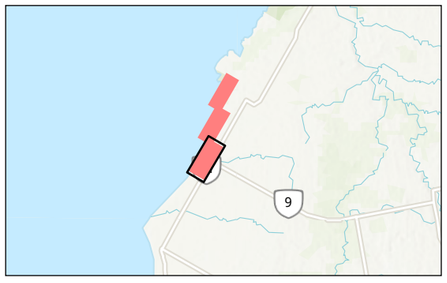
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Minimum Pressure - Future PHD (No BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)
- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)
- 200
- 300

Minimum Pressure (psi)
- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

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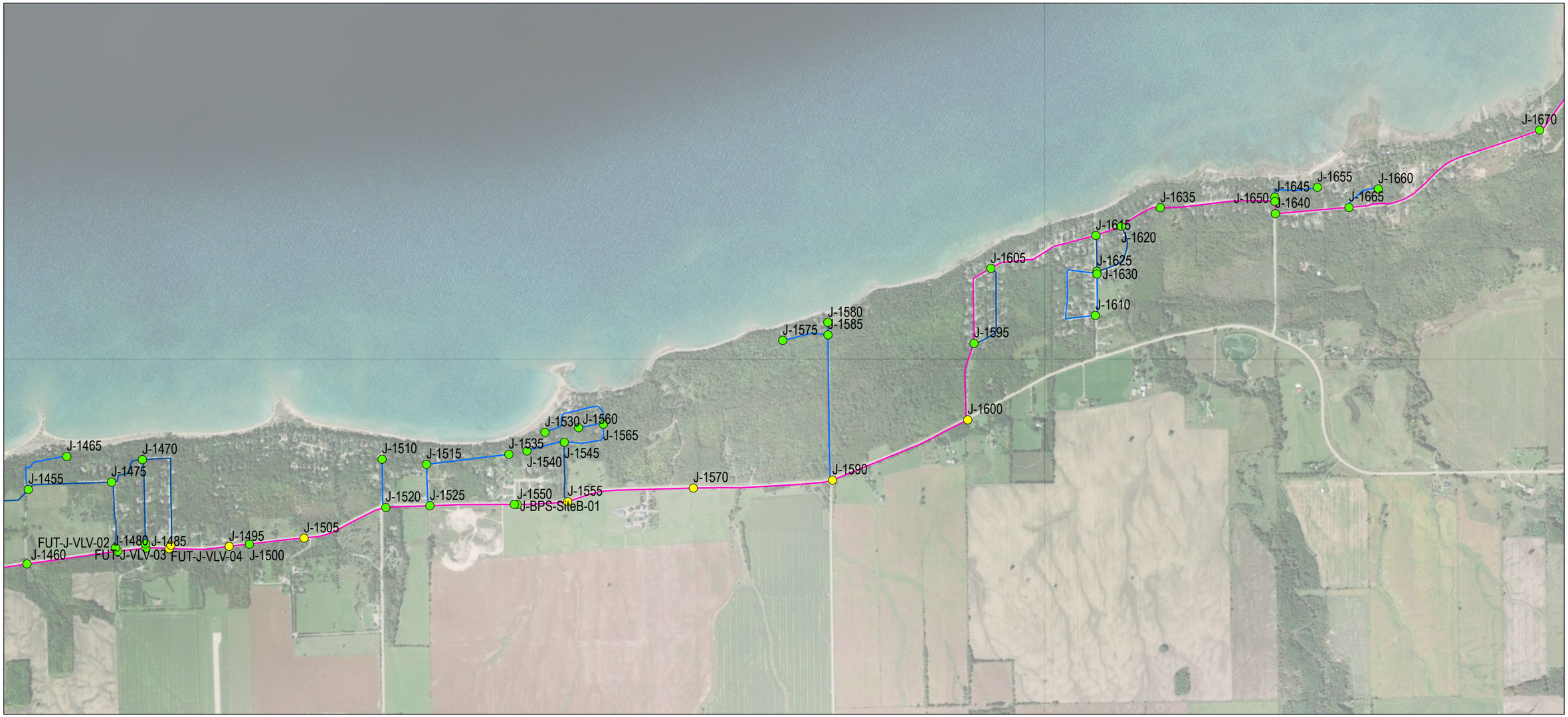
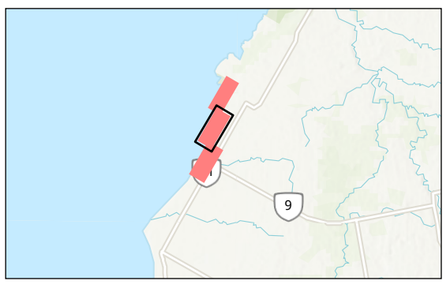
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Minimum Pressure - Future PHD (With BP)





Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

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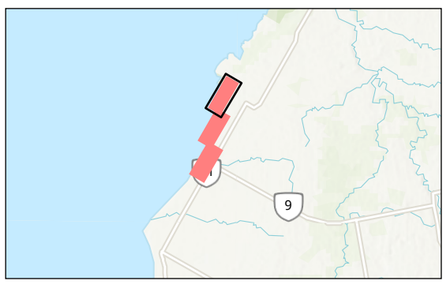
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Minimum Pressure - Future PHD (With BP)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model



Legend

- Water Treatment Plant
- Standpipe

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:17,000

N

Notes

1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

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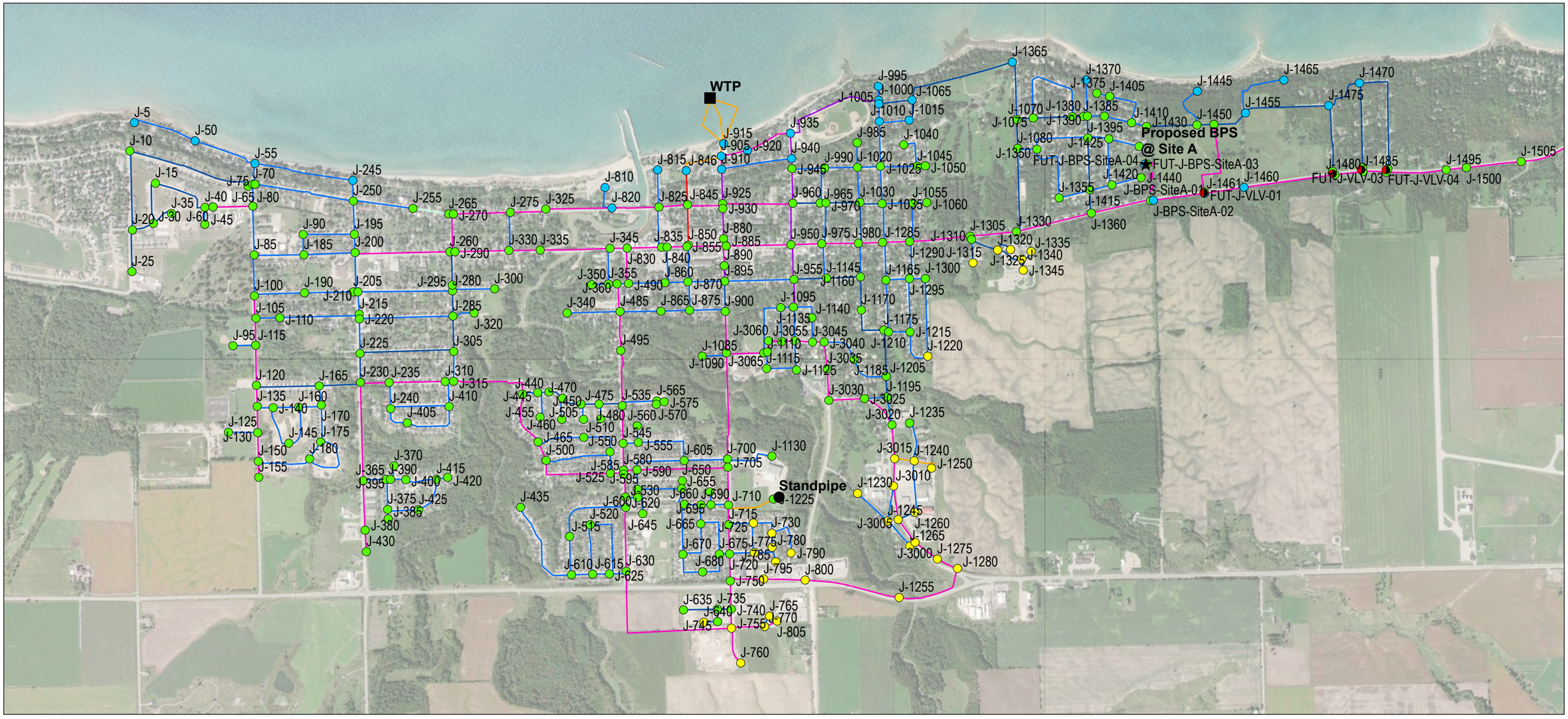
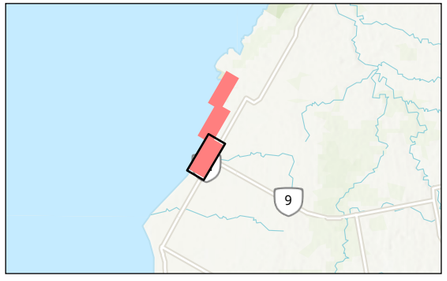
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Minimum Pressure - Future PHD (With BP)





Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

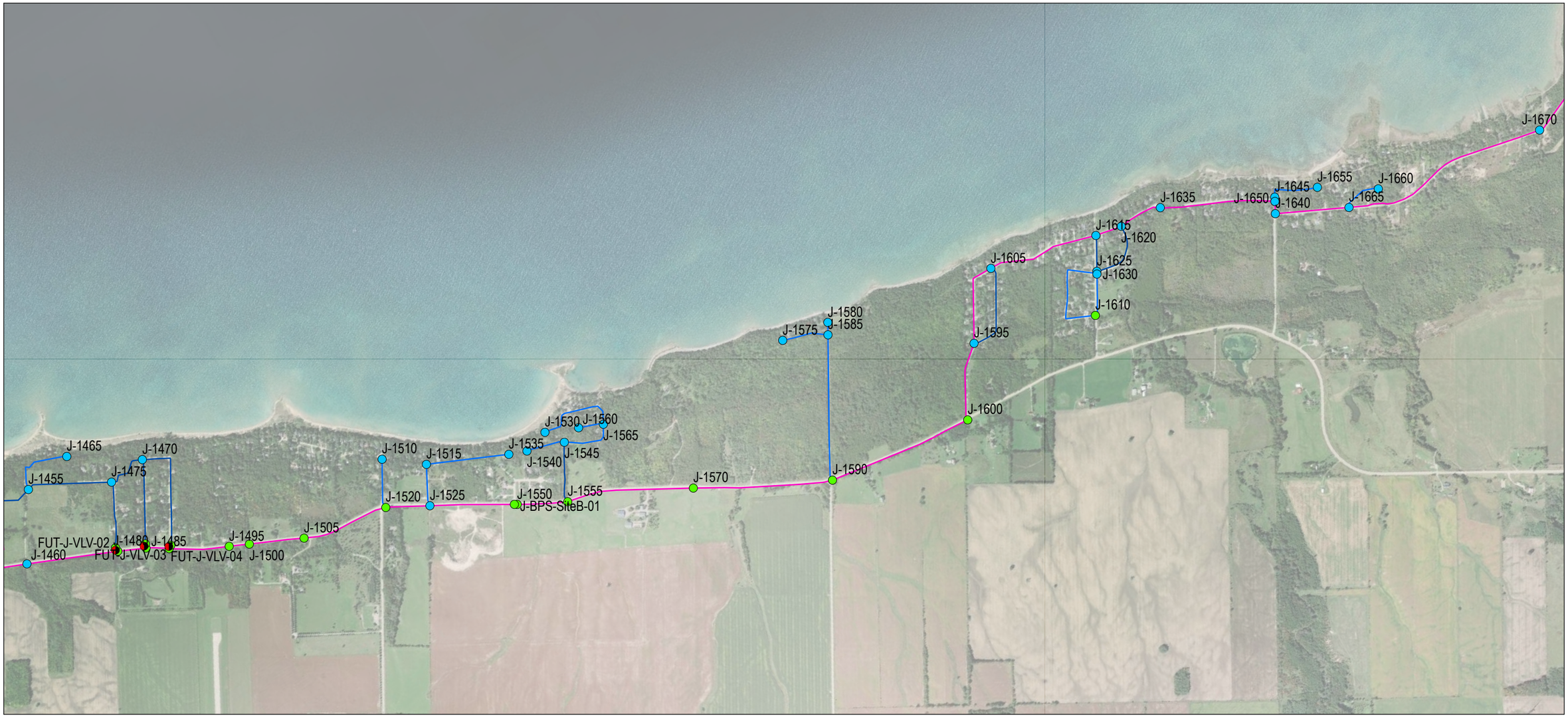
Stantec

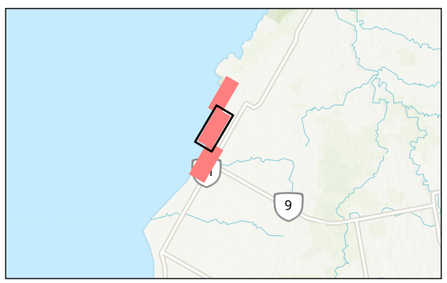
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site A)





Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

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Project Location
Municipality of Kincardine

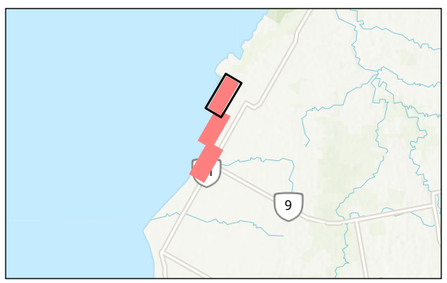
Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site A)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

J-1675
J-1680
J-1690
J-1700
J-1710
J-1695
J-1705
J-1730
J-1735
J-1740
J-FUT-2
J-FUT-1
J-1715
J-1720
J-1725
J-1685
J-1670
J-1655
J-1660
J-1645
J-1650
J-1665
J-1640



Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site
- Proposed PRV

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:17,000

N

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

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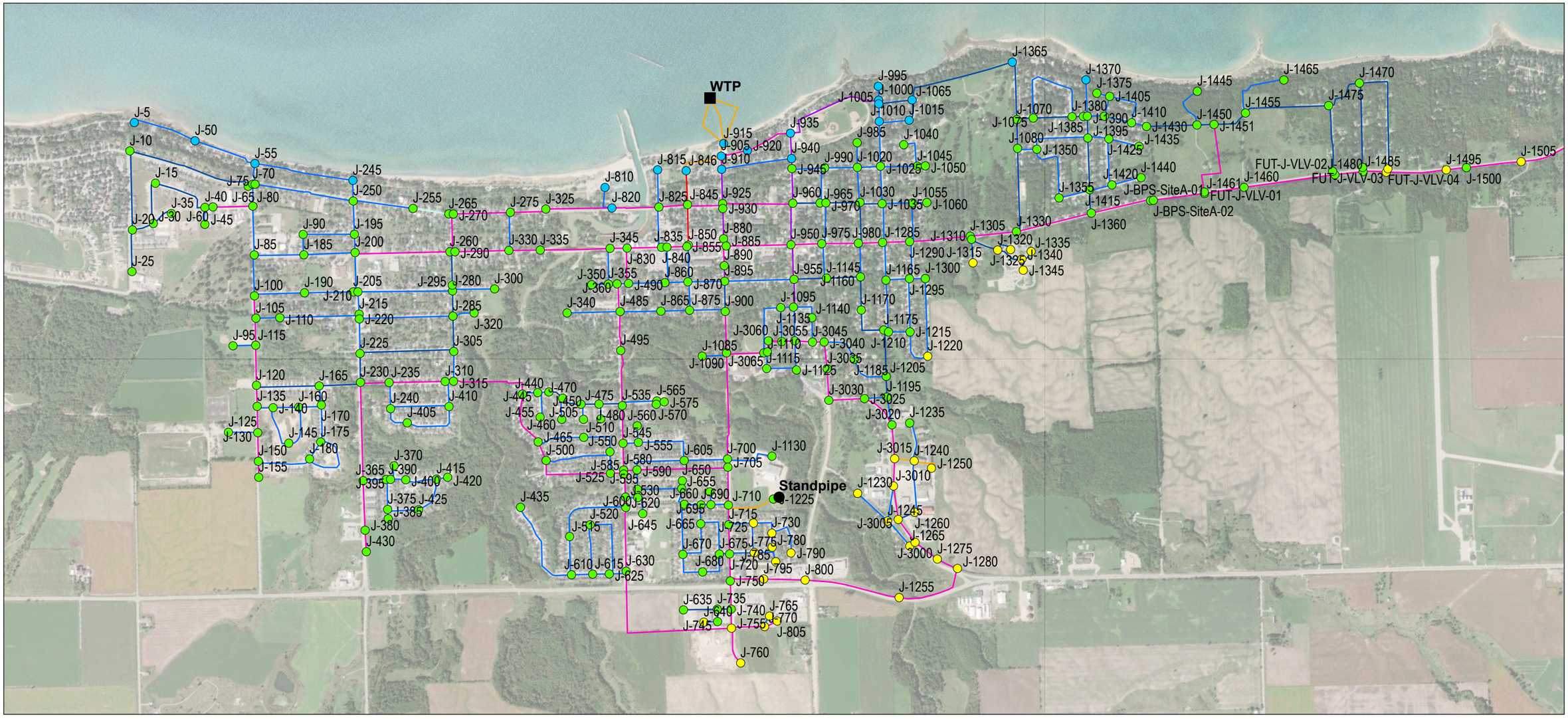
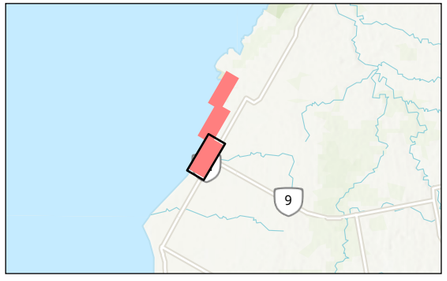
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site A)





Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

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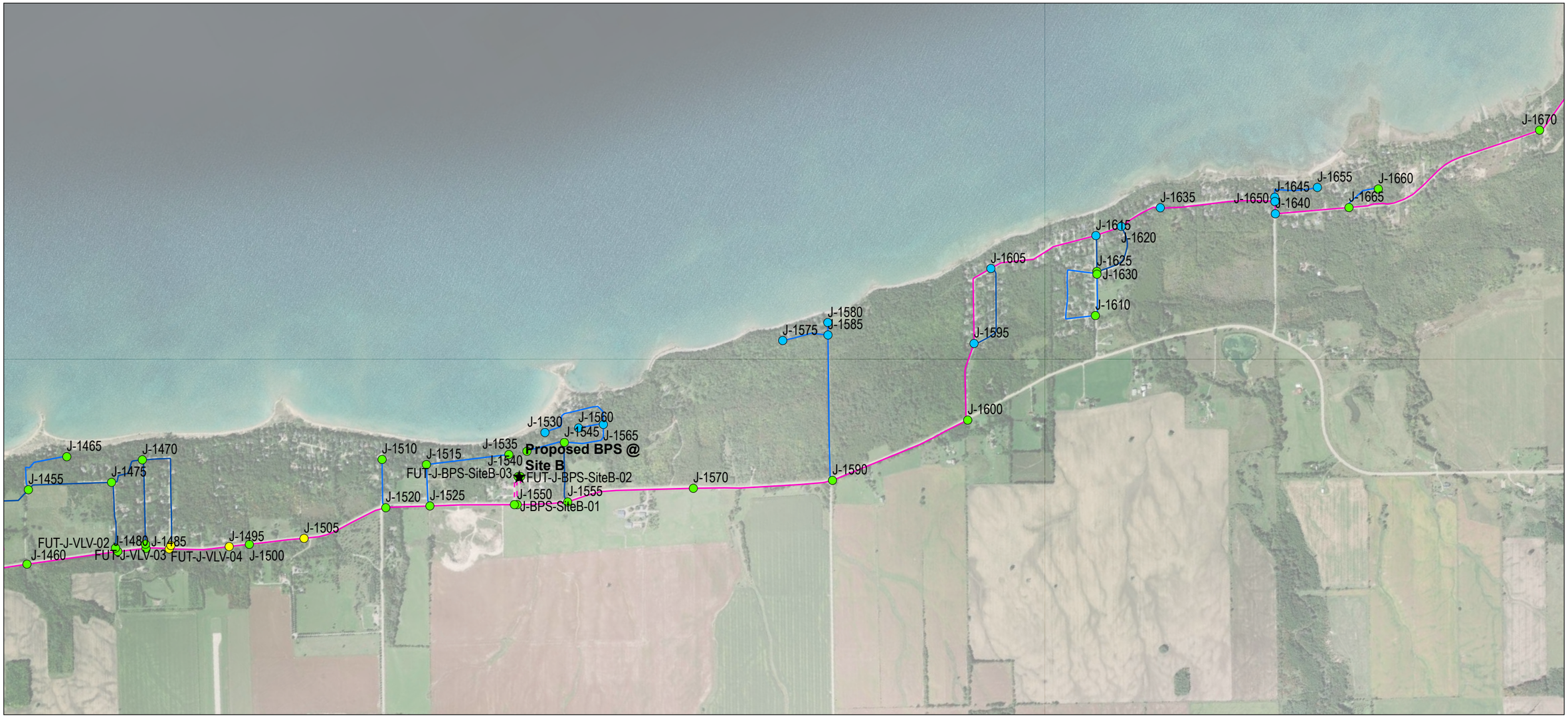
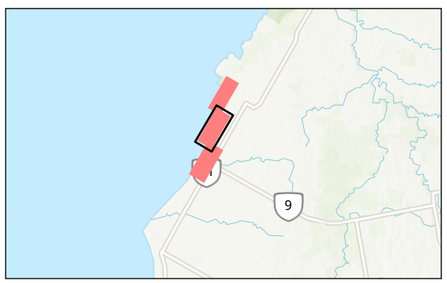
Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
1

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site B)





Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:18,000

N

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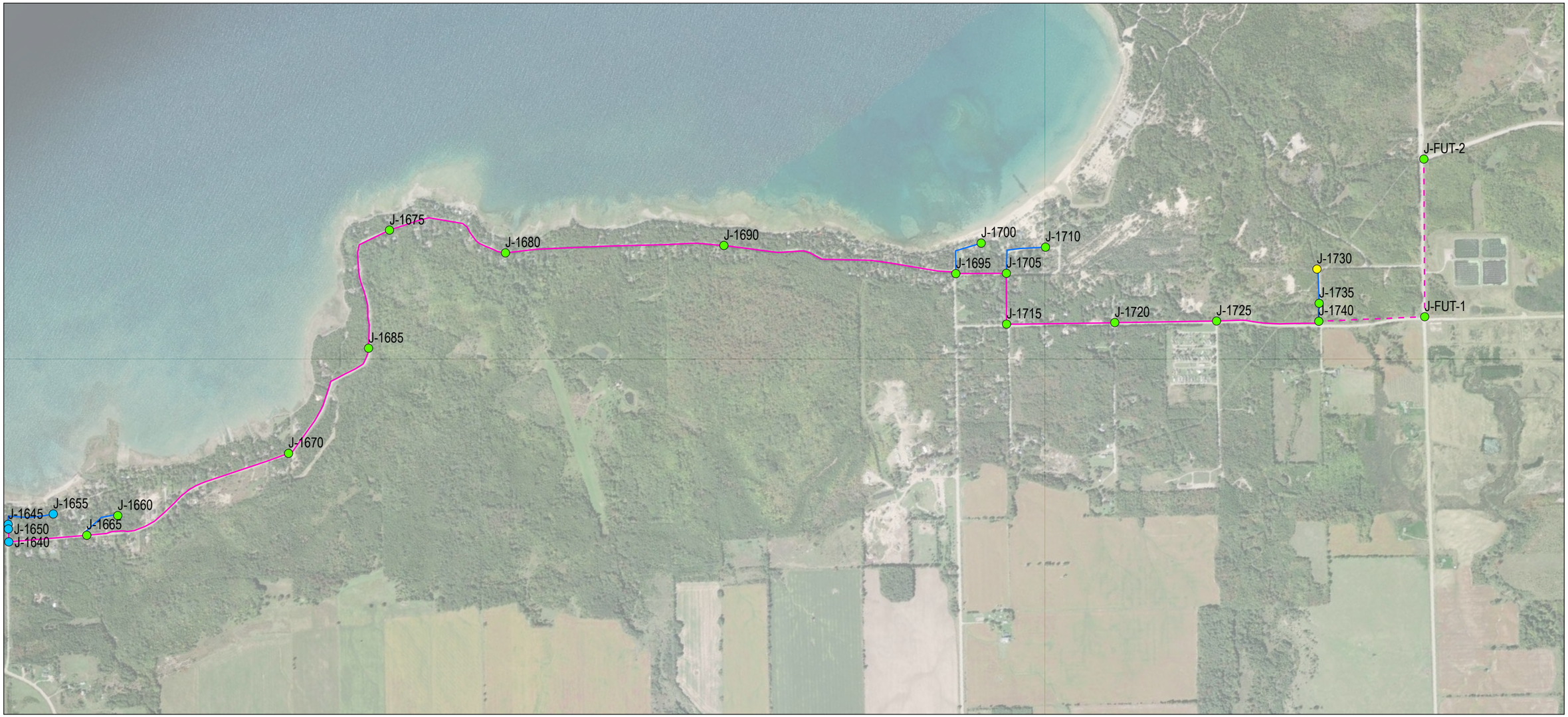
Project Location
Municipality of Kincardine

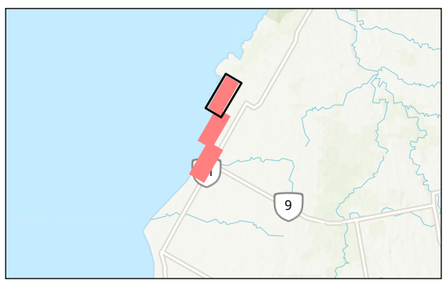
Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
2

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site B)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model





Legend

- Water Treatment Plant
- Standpipe
- Proposed BPS Site

Existing Watermain (mm)

- 100
- 150
- 200
- 250
- 300
- 350
- 400

Future Watermain (mm)

- 200
- 300

Minimum Pressure (psi)

- Less than 40
- 40 - 50
- 51 - 80
- 81 - 100
- Greater than 100

0 400 800 Meters

(At original document size of 11x17)
1:17,000

N

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Project Location
Municipality of Kincardine

Client/Project 165630238
Municipality of Kincardine
Water Supply Schedule C Class EA

Figure No.
3

Title
Minimum Pressure - Future PHD (With BP and BPS @ Site B)

Notes
1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Data Sources: BM Ross Hydraulic Model

Appendix C
Tables

MDD Pressure Model Output

Scenario	# of Nodes per Range in Pressure						Total Nodes
	< 40 psi (276 kPa)	40 - 50 psi (276 - 345 kPa)	50 - 70 psi (345 - 483 kPa)	70 - 80 psi (483 - 552 kPa)	80 - 100 psi (552 - 689 kPa)	> 100 psi (689 kPa)	
MDD (Ex + Fut Growth)	0	24	183	93	62	1	363
MDD (Ex + Fut Growth + BP)	2	36	228	71	28	0	365
MDD (Ex + Fut Growth + BP) w/ BPS @ Site A	0	30	210	91	36	0	367
MDD (Ex + Fut Growth + BP) w/ BPS @ Site B	0	28	208	77	54	0	367

		MIN	*176.70*		*242.59*	*42*		*218.09*	*33*	*-34*		*224.54*	*41*	*-25*		*234.15*	*41*	*-11*
		AVG	*196.39*		*244.81*	*69*		*241.77*	*64*	*-4*		*243.04*	*66*	*-2*		*243.71*	*67*	*-2*
		MAX	*215.00*		*249.52*	*100*		*248.42*	*98*	*0*		*251.05*	*98*	*7*		*252.51*	*98*	*11*
		SUM	*149.4*				*181.4*				*181.4*				*181.4*			
			MDD (Ex + Fut Growth)				MDD (Ex + Fut Growth + BP)				MDD (Ex + Fut Growth + BP) w/ BPS @ Site A				MDD (Ex + Fut Growth + BP) w/ BPS @ Site B			
ID	Label	Elevation (m)	HLP2&3 On (Firm Capacity); Standpipe LWL 243m				HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing	HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing	HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing
			Demand	Hydraulic Grade	Pressure		Demand	Hydraulic Grade	Pressure		Demand	Hydraulic Grade	Pressure		Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	
			(L/s)	(m AD)	(psi)		(L/s)	(m AD)	(psi)	(psi)	(L/s)	(m AD)	(psi)	(psi)	(L/s)	(m AD)	(psi)	(psi)
29	J-5	179.91	0.246	245.23	*93*		0.246	244.40	*92*	-1	0.246	244.40	*92*	-1	0.246	244.40	*92*	-1
31	J-10	190.02	0.246	245.17	78		0.246	244.35	77	-1	0.246	244.35	77	-1	0.246	244.35	77	-1
34	J-15	191.50	0.246	245.15	76		0.246	244.34	75	-1	0.246	244.34	75	-1	0.246	244.34	75	-1
37	J-20	195.58	0.246	245.16	70		0.246	244.34	69	-1	0.246	244.34	69	-1	0.246	244.34	69	-1
40	J-25	198.51	0.246	245.16	66		0.246	244.34	65	-1	0.246	244.34	65	-1	0.246	244.34	65	-1
42	J-30	195.01	0.246	245.15	71		0.246	244.34	70	-1	0.246	244.34	70	-1	0.246	244.34	70	-1
46	J-35	194.14	0.246	245.15	72		0.246	244.34	71	-1	0.246	244.34	71	-1	0.246	244.34	71	-1
48	J-40	193.08	0.246	245.15	74		0.246	244.34	73	-1	0.246	244.34	73	-1	0.246	244.34	73	-1
50	J-45	194.80	0.246	245.15	71		0.246	244.34	70	-1	0.246	244.34	70	-1	0.246	244.34	70	-1
52	J-50	177.54	0.246	245.23	*96*		0.246	244.40	*95*	-1	0.246	244.40	*95*	-1	0.246	244.40	*95*	-1
56	J-55	181.13	0.246	245.23	*91*		0.246	244.40	*90*	-1	0.246	244.40	*90*	-1	0.246	244.40	*90*	-1
57	J-60	192.68	0.246	245.15	74		0.246	244.34	73	-1	0.246	244.34	73	-1	0.246	244.34	73	-1
58	J-65	188.44	0.246	245.19	*81*		0.246	244.37	79	-2	0.246	244.37	79	-2	0.246	244.37	79	-2
59	J-70	188.35	0.246	245.2	*81*		0.246	244.37	80	-1	0.246	244.37	80	-1	0.246	244.37	80	-1
60	J-75	188.01	0.246	245.21	*81*		0.246	244.38	80	-1	0.246	244.38	80	-1	0.246	244.38	80	-1
63	J-80	192.01	0.246	245.15	75		0.246	244.34	74	-1	0.246	244.34	74	-1	0.246	244.34	74	-1
66	J-85	198.37	0.246	245.09	66		0.246	244.30	65	-1	0.246	244.30	65	-1	0.246	244.30	65	-1
72	J-90	195.86	0.246	245.53	70		0.246	244.66	69	-1	0.246	244.66	69	-1	0.246	244.66	69	-1
74	J-95	195.16	0.246	244.46	70		0.246	243.81	69	-1	0.246	243.81	69	-1	0.246	243.81	69	-1
83	J-100	198.36	0.246	244.5	65		0.246	243.85	65	0	0.246	243.85	65	0	0.246	243.85	65	0
85	J-105	193.69	0.246	244.49	72		0.246	243.83	71	-1	0.246	243.83	71	-1	0.246	243.83	71	-1
89	J-110	195.72	0.246	244.54	69		0.246	243.88	68	-1	0.246	243.88	68	-1	0.246	243.88	68	-1
92	J-115	195.19	0.246	244.46	70		0.246	243.81	69	-1	0.246	243.81	69	-1	0.246	243.81	69	-1
99	J-120	196.70	0.246	244.42	68		0.246	243.78	67	-1	0.246	243.78	67	-1	0.246	243.78	67	-1
102	J-125	199.91	0.246	244.39	63		0.246	243.76	62	-1	0.246	243.76	62	-1	0.246	243.76	62	-1
104	J-130	199.43	0.246	244.39	64		0.246	243.76	63	-1	0.246	243.76	63	-1	0.246	243.76	63	-1
106	J-135	198.26	0.246	244.4	65		0.246	243.77	65	0	0.246	243.77	65	0	0.246	243.77	65	0
110	J-140	198.71	0.246	244.39	65		0.246	243.76	64	-1	0.246	243.76	64	-1	0.246	243.76	64	-1
112	J-145	200.14	0.246	244.39	63		0.246	243.76	62	-1	0.246	243.76	62	-1	0.246	243.76	62	-1
113	J-150	200.09	0.246	244.38	63		0.246	243.75	62	-1	0.246	243.75	62	-1	0.246	243.75	62	-1
116	J-155	200.72	8.064	244.38	62		8.064	243.74	61	-1	8.064	243.74	61	-1	8.064	243.74	61	-1
117	J-160	198.53	0.246	244.39	65		0.246	243.76	64	-1	0.246	243.76	64	-1	0.246	243.76	64	-1
120	J-165	196.85	0.246	244.38	67		0.246	243.75	67	0	0.246	243.76	67	0	0.246	243.75	67	0
121	J-170	197.96	0.246	244.38	66		0.246	243.75	65	-1	0.246	243.75	65	-1	0.246	243.75	65	-1
124	J-175	198.98	0.246	244.38	64		0.246	243.75	64	0	0.246	243.75	64	0	0.246	243.75	64	0
126	J-180	198.52	0.246	244.38	65		0.246	243.75	64	-1	0.246	243.75	64	-1	0.246	243.75	64	-1
131	J-185	194.93	0.246	245.51	72		0.246	244.64	71	-1	0.246	244.65	71	-1	0.246	244.64	71	-1
132	J-190	195.55	0.246	244.74	70		0.246	244.04	69	-1	0.246	244.04	69	-1	0.246	244.04	69	-1
134	J-195	195.54	0.246	245.59	71		0.246	244.71	70	-1	0.246	244.71	70	-1	0.246	244.71	70	-1
135	J-200	197.10	0.246	245.75	69		0.246	244.85	68	-1	0.246	244.85	68	-1	0.246	244.85	68	-1
139	J-205	196.72	0.246	244.99	69		0.246	244.24	67	-2	0.246	244.24	67	-2	0.246	244.24	67	-2
140	J-210	197.78	0.246	244.97	67		0.246	244.23	66	-1	0.246	244.23	66	-1	0.246	244.23	66	-1
143	J-215	197.43	0.246	244.74	67		0.246	244.05	66	-1	0.246	244.05	66	-1	0.246	244.05	66	-1
145	J-220	197.36	0.246	244.73	67		0.246	244.04	66	-1	0.246	244.04	66	-1	0.246	244.04	66	-1
149	J-225	197.28	0.246	244.49	67		0.246	243.86	66	-1	0.246	243.86	66	-1	0.246	243.86	66	-1
151	J-230	196.69	0.246	244.34	68		0.246	243.74	67	-1	0.246	243.74	67	-1	0.246	243.74	67	-1
156	J-235	200.00	0.246	244.33	63		0.246	243.74	62	-1	0.246	243.74	62	-1	0.246	243.74	62	-1
159	J-240	200.17	0.246	244.32	63		0.246	243.73	62	-1	0.246	243.73	62	-1	0.246	243.73	62	-1
161	J-245	181.69	0.246	245.43	*90*		0.246	244.57	*89*	-1	0.246	244.57	*89*	-1	0.246	244.57	*89*	-1
165	J-250	191.97	0.246	245.47	76		0.246	244.61	75	-1	0.246	244.61	75	-1	0.246	244.61	75	-1
167	J-255	190.96	0.246	245.59	78		0.246	244.70	76	-2	0.246	244.70	76	-2	0.246	244.70	76	-2
170	J-260	197.55	0.246	246	69		0.246	245.05	67	-2	0.246	245.06	67	-2	0.246	245.05	67	-2
172	J-265	191.51	0.246	246.15	78		0.246	245.19	76	-2	0.246	245.19	76	-2	0.246	245.19	76	-2
174	J-270	191.93	0.246	246.15	77		0.246	245.19	76	-1	0.246	245.19	76	-1	0.246	245.19	76	-1
177	J-275	194.07	0.246	246.38	74		0.246	245.39	73	-1	0.246	245.39	73	-1	0.246	245.39	73	-1
179	J-280	200.70	0.246	245.13	63		0.246	244.36	62	-1	0.246	244.36	62	-1	0.246	244.36	62	-1
181	J-285	197.54	0.246	244.87	67		0.246	244.16	66	-1	0.246	244.16	66	-1	0.246	244.16	66	-1
182	J-290	197.43	0.246	246.03	69		0.246	245.08	68	-1	0.246	245.08	68	-1	0.246	245.08	68	-1
184	J-295	200.83	0.246	245.52	63		0.246	244.67	62	-1	0.246	244.67	62	-1	0.246	244.67	62	-1
186	J-300	200.15	0.246	245.13	64		0.246	244.36	63	-1	0.246	244.36	63	-1	0.246	244.36	63	-1
189	J-305	198.16	0.246	244.63	66		0.246	243.97	65	-1	0.246	243.97	65	-1	0.246	243.97	65	-1
190	J-310	199.61	0.246	244.32	63		0.246	243.73	63	0	0.246	243.73	63	0	0.246	243.73	63	0
191	J-315	198.16	0.246	244.31	66		0.246	243.73	65	-1	0.246	243.73	65	-1	0.246	243.73	65	-1
194	J-320	199.01	0.246	244.87	65		0.246	244.16	64	-1	0.246	244.16	64	-1	0.246	244.16	64	-1
195	J-325	191.01	0.246	246.58	79		0.246	245.57	77	-2	0.246	245.57	77	-2	0.246	245.57	77	-2
197	J-330	196.27	0.246	246.07	71		0.246	245.11	69	-2	0.246	245.11	69	-2	0.246	245.11	69	-2
199	J-335	192.64	0.246	246.08	76		0.246	245.12	74	-2	0.246	245.12	74	-2	0.246	245.12	74	-2
200	J-340	194.63	0.246	244.89	71		0.246	244.20	70	-1	0.246	244.20	70	-1	0.246	244.20	70	-1
202	J-345	194.25	0.246	246.1	74		0.246	245.13	72	-2	0.246	245.13	72	-2	0.246	245.13	72	-2
205	J-350	199.72	0.246	245.21	65		0.246	244.44	63	-2	0.246	244.44	63	-2	0.246	244.44	63	-2
207	J-355	201.48	0.246	245.21	62		0.246	244.44	61	-1	0.246	244.44	61	-1	0.246	244.44	61	-1
208	J-360	201.60	0.246	245.02	62		0.246	244.29	61	-1	0.246	244.29	61	-1	0.246	244.29	61	-1
211	J-365	194.31	0.246	244.32	71		0.246	243.72	70	-1	0.246	243.72	70	-1	0.246	243.72	70	-1
213	J-370	194.80	0.246	244.29	70		0.246	243.69	69	-1	0.246	243.70	69	-1	0.246	243.69	69	-1
215	J-375	196.44	0.246	244.29	68		0.246	243.69	67	-1	0.246	243.69	67	-1	0.246	243.69	67	-1
218	J-380	198.01	0.246	244.32	66		0.246	243.72	65	-1	0.246	243.72	65	-1	0.246	243.72	65	-1
219	J-385	196.06	0.246	244.29	68		0.246	243.69	68	0	0.246	243.69	68	0	0.246	243.69	68	0
220	J-390	195.78	0.246	244.3	69		0.246	243.70	68	-1	0.246	243.70	68	-1	0.246	243.70	68	-1
222	J-395	195.75	0.246	244.29	69		0.246	243.69	68	-1	0.246	243.70	68	-1	0.246	243.69	68	-1
226	J-400	195.22	0.246	244.29	70		0.246	243.69	69	-1	0.246	243.69	69	-1	0.246	243.69	69	-1
237	J-405	200.13	0.246	244.32	63		0.246	243.73	62	-1	0.246	243.73	62	-1	0.246	243.73	62	-1
239	J-410	196.76	0.246	244.32	68		0.246	243.73	67	-1	0.246	243.73	67	-1	0.246	243.73	67	-1
241	J-415	191.88	0.246	244.29	74		0.246	243.69	73	-1	0.246	243.69	73	-1	0.246	243.69	73	-1
243	J-420	191.47	0.246	244.29	75		0.246	243.69	74	-1	0.246	243.69	74	-1	0.246	243.69	74	-1
244	J-425	195.82	0.246	244.29	69		0.246	243.69	68	-1	0.246	243.69	68	-1	0.246	243.69	68	-1
245	J-430	199.12	3.603	244.32	64		3.603	243.72	63	-1	3.603	243.72	63	-1	3.603	243.72	63	-1
247	J-435	195.92	0.246	243.88	68		0.246	243.47	67	-1	0.246	243.47	67	-1	0.246	243.47	67	-1
253	J-440	195.52	0.246	244.24	69		0.246	243.69	68	-1	0.246	243.69	68	-1	0.246	243.69	68	-1
255	J-445	193.68	0.246	244.26	72		0.246	243.71	71	-1	0.246	243.71	71	-1	0.246	243.71	71	-1
257	J-450	192.38	0.246	244.28	74		0.246	243.73	73	-1	0.246	243.73	73	-1	0.246	243.73	73	-1
258	J-455	195.19	0.246	244.26	70		0.246	243.71	69	-1	0.246	243.71	69	-1	0.246	243.71	69	-1
260	J-460	196.53	0.246	244.29	68		0.246	243.74	67	-1	0.246	243.74	67	-1	0.246	243.74	67	-1
261	J-465	196.78	0.246	244.17	67		0.246	243.66	67	0	0.246	243.66	67	0	0.246	243.66	67	0
262	J-470	192.96	0.246	244.29	73		0.246	243.74	72	-1	0.246	243.74	72	-1	0.246	243.74	72	-1
264	J-475	195.04	0.246	244.3	70		0.246	243.75	69	-1	0.246	243.75	69	-1	0.246	243.75	69	-1
267	J-480	196.69	0.246	244.31	68		0.246	243.76	67	-1	0.246	243.77	67	-1	0.246	243.76	67	-1
272	J-485	197.82	0.246	244.89	67		0.246	244.20	66	-1	0.246	244.20	66	-1	0.246	244.20	66	-1
274	J-490	201.68	0.246	246.07	63		0.246	245.09	62	-1	0.246	245.10	62	-1	0.246	245.09	62	-1
276	J-495	189.36	0.246	244.66	78		0.246	244.03	78	0	0.246	244.03	78	0	0.246	244.03	78	0
281	J-500	196.52	0.246	244.15	68		0.246	243.64	67	-1	0.246	243.64	67	-1	0.246	243.64	67	-1
283	J-505	196.55	0.246	244.3	68		0.246	243.75	67	-1	0.246	243.75	67	-1	0.246	243.75	67	-1
284	J-510	196.70	0.246	244.14	67		0.246	243.64	67	0	0.246	243.64	67	0	0.246	243.64	67	0
288	J-515	196.78	0.246	243.91	67		0.246	243.49	66	-1	0.246	243.49	66	-1	0.246	243.49	66	-1
289	J-520	198.38	0.246	243.87	65		0.246	243.46	64	-1	0.246	243.46	64	-1	0.246	243.46	64	-1
292	J-525	197.38	0.246	244.09	66		0.246	243.61	66	0	0.246	243.61	66	0	0.246	243.61	66	0
293	J-530	198.01	0.246	244.01	65		0.246	243.56	65	0	0.246	243.56	65	0	0.246	243.56	65	0
298	J-535	195.14	0.246	244.33	70		0.246	243.79	69	-1	0.246	243.79	69	-1	0.246	243.79	69	-1
299	J-540	196.06	0.246	244.31	68		0.246	243.76	68	0	0.246	243.76	68	0	0.246	243.76	68	0
300	J-545	197.66	0.246	244.17	66		0.246	243.67	65	-1	0.246	243.67	65	-1	0.246	243.67	65	-1
301	J-550	197.14	0.246	244.12	67		0.246	243.63	66	-1	0.246	243.63	66	-1	0.246	243.63	66	-1
304	J-555	198.68	0.246	244.14	65		0.246	243.65	64	-1	0.246	243.65	64	-1	0.246	243.65	64	-1
307	J-560	197.35	0.246	244.14	66		0.246	243.65	66	0	0.246	243.65	66	0	0.246	243.65	66	0
308	J-565	198.43	0.246	244.33	65		0.246	243.78	64	-1	0.246	243.78	64	-1	0.246	243.78	64	-1
310	J-570	198.44	0.246	244.33	65		0.246	243.78	64	-1	0.246	243.78	64	-1	0.246	243.78	64	-1
311	J-575	199.14	0.246	244.33	64		0.246	243.78	63	-1	0.246	243.78	63	-1	0.246	243.78	63	-1
312	J-580	197.74	0.246	244.07	66		0.246	243.60	65	-1	0.246	243.60	65	-1	0.246	243.60	65	-1
315	J-585	197.41	0.246	244.07	66		0.246	243.60	66	0	0.246	243.60	66	0	0.246	243.60	66	0
316	J-590	198.65	0.246	244.05	64		0.246	243.59	64	0	0.246	243.59	64	0	0.246	243.59	64	0
318	J-595	197.53	0.246	243.98	66		0.246	243.54	65	-1	0.246	243.54	65	-1	0.246	243.54	65	-1
321	J-600	197.59	0.246	243.99	66		0.246	243.55	65	-1	0.246	243.55	65	-1	0.246	243.55	65	-1
324	J-605	202.23	0.246	244.05	59		0.246	243.60	59	0	0.246	243.60	59	0	0.246	243.60	59	0
327	J-610	201.13	0.246	243.88	61		0.246	243.47	60	-1	0.246	243.47	60	-1	0.246	243.47	60	-1
331	J-615	202.96	0.246	243.87	58		0.246	243.46	58	0	0.246	243.46	58	0	0.246	243.46	58	0
332	J-620	199.43	0.246	243.99	63		0.246	243.54	63	0	0.246	243.54	63	0	0.246	243.54	63	0
335	J-625	204.00	0.246	243.87	57		0.246	243.46	56	-1	0.246	243.46	56	-1	0.246	243.46	56	-1
337	J-630	204.20	0.246	243.87	56		0.246	243.46	56	0	0.246	243.46	56	0	0.246	243.46	56	0
339	J-635	205.39	1.071	243.64	54		1.071	243.31	54	0	1.071	243.31	54	0	1.071	243.31	54	0
340	J-640	209.47	1.071	243.64	48		1.071	243.30	48	0	1.071	243.30	48	0	1.071	243.30	48	0
341	J-645	199.09	0.246	243.99	64		0.246	243.55	63	-1	0.246	243.55	63	-1	0.246	243.55	63	-1
342	J-650	203.86	0.246	243.68	57		0.246	243.35	56	-1	0.246	243.35	56	-1	0.246	243.35	56	-1
344	J-655	204.73	0.246	243.68	55		0.246	243.35	55	0	0.246	243.35	55	0	0.246	243.35	55	0
348	J-660	205.47	0.246	243.56	54		0.246	243.29	54	0	0.246	243.29	54	0	0.246	243.29	54	0
352	J-665	205.66	0.246	243.52	54		0.246	243.26	53	-1	0.246	243.26	53	-1	0.246	243.26	53	-1
355	J-670	201.72	0.246	243.53	59		0.246	243.27	59	0	0.246	243.27	59	0	0.246	243.27	59	0
358	J-675	205.66	0.246	243.53	54		0.246	243.27	53	-1	0.246	243.27	53	-1	0.246	243.27	53	-1
359	J-680	205.07	0.246	243.53	55		0.246	243.27	54	-1	0.246	243.27	54	-1	0.246	243.27	54	-1
360	J-685	205.91	0.246	243.46	53		0.246	243.23	53	0	0.246	243.23	53	0	0.246	243.23	53	0
361	J-690	206.02	0.246	243.51	53		0.246	243.26	53	0	0.246	243.26	53	0	0.246	243.26	53	0
364	J-695	206.35	0.246	243.46	53		0.246	243.23	52	-1	0.246	243.23	52	-1	0.246	243.23	52	-1
367	J-700	205.13	0.246	244.02	55		0.246	243.58	55	0	0.246	243.58	55	0	0.246	243.58	55	0
369	J-705	205.38	0.246	243.95	55		0.246	243.54	54	-1	0.246	243.54	54	-1	0.246	243.54	54	-1
373	J-710	206.88	0.246	243.38	52		0.246	243.20	52	0	0.246	243.20	52	0	0.246	243.20	52	0

375	J-715	206.67	0.246	243.45	52	0.246	243.23	52	0	0.246	243.23	52	0	0.246	243.23	52	0
378	J-720	206.31	0.246	243.54	53	0.246	243.27	52	-1	0.246	243.27	52	-1	0.246	243.27	52	-1
381	J-725	208.38	0.246	243.47	50	0.246	243.23	49	-1	0.246	243.23	49	-1	0.246	243.23	49	-1
385	J-730	209.54	0.246	243.47	48	0.246	243.23	48	0	0.246	243.23	48	0	0.246	243.23	48	0
386	J-735	205.42	1.071	243.64	54	1.071	243.31	54	0	1.071	243.31	54	0	1.071	243.31	54	0
389	J-740	206.69	1.071	243.65	52	1.071	243.32	52	0	1.071	243.32	52	0	1.071	243.32	52	0
390	J-745	207.31	1.071	243.64	52	1.071	243.31	51	-1	1.071	243.31	51	-1	1.071	243.31	51	-1
392	J-750	206.89	1.071	243.65	52	1.071	243.32	52	0	1.071	243.32	52	0	1.071	243.32	52	0
397	J-755	207.81	1.071	243.67	51	1.071	243.33	50	-1	1.071	243.33	50	-1	1.071	243.33	50	-1
398	J-760	212.84	1.071	243.67	44	1.071	243.33	43	-1	1.071	243.33	43	-1	1.071	243.33	43	-1
399	J-765	210.90	1.071	243.66	47	1.071	243.32	46	-1	1.071	243.32	46	-1	1.071	243.32	46	-1
400	J-770	210.36	3.67	243.66	47	3.670	243.32	47	0	3.670	243.32	47	0	3.67	243.32	47	0
403	J-775	207.93	0.246	243.48	50	0.246	243.24	50	0	0.246	243.24	50	0	0.246	243.24	50	0
404	J-780	209.52	0.246	243.47	48	0.246	243.23	48	0	0.246	243.23	48	0	0.246	243.23	48	0
405	J-785	209.27	0.246	243.47	49	0.246	243.23	48	-1	0.246	243.23	48	-1	0.246	243.23	48	-1
406	J-790	210.10	0.246	243.47	47	0.246	243.23	47	0	0.246	243.23	47	0	0.246	243.23	47	0
407	J-795	209.39	1.071	243.74	49	1.071	243.37	48	-1	1.071	243.37	48	-1	1.071	243.37	48	-1
408	J-800	210.50	1.071	243.86	47	1.071	243.44	47	0	1.071	243.44	47	0	1.071	243.44	47	0
411	J-805	211.42	1.071	243.66	46	1.071	243.32	45	-1	1.071	243.32	45	-1	1.071	243.32	45	-1
414	J-810	176.70	0.246	246.95	**100**	0.246	245.90	**98**	-2	0.246	245.90	**98**	-2	0.246	245.90	**98**	-2
415	J-815	181.69	0.246	247.22	**93**	0.246	246.14	**91**	-2	0.246	246.14	**91**	-2	0.246	246.14	**91**	-2
417	J-820	180.21	0.246	246.95	**95**	0.246	245.90	**93**	-2	0.246	245.90	**93**	-2	0.246	245.90	**93**	-2
421	J-825	190.06	0.246	247.22	**81**	0.246	246.14	80	-1	0.246	246.14	80	-1	0.246	246.14	80	-1
423	J-830	197.10	0.246	246.13	70	0.246	245.15	68	-2	0.246	245.15	68	-2	0.246	245.15	68	-2
427	J-835	197.03	0.246	246.35	70	0.246	245.31	69	-1	0.246	245.31	69	-1	0.246	245.31	69	-1
428	J-840	197.14	0.246	246.37	70	0.246	245.33	68	-2	0.246	245.33	68	-2	0.246	245.33	68	-2
430	J-845	191.27	0.246	247.48	80	0.246	246.37	78	-2	0.246	246.38	78	-2	0.246	246.37	78	-2
432	J-850	197.15	0.246	247.29	71	0.246	246.19	70	-1	0.246	246.19	70	-1	0.246	246.19	70	-1
433	J-855	197.24	0.246	246.47	70	0.246	245.40	68	-2	0.246	245.40	68	-2	0.246	245.40	68	-2
437	J-860	200.56	0.246	246.12	65	0.246	245.12	63	-2	0.246	245.12	63	-2	0.246	245.12	63	-2
439	J-865	196.80	0.246	245.17	69	0.246	244.38	68	-1	0.246	244.38	68	-1	0.246	244.38	68	-1
441	J-870	201.00	0.246	246.08	64	0.246	245.07	63	-1	0.246	245.07	63	-1	0.246	245.07	63	-1
446	J-875	197.17	0.246	245.38	68	0.246	244.52	67	-1	0.246	244.52	67	-1	0.246	244.52	67	-1
449	J-880	197.91	0.246	246.54	69	0.246	245.44	67	-2	0.246	245.44	67	-2	0.246	245.44	67	-2
451	J-885	198.86	0.246	246.46	68	0.246	245.37	66	-2	0.246	245.37	66	-2	0.246	245.37	66	-2
453	J-890	201.43	0.246	246.35	64	0.246	245.27	62	-2	0.246	245.27	62	-2	0.246	245.27	62	-2
455	J-895	201.30	0.246	246.11	64	0.246	245.07	62	-2	0.246	245.07	62	-2	0.246	245.07	62	-2
459	J-900	194.61	0.246	245.17	72	0.246	244.33	71	-1	0.246	244.33	71	-1	0.246	244.33	71	-1
464	J-905	181.92	0.246	248.85	**95**	0.246	247.74	**93**	-2	0.246	247.74	**93**	-2	0.246	247.74	**93**	-2
466	J-910	183.06	0.246	248.61	**93**	0.246	247.49	**91**	-2	0.246	247.50	**91**	-2	0.246	247.49	**91**	-2
474	J-915	180.66	0.246	249.52	**98**	0.246	248.42	**96**	-2	0.246	248.43	**96**	-2	0.246	248.42	**96**	-2
476	J-920	182.93	0.246	248.54	**93**	0.246	247.39	**92**	-1	0.246	247.40	**92**	-1	0.246	247.39	**92**	-1
479	J-925	192.59	0.246	247.4	78	0.246	246.27	76	-2	0.246	246.28	76	-2	0.246	246.27	76	-2
480	J-930	193.71	0.246	247.35	76	0.246	246.23	75	-1	0.246	246.23	75	-1	0.246	246.23	75	-1
485	J-935	182.52	0.246	248.01	**93**	0.246	246.79	**91**	-2	0.246	246.81	**91**	-2	0.246	246.79	**91**	-2
491	J-940	186.49	0.246	247.69	**87**	0.246	246.49	**85**	-2	0.246	246.49	**85**	-2	0.246	246.49	**85**	-2
491	J-945	190.09	0.246	247.51	**82**	0.246	246.30	80	-2	0.246	246.31	80	-2	0.246	246.30	80	-2
495	J-950	197.57	0.246	246.36	69	0.246	245.15	68	-1	0.246	245.15	68	-1	0.246	245.15	68	-1
503	J-955	197.83	0.246	245.99	68	0.246	244.84	67	-1	0.246	244.83	67	-1	0.246	244.84	67	-1
509	J-960	192.83	0.246	247.14	77	0.246	245.95	75	-2	0.246	245.95	75	-2	0.246	245.95	75	-2
514	J-965	191.96	0.246	246.77	78	0.246	245.47	76	-2	0.246	245.47	76	-2	0.246	245.47	76	-2
515	J-970	191.88	0.246	246.67	78	0.246	245.34	76	-2	0.246	245.35	76	-2	0.246	245.34	76	-2
516	J-975	198.96	0.246	246.24	67	0.246	244.94	65	-2	0.246	244.94	65	-2	0.246	244.94	65	-2
520	J-980	198.94	0.246	246.1	67	0.246	244.67	65	-2	0.246	244.67	65	-2	0.246	244.67	65	-2
522	J-985	188.77	0.246	246.57	**82**	0.246	245.14	80	-2	0.246	245.15	80	-2	0.246	245.14	80	-2
523	J-990	191.33	0.246	246.86	79	0.246	245.54	77	-2	0.246	245.55	77	-2	0.246	245.54	77	-2
525	J-995	179.89	0.246	247.37	**96**	0.246	245.93	**94**	-2	0.246	245.97	**94**	-2	0.246	245.93	**94**	-2
527	J-1000	181.60	0.246	247.37	**93**	0.246	245.93	**91**	-2	0.246	245.97	**91**	-2	0.246	245.93	**91**	-2
528	J-1005	181.78	0.246	247.07	**93**	0.246	245.53	**91**	-2	0.246	245.58	**91**	-2	0.246	245.53	**91**	-2
530	J-1010	184.25	0.246	246.86	**89**	0.246	245.29	**87**	-2	0.246	245.33	**87**	-2	0.246	245.29	**87**	-2
533	J-1015	183.95	0.246	246.83	**89**	0.246	245.19	**87**	-2	0.246	245.25	**87**	-2	0.246	245.19	**87**	-2
536	J-1020	190.44	0.246	246.57	80	0.246	245.14	78	-2	0.246	245.15	78	-2	0.246	245.14	78	-2
538	J-1025	191.00	0.246	246.56	79	0.246	245.11	77	-2	0.246	245.12	77	-2	0.246	245.11	77	-2
542	J-1030	191.95	0.246	246.37	77	0.246	244.94	75	-2	0.246	244.95	75	-2	0.246	244.94	75	-2
547	J-1035	192.25	0.246	246.32	77	0.246	244.86	75	-2	0.246	244.86	75	-2	0.246	244.86	75	-2
552	J-1040	190.53	0.246	246.55	80	0.246	245.10	77	-3	0.246	245.12	77	-3	0.246	245.10	77	-3
555	J-1045	192.11	0.246	246.56	77	0.246	245.10	75	-2	0.246	245.12	75	-2	0.246	245.10	75	-2
556	J-1050	192.08	0.246	246.56	77	0.246	245.10	75	-2	0.246	245.12	75	-2	0.246	245.10	75	-2
559	J-1055	194.63	0.246	246.08	73	0.246	244.50	71	-2	0.246	244.50	71	-2	0.246	244.50	71	-2
561	J-1060	195.00	0.246	246.08	73	0.246	244.50	70	-3	0.246	244.50	70	-3	0.246	244.50	70	-3
564	J-1065	181.57	0.246	246.83	**93**	0.246	245.18	**90**	-3	0.246	245.24	**90**	-3	0.246	245.18	**90**	-3
569	J-1070	189.06	0.246	245.35	80	0.246	242.63	76	-4	0.246	242.86	76	-4	0.246	242.63	76	-4
571	J-1075	189.00	0.246	245.3	80	0.246	242.49	76	-4	0.246	242.83	76	-4	0.246	242.49	76	-4
572	J-1080	191.25	0.246	245.31	77	0.246	242.59	73	-4	0.246	242.70	73	-4	0.246	242.59	73	-4
575	J-1085	193.98	0.246	244.94	72	0.246	244.14	71	-1	0.246	244.14	71	-1	0.246	244.14	71	-1
576	J-1090	195.60	0.246	244.94	70	0.246	244.14	69	-1	0.246	244.14	69	-1	0.246	244.14	69	-1
583	J-1095	198.24	0.246	245.3	67	0.246	244.37	65	-2	0.246	244.37	65	-2	0.246	244.37	65	-2
587	J-3055	199.45	0.246	244.96	65	0.246	244.14	63	-2	0.246	244.14	63	-2	0.246	244.14	63	-2
588	J-1110	197.38	0.246	244.96	68	0.246	244.14	66	-2	0.246	244.14	66	-2	0.246	244.14	66	-2
591	J-1115	196.23	0.246	244.96	69	0.246	244.14	68	-1	0.246	244.14	68	-1	0.246	244.14	68	-1
594	J-3050	202.05	0.246	244.96	61	0.246	244.14	60	-1	0.246	244.14	60	-1	0.246	244.14	60	-1
601	J-1125	202.14	0.246	244.96	61	0.246	244.14	60	-1	0.246	244.14	60	-1	0.246	244.14	60	-1
606	J-1130	205.27	0.246	244.02	55	0.246	243.58	54	-1	0.246	243.58	54	-1	0.246	243.58	54	-1
610	J-1135	200.79	0.246	245.66	64	0.246	244.62	62	-2	0.246	244.61	62	-2	0.246	244.62	62	-2
615	J-1140	200.46	0.246	245.27	64	0.246	244.34	62	-2	0.246	244.34	62	-2	0.246	244.34	62	-2
617	J-1145	198.65	0.246	245.98	67	0.246	244.78	65	-2	0.246	244.78	65	-2	0.246	244.78	65	-2
620	J-3045	201.75	0.246	244.96	61	0.246	244.13	60	-1	0.246	244.13	60	-1	0.246	244.13	60	-1
621	J-3040	200.70	0.246	244.95	63	0.246	244.12	62	-1	0.246	244.12	62	-1	0.246	244.12	62	-1
627	J-1160	198.56	0.246	245.91	67	0.246	244.64	65	-2	0.246	244.63	65	-2	0.246	244.64	65	-2
628	J-1165	200.77	0.246	245.66	64	0.246	244.22	62	-2	0.246	244.21	62	-2	0.246	244.22	62	-2
630	J-1170	199.93	0.246	245.72	65	0.246	244.45	63	-2	0.246	244.45	63	-2	0.246	244.45	63	-2
632	J-1175	205.90	0.246	245.49	56	0.246	244.22	54	-2	0.246	244.22	54	-2	0.246	244.22	54	-2
634	J-1185	202.60	0.246	245	60	0.246	244.11	59	-1	0.246	244.11	59	-1	0.246	244.11	59	-1
643	J-1195	203.79	0.246	244.94	58	0.246	244.06	57	-1	0.246	244.06	57	-1	0.246	244.06	57	-1
650	J-1205	201.73	0.246	245.07	62	0.246	244.11	60	-2	0.246	244.11	60	-2	0.246	244.11	60	-2
651	J-1210	205.96	0.246	245.5	56	0.246	244.22	54	-2	0.246	244.21	54	-2	0.246	244.22	54	-2
653	J-1215	205.51	0.246	245.5	57	0.246	244.14	55	-2	0.246	244.13	55	-2	0.246	244.14	55	-2
655	J-1220	208.06	5.224	245.45	53	5.224	244.04	51	-2	5.224	244.03	51	-2	5.224	244.04	51	-2
656	J-1225	206.72	0.246	243	52	0.246	243.00	52	0	0.246	243.00	52	0	0.246	243.00	52	0
657	J-1230	208.48	0.246	244.58	51	0.246	243.86	50	-1	0.246	243.86	50	-1	0.246	243.86	50	-1
658	J-1235	207.08	0.246	244.68	53	0.246	243.93	52	-1	0.246	243.93	52	-1	0.246	243.93	52	-1
663	J-1240	210.59	0.246	244.68	48	0.246	243.93	47	-1	0.246	243.93	47	-1	0.246	243.93	47	-1
666	J-1245	210.89	0.246	244.58	48	0.246	243.87	47	-1	0.246	243.86	47	-1	0.246	243.87	47	-1
670	J-1250	211.11	0.246	244.68	48	0.246	243.93	47	-1	0.246	243.93	47	-1	0.246	243.93	47	-1
671	J-1255	209.45	0.246	244.16	49	0.246	243.61	49	0	0.246	243.61	49	0	0.246	243.61	49	0
672	J-1260	212.65	0.246	244.58	45	0.246	243.87	44	-1	0.246	243.86	44	-1	0.246	243.87	44	-1
677	J-1265	213.34	0.246	244.53	44	0.246	243.84	43	-1	0.246	243.83	43	-1	0.246	243.84	43	-1
678	J-3000	214.13	0.246	244.52	43	0.246	243.83	42	-1	0.246	243.83	42	-1	0.246	243.83	42	-1
680	J-1275	214.30	0.246	244.46	43	0.246	243.80	42	-1	0.246	243.79	42	-1	0.246	243.80	42	-1
682	J-1280	215.00	0.246	244.39	42	0.246	243.75	41	-1	0.246	243.75	41	-1	0.246	243.75	41	-1
685	J-1285	198.76	0.246	245.96	67	0.246	244.40	65	-2	0.246	244.40	65	-2	0.246	244.40	65	-2
688	J-1290	199.44	0.246	245.81	66	0.246	244.08	63	-3	0.246	244.06	63	-3	0.246	244.08	63	-3
691	J-1295	202.09	0.246	245.63	62	0.246	244.13	60	-2	0.246	244.12	60	-2	0.246	244.13	60	-2
694	J-1300	202.88	0.246	245.6	61	0.246	244.11	59	-2	0.246	244.10	59	-2	0.246	244.11	59	-2
697	J-1305	199.02	0.484	245.44	66	0.484	243.12	63	-3	0.484	243.08	63	-3	0.484	243.12	63	-3
701	J-1310	199.81	0.246	245.44	65	0.246	243.12	61	-4	0.246	243.08	61	-4	0.246	243.12	61	-4
703	J-1315	207.39	5.711	245.27	54	5.711	242.95	50	-4	5.711	242.92	50	-4	5.711	242.95	50	-4
704	J-1320	210.04	0.246	245.38	50	0.246	243.06	47	-3	0.246	243.02	47	-3	0.246	243.06	47	-3
707	J-1325	211.89	0.246	245.38	48	0.246	243.06	44	-4	0.246	243.02	44	-4	0.246	243.06	44	-4
710	J-1330	202.93	0.975	245.31	60	0.975	242.63	56	-4	0.975	242.59	56	-4	0.975	242.63	56	-4
711	J-1335	210.85	0.959	245.33	49	0.959	243.01	46	-3	0.959	242.97	46	-3	0.959	243.01	46	-3
712	J-1340	210.67	0.246	245.33	49	0.246	243.01	46	-3	0.246	242.97	46	-3	0.246	243.01	46	-3
715	J-1345	210.00	5.224	245.26	50	5.224	242.94	47	-3	5.224	242.91	47	-3	5.224	242.94	47	-3
717	J-1350	190.78	0.246	245.21	77	0.246	242.31	73	-4	0.246	242.52	73	-4	0.246	242.31	73	-4
720	J-1355	195.31	0.246	245.14	71	0.246	242.10	66	-5	0.246	242.19	67	-4	0.246	242.10	66	-5
724	J-1360	201.71	5.224	245.09	62	5.224	241.95	57	-5	5.224	241.63	57	-5	5.224	241.95	57	-5
725	J-1365	178.95	0.246	245.85	**95**	0.246	243.48	**92**	-3	0.246	243.66	**92**	-3	0.246	243.48	**92**	-3
731	J-1370	181.76	0.246	245.13	**90**	0.246	242.06	**86**	-4	0.246	242.73	**87**	-3	0.246	242.06	**86**	-4
734	J-1375	187.18	0.246	244.97	**82**	0.246	241.54	77	-5	0.246	243.33	80	-2	0.246	241.54	77	-5
736	J-1380	189.38	0.246	245.22	79	0.246	242.29	75	-4	0.246	242.78	76	-3	0.246	242.29	75	-4
737	J-1385	189.19	0.246	245.19	79	0.246	242.20	74	-5	0.246	242.76	75	-4	0.246	242.20	74	-5
740	J-1390	189.89	0.246	245.13	78	0.246	242.06	74	-4	0.246	242.73	75	-3	0.246	242.06	74	-4
745	J-1395	191.33	0.246	245.13	76	0.246	242.05	72	-4	0.246	242.47	73	-3	0.246	242.05	72	-4
750	J-1400	190.37	0.246	245	78	0.246	241.63	73	-5	0.246	243.23	75	-3	0.246	241.63	73	-5
752	J-1405	188.52	0.246	244.97	80	0.246	241.54	75	-5	0.246	243.33	78	-2	0.246	241.54	75	-5
757	J-1410	191.72	0.246	244.93	76	0.246	241.37	70	-6	0.246	243.60	74	-2	0.246	241.37	70	-6
759	J-1415	195.36	0.246	245.11	71	0.246	242.01	66	-5	0.246	242.06	66	-5	0.246	242.01	66	-5
764	J-1420	195.34	0.246	245.11	71	0.246	242.02	66	-5	0.246	242.14	66	-5	0.246	242.02	66	-5
765	J-1425	191.67	0.246	245.12	76	0.246	242.04	72	-4	0.246	242.36	72	-4	0.246	242.04	72	-4
767	J-1430	191.10	0.246	244.85	76	0.246	241.05	71	-5	0.246	244.11	75	-1	0.246	241.05	71	-5
768	J-1435	192.70	0.246	245.12	74	0.246	242.04	70	-4	0.246	242.35	70	-4	0.246	242.04	70	-4
769	J-1440	195.47	0.246	245.11	70	0.246	242.02	66	-4	0.246	242.14	66	-4	0.246	242.02	66	-4
772	J-1445	184.00	0.246	244.79	**86**	0.246	240.83	**81**	-5	0.246	244.47	**86**	0	0.246	240.83	**81**	-5
775	J-1450	192.23	1.329	244.79	75	1.329	240.83	69	-6	1.329	244.47	74	-1	1.329	240.83	69	-6
780	J-1455	190.35	1.329	244.71	77	1.329	240.49	71	-6	1.329	244.99	78	1	1.329	240.49	71	-6
783	J-1460	197.48	1.329	244.73	67	1.329	240.52	61	-6	1.329	248.28	72	5	1.329	240.52	61	-6
784	J-1465	185.62	0.246	244.71	**84**	0.246	240.48	78	-6	0.246	244.99	**84**	0	0.246	240.48	78	-6
786	J-1470	189.54	0.246	244.58	78	0.246	239.75	71	-7	0.246	246.08	80	2	0.246	239.75	71	-7
788	J-1475	191.15	1.329	244.61	76	1.329	239.92	69	-7	1.329	246.02	78	2	1.329	239.92	69	-7
792	J-1480	202.35	1.329	244.61	60	1.329	239.90	53	-7	1.329	246.56	63	3	1.329	239.90	53	-7
793	J-1485	201.64	0.246	244.58	61	0.246	239.71	54	-7	0.246	246.21	63	2	0.246	239.71	54	-7
797	J-1490	203.29	0.246	244.55	59	0.246	239.53	51	-8	0.246	245.98	61	2	0.246	239.53	51	-8
801	J-1495	201.79	0.246	244.45	61	0.246	238.94	53	-8	0.246	245.39	62	1	0.246	238.94	53	-8
804	J-1500	199.49	0.246	244.42	64	0.246	238.74	56	-8	0.246	245.19	65	1	0.246	238.74	56	-8
808	J-1505	202.39	0.246	244.33	60	0.246	238.21	51	-9	0.246	244.66	60	0	0.246	238.21	51	-9
809	J-1510	189.54	0.246	244.2	78	0.246	237.37	68	-10	0.246	243.82	77	-1	0.246	237.37	68	-10
811	J-1515	190.48	0.246	244.14	76	0.246	236.95	66	-10	0.246	243.40	75	-1	0.246	236.95	66	-10
813	J-1520	196.86	0.246	244.2	67	0.246	237.37	57	-10	0.246	243.82	67	0	0.246	237.37	57	-10
816	J-1525	195.09	0.246	244.14	70	0.246	236.95	59	-11	0.246	243.40	69	-1	0.246	236.95	59	-11
818	J-1530	185.88	0.246	243.94	**82**	0.246	235.68	71	-11	0.246	242.13	80	-2	0.246	251.75	**93**	11
819	J-1535	190.92	0.246	244.13	76	0.246	236.95	65	-11	0.246	243.40	75	-1	0.246	236.95	65	-11
820	J-1540	191.72	0.246	243.95	74	0.246	235.69	62	-12	0.246	242.14	72	-2	0.246	251.75	**85**	11

822	J-1545	193.07	0.246	243.95	72	0.246	235.69	60	-12	0.246	242.14	70	-2	0.246	251.76	83	11
828	J-1550	196.29	0.246	244.02	68	0.246	236.15	57	-11	0.246	242.61	66	-2	0.246	252.22	79	11
830	J-1555	198.49	0.246	243.96	65	0.246	235.70	53	-12	0.246	242.15	62	-3	0.246	251.76	76	11
833	J-1560	188.90	0.246	243.95	78	0.246	235.68	66	-12	0.246	242.14	76	-2	0.246	251.75	89	11
835	J-1565	190.15	0.246	243.95	78	0.246	235.68	65	-13	0.246	242.14	74	-2	0.246	251.75	87	11
837	J-1570	198.68	0.246	243.82	64	0.246	234.61	51	-13	0.246	241.06	60	-4	0.246	250.67	74	10
845	J-1575	182.39	0.246	243.65	87	0.246	233.40	72	-15	0.246	239.85	82	-5	0.246	249.46	95	8
848	J-1580	181.68	0.246	243.65	88	0.246	233.40	73	-15	0.246	239.85	83	-5	0.246	249.47	96	8
850	J-1585	184.07	0.246	243.65	85	0.246	233.40	70	-15	0.246	239.85	79	-6	0.246	249.47	93	8
853	J-1590	201.82	0.246	243.68	59	0.246	233.42	45	-14	0.246	239.88	54	-5	0.246	249.49	68	9
856	J-1595	186.62	0.246	243.47	81	0.246	231.58	64	-17	0.246	238.04	73	-8	0.246	247.65	87	6
862	J-1600	199.87	0.246	243.54	62	0.246	232.22	46	-16	0.246	238.67	55	-7	0.246	248.28	69	7
863	J-1605	182.98	0.246	243.42	86	0.246	231.17	68	-18	0.246	237.62	78	-8	0.246	247.23	91	5
868	J-1610	189.90	0.246	243.32	76	0.246	230.22	57	-19	0.246	236.67	66	-10	0.246	246.28	80	4
869	J-1615	183.44	0.246	243.33	85	0.246	230.28	66	-19	0.246	236.74	76	-9	0.246	246.35	89	4
871	J-1620	183.31	0.246	243.31	85	0.246	230.12	66	-19	0.246	236.58	76	-9	0.246	246.19	89	4
873	J-1625	186.56	0.246	243.32	81	0.246	230.22	62	-19	0.246	236.67	71	-10	0.246	246.28	85	4
875	J-1630	186.73	0.246	243.32	80	0.246	230.22	62	-18	0.246	236.67	71	-9	0.246	246.28	85	5
876	J-1635	179.99	0.246	243.28	90	0.246	229.79	71	-19	0.246	236.24	80	-10	0.246	245.85	93	3
877	J-1640	183.67	0.246	243.19	84	0.246	228.85	64	-20	0.246	235.30	73	-11	0.246	244.91	87	3
881	J-1645	181.58	0.246	243.2	87	0.246	228.93	67	-20	0.246	235.39	76	-11	0.246	245.00	90	3
882	J-1650	182.27	0.246	243.2	86	0.246	228.93	66	-20	0.246	235.39	75	-11	0.246	245.00	89	3
883	J-1655	182.00	0.246	243.2	87	0.246	228.93	67	-20	0.246	235.39	76	-11	0.246	245.00	89	2
885	J-1660	185.78	0.246	243.15	81	0.246	228.32	60	-21	0.246	234.77	70	-11	0.246	244.38	83	2
886	J-1665	185.01	0.246	243.15	83	0.246	228.32	61	-22	0.246	234.77	71	-12	0.246	244.38	84	1
890	J-1670	182.03	0.246	243.04	87	0.246	226.84	64	-23	0.246	233.30	73	-14	0.246	242.91	86	-1
891	J-1675	180.50	0.246	242.91	89	0.246	225.04	63	-26	0.246	231.49	72	-17	0.246	241.10	86	-3
894	J-1680	180.50	0.246	242.85	89	0.246	224.21	62	-27	0.246	230.66	71	-18	0.246	240.28	85	-4
895	J-1685	186.55	0.246	242.97	80	0.246	225.94	56	-24	0.246	232.39	65	-15	0.246	242.00	79	-1
898	J-1690	184.41	1.434	242.76	83	1.434	222.83	55	-28	1.434	229.28	64	-19	1.434	238.89	77	-6
913	J-1695	185.24	0.246	242.68	82	0.246	221.43	51	-31	0.246	227.88	61	-21	0.246	237.49	74	-8
917	J-1700	181.63	0.246	242.68	87	0.246	221.43	56	-31	0.246	227.88	66	-21	0.246	237.49	79	-8
918	J-1705	183.86	0.246	242.67	83	0.246	221.13	53	-30	0.246	227.59	62	-21	0.246	237.20	76	-7
921	J-1710	184.24	0.246	242.67	83	0.246	221.13	52	-31	0.246	227.59	62	-21	0.246	237.20	75	-8
926	J-1715	187.22	0.246	242.65	79	0.246	220.85	48	-31	0.246	227.30	57	-22	0.246	236.91	71	-8
930	J-1720	186.98	0.246	242.63	79	0.246	220.24	47	-32	0.246	226.69	56	-23	0.246	236.31	70	-9
931	J-1725	189.86	0.246	242.61	75	0.246	219.68	42	-33	0.246	226.13	51	-24	0.246	235.74	65	-10
933	J-1730	195.58	0.246	242.59	67	0.246	219.11	33	-34	0.246	225.56	43	-24	0.246	235.17	56	-11
934	J-1735	189.31	0.246	242.59	76	0.246	219.11	42	-34	0.246	225.56	51	-25	0.246	235.17	65	-11
937	J-1740	188.53	6.033	242.59	77	6.033	219.11	43	-34	6.033	225.56	53	-24	6.033	235.17	66	-11
1985	J-3005	212.48	0.246	244.58	46	0.246	243.86	45	-1	0.246	243.86	45	-1	0.246	243.86	45	-1
1986	J-3065	198.77	0.246	244.96	66	0.246	244.14	64	-2	0.246	244.14	64	-2	0.246	244.14	64	-2
1988	J-3060	198.45	0.246	244.96	66	0.246	244.14	65	-1	0.246	244.14	65	-1	0.246	244.14	65	-1
1989	J-3035	203.38	0.246	244.91	59	0.246	244.09	58	-1	0.246	244.09	58	-1	0.246	244.09	58	-1
1990	J-3030	205.06	0.246	244.88	57	0.246	244.07	55	-2	0.246	244.06	55	-2	0.246	244.07	55	-2
1991	J-3025	206.09	0.246	244.84	55	0.246	244.03	54	-1	0.246	244.03	54	-1	0.246	244.03	54	-1
1992	J-3020	205.62	0.246	244.77	56	0.246	243.99	54	-2	0.246	243.98	54	-2	0.246	243.99	54	-2
1993	J-3015	208.92	0.888	244.68	51	0.888	243.93	50	-1	0.888	243.93	50	-1	0.888	243.93	50	-1
1994	J-3010	209.67	0.246	244.63	50	0.246	243.90	49	-1	0.246	243.89	49	-1	0.246	243.90	49	-1
2054	J-1461	198.56	1.329	244.79	66	1.329	240.80	60	-6	1.329	249.06	72	8	1.329	240.80	60	-6
2058	J-1451	191.62	1.329	244.79	75	1.329	240.78	70	-5	1.329	244.62	75	0	1.329	240.78	70	-5
2062	J-846	187.27	0.246	248.28	87	0.246	247.18	85	-2	0.246	247.18	85	-2	0.246	247.18	85	-2
2073	J-FUT-1	189.48	(N/A)	(N/A)	(N/A)	0.000	218.70	41	(N/A)	0.000	225.15	51	(N/A)	0	234.76	64	(N/A)
2074	J-FUT-2	191.00	(N/A)	(N/A)	(N/A)	32.000	218.09	38	(N/A)	32.000	224.54	48	(N/A)	32.000	234.15	61	(N/A)
2085	J-BPS-SiteA-01	200.05	0	244.93	64	0.000	241.34	59	-5	0.000	240.40	57	-7	0	241.34	59	-5
2088	J-BPS-SiteA-02	199.97	0	244.93	64	0.000	241.31	59	-5	0.000	250.10	71	7	0	241.31	59	-5
2091	FUT-J-BPS-SiteA-03	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0.000	239.63	65	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2092	FUT-J-BPS-SiteA-04	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0.000	251.05	81	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2102	FUT-J-VLV-01	198.45	0	244.79	66	0.000	240.80	60	-6	0.000	244.62	66	0	0	240.80	60	-6
2113	FUT-J-VLV-02	201.70	0	244.61	61	0.000	239.91	54	-7	0.000	246.52	64	3	0	239.91	54	-7
2118	FUT-J-VLV-03	201.07	0	244.58	62	0.000	239.71	55	-7	0.000	246.21	64	2	0	239.71	55	-7
2124	FUT-J-VLV-04	202.85	0	244.55	59	0.000	239.54	52	-7	0.000	246.08	61	2	0	239.54	52	-7
2136	J-BPS-SiteB-01	196.25	0	244.03	68	0.000	236.18	57	-11	0.000	242.63	66	-2	0	236.18	57	-11
2140	FUT-J-BPS-SiteB-03	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	235.91	61	(N/A)
2141	FUT-J-BPS-SiteB-02	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	252.51	84	(N/A)

MDD+FF Available Fire Flow Model Output

Scenario	# of Nodes per Range in Available Fire Flow					Total Nodes
	< 33.3 L/s (2,000 L/min)	33.3 - 50.0 L/s (2,000 - 3,000 L/min)	50.1 - 133.3 L/s (3,000 - 8,000 L/min)	133.4 - 166.7 L/s (8,000 - 10,000 L/min)	> 166.7 L/s (10,000 L/min)	
MDD+FF (Ex + Fut Growth)	0	24	137	32	170	363
MDD+FF (Ex + Fut Growth + BP)	50	16	123	26	150	365
MDD+FF (Ex + Fut Growth + BP) w/ BPS @ Site A	1	29	147	32	158	367
MDD+FF (Ex + Fut Growth + BP) w/ BPS @ Site B	1	18	163	29	156	367

MIN	*176.70*	*33.4*	*20*		*7.8*	*20*		*-173.4*	*31.2*	*20*		*-69.2*	*29.9*	*20*		*-67.7*
AVG	*196.39*	*205.5*	*25*		*165.0*	*33*		*-39.7*	*191.5*	*28*		*-12.7*	*189.8*	*30*		*-14.2*
MAX	*215.00*	*500.0*	*64*		*500.0*	*78*		*0.0*	*500.0*	*77*		*12.7*	*500.0*	*121*		*16.6*
SUM																

			MDD+FF (Ex + Fut Growth)			MDD+FF (Ex + Fut Growth + BP)				MDD+FF (Ex + Fut Growth + BP) w/ BPS @ Site A				MDD+FF (Ex + Fut Growth + BP) w/ BPS @ Site B			
			HLP2&3 On (Firm Capacity); Standpipe LWL 243m			HLP2&3 On (Firm Capacity); Standpipe LWL 243m				HLP2&3 On (Firm Capacity); Standpipe LWL 243m				HLP2&3 On (Firm Capacity); Standpipe LWL 243m			
ID	Label	Elevation (m)	Fire Flow (Available)	Pressure (Calculated Residual)	Is Fire Flow Run Balanced?	Fire Flow (Available)	Pressure (Calculated Residual)	Is Fire Flow Run Balanced?	Available Fire Flow Difference from Future	Fire Flow (Available)	Pressure (Calculated Residual)	Is Fire Flow Run Balanced?	Available Fire Flow Difference from Future	Fire Flow (Available)	Pressure (Calculated Residual)	Is Fire Flow Run Balanced?	Available Fire Flow Difference from Future
			(L/s)	(psi)	(-)	(L/s)	(psi)	(-)	(L/s)	(L/s)	(psi)	(-)	(L/s)	(L/s)	(psi)	(-)	(L/s)
29	J-5	179.91	43.8	20	TRUE	43.5	20	TRUE	0	43.4	20	TRUE	0	43.4	20	TRUE	0
31	J-10	190.02	87.3	27	TRUE	86.7	27	TRUE	-1	86.6	27	TRUE	-1	86.6	27	TRUE	-1
34	J-15	191.50	88.7	27	TRUE	88.0	28	TRUE	-1	87.9	28	TRUE	-1	87.9	28	TRUE	-1
37	J-20	195.58	81.8	24	TRUE	81.3	24	TRUE	-1	81.1	24	TRUE	-1	81.1	24	TRUE	-1
40	J-25	198.51	71.8	20	TRUE	71.2	20	TRUE	-1	71.1	20	TRUE	-1	71.1	20	TRUE	-1
42	J-30	195.01	83.9	24	TRUE	83.2	24	TRUE	-1	83.2	24	TRUE	-1	83.2	24	TRUE	-1
46	J-35	194.14	82.1	20	TRUE	81.5	20	TRUE	-1	81.4	20	TRUE	-1	81.4	20	TRUE	-1
48	J-40	193.08	97.9	26	TRUE	97.2	26	TRUE	-1	97.0	26	TRUE	-1	97.0	26	TRUE	-1
50	J-45	194.80	74.3	20	TRUE	73.8	20	TRUE	0	73.7	20	TRUE	-1	73.7	20	TRUE	-1
52	J-50	177.54	58.5	24	TRUE	58.1	24	TRUE	0	58.1	24	TRUE	0	58.1	24	TRUE	0
56	J-55	181.13	109.0	20	TRUE	108.5	20	TRUE	-1	108.4	20	TRUE	-1	108.4	20	TRUE	-1
57	J-60	192.68	99.6	26	TRUE	98.9	26	TRUE	-1	98.7	26	TRUE	-1	98.7	26	TRUE	-1
58	J-65	188.44	98.8	29	TRUE	98.0	29	TRUE	-1	97.9	29	TRUE	-1	97.9	29	TRUE	-1
59	J-70	188.35	102.5	32	TRUE	101.7	32	TRUE	-1	101.6	32	TRUE	-1	101.5	32	TRUE	-1
60	J-75	188.01	104.2	31	TRUE	103.4	31	TRUE	-1	103.2	31	TRUE	-1	103.2	31	TRUE	-1
63	J-80	192.01	100.7	28	TRUE	99.9	28	TRUE	-1	99.8	28	TRUE	-1	99.8	28	TRUE	-1
66	J-85	198.37	139.5	20	TRUE	138.3	20	TRUE	-1	138.0	20	TRUE	-2	138.0	20	TRUE	-2
72	J-90	195.86	123.6	20	TRUE	122.7	20	TRUE	-1	122.5	20	TRUE	-1	122.5	20	TRUE	-1
74	J-95	195.16	90.2	20	TRUE	89.7	20	TRUE	-1	89.5	20	TRUE	-1	89.5	20	TRUE	-1
83	J-100	198.36	195.8	20	TRUE	193.5	20	TRUE	-2	192.9	20	TRUE	-3	192.9	20	TRUE	-3
85	J-105	193.69	194.9	28	TRUE	192.4	28	TRUE	-2	191.8	28	TRUE	-3	191.8	28	TRUE	-3
89	J-110	195.72	127.0	20	TRUE	126.0	20	TRUE	-1	125.8	20	TRUE	-1	125.8	20	TRUE	-1
92	J-115	195.19	191.5	27	TRUE	189.1	27	TRUE	-2	188.5	27	TRUE	-3	188.5	27	TRUE	-3
99	J-120	196.70	186.8	26	TRUE	184.5	26	TRUE	-2	183.9	26	TRUE	-3	183.9	26	TRUE	-3
102	J-125	199.91	73.1	20	TRUE	72.6	20	TRUE	-1	72.5	20	TRUE	-1	72.5	20	TRUE	-1
104	J-130	199.43	174.0	22	TRUE	171.9	22	TRUE	-2	171.4	22	TRUE	-3	171.4	22	TRUE	-3
106	J-135	198.26	181.7	24	TRUE	179.5	24	TRUE	-2	178.9	24	TRUE	-3	178.9	24	TRUE	-3
110	J-140	198.71	130.8	20	TRUE	129.7	20	TRUE	-1	129.4	20	TRUE	-1	129.4	20	TRUE	-1
112	J-145	200.14	90.5	20	TRUE	89.8	20	TRUE	-1	89.7	20	TRUE	-1	89.7	20	TRUE	-1
113	J-150	200.09	166.9	21	TRUE	164.9	21	TRUE	-2	164.5	21	TRUE	-2	164.4	21	TRUE	-2
116	J-155	200.72	162.0	20	TRUE	160.2	20	TRUE	-2	159.7	20	TRUE	-2	159.7	20	TRUE	-2
117	J-160	198.53	124.9	20	TRUE	123.8	20	TRUE	-1	123.6	20	TRUE	-1	123.6	20	TRUE	-1
120	J-165	196.85	209.0	20	TRUE	206.6	20	TRUE	-2	206.0	20	TRUE	-3	206.0	20	TRUE	-3
121	J-170	197.96	146.2	20	TRUE	144.9	20	TRUE	-1	144.5	20	TRUE	-2	144.5	20	TRUE	-2
124	J-175	198.98	101.3	20	TRUE	100.5	20	TRUE	-1	100.4	20	TRUE	-1	100.4	20	TRUE	-1
126	J-180	198.52	101.0	20	TRUE	100.2	20	TRUE	-1	100.1	20	TRUE	-1	100.1	20	TRUE	-1
131	J-185	194.93	150.5	20	TRUE	149.3	20	TRUE	-1	149.0	20	TRUE	-2	149.0	20	TRUE	-2
132	J-190	195.55	117.4	20	TRUE	116.5	20	TRUE	-1	116.3	20	TRUE	-1	116.3	20	TRUE	-1
134	J-195	195.54	174.5	20	TRUE	173.0	20	TRUE	-2	172.5	20	TRUE	-2	172.5	20	TRUE	-2
135	J-200	197.10	299.6	20	TRUE	294.0	20	TRUE	-6	292.5	20	TRUE	-7	292.5	20	TRUE	-7
139	J-205	196.72	192.5	20	TRUE	190.5	20	TRUE	-2	189.9	20	TRUE	-3	189.9	20	TRUE	-3
140	J-210	197.78	191.0	20	TRUE	188.9	20	TRUE	-2	188.4	20	TRUE	-3	188.4	20	TRUE	-3
143	J-215	197.43	189.7	20	TRUE	187.7	20	TRUE	-2	187.1	20	TRUE	-3	187.1	20	TRUE	-3
145	J-220	197.36	189.3	20	TRUE	187.3	20	TRUE	-2	186.8	20	TRUE	-3	186.8	20	TRUE	-3
149	J-225	197.28	246.1	20	TRUE	242.9	20	TRUE	-3	242.0	20	TRUE	-4	242.0	20	TRUE	-4
151	J-230	196.69	289.4	24	TRUE	284.7	24	TRUE	-5	283.4	24	TRUE	-6	283.4	24	TRUE	-6
156	J-235	200.00	292.9	20	TRUE	288.0	20	TRUE	-5	286.8	20	TRUE	-6	286.6	20	TRUE	-6
159	J-240	200.17	134.7	20	TRUE	133.4	20	TRUE	-1	133.1	20	TRUE	-2	133.1	20	TRUE	-2
161	J-245	181.69	116.0	20	TRUE	115.4	20	TRUE	-1	115.3	20	TRUE	-1	115.3	20	TRUE	-1
165	J-250	191.97	133.1	20	TRUE	132.2	20	TRUE	-1	132.0	20	TRUE	-1	132.0	20	TRUE	-1
167	J-255	190.96	83.6	20	TRUE	83.1	20	TRUE	0	83.0	20	TRUE	-1	83.0	20	TRUE	-1
170	J-260	197.55	422.9	21	TRUE	362.1	31	TRUE	-61	406.4	21	TRUE	-16	406.4	21	TRUE	-16
172	J-265	191.51	440.6	20	TRUE	357.4	36	TRUE	-83	426.2	20	TRUE	-14	426.2	20	TRUE	-14
174	J-270	191.93	451.8	20	TRUE	357.3	38	TRUE	-94	433.8	21	TRUE	-18	433.8	21	TRUE	-18
177	J-275	194.07	441.6	20	TRUE	350.9	37	TRUE	-91	425.9	20	TRUE	-16	425.9	20	TRUE	-16
179	J-280	200.70	235.4	20	TRUE	232.1	20	TRUE	-3	231.2	20	TRUE	-4	231.2	20	TRUE	-4
181	J-285	197.54	234.8	22	TRUE	231.7	22	TRUE	-3	230.9	22	TRUE	-4	230.9	22	TRUE	-4
182	J-290	197.43	431.1	21	TRUE	361.0	32	TRUE	-70	414.1	21	TRUE	-17	414.0	21	TRUE	-17
184	J-295	200.83	243.5	20	TRUE	239.8	20	TRUE	-4	238.8	20	TRUE	-5	238.8	20	TRUE	-5
186	J-300	200.15	65.1	20	TRUE	64.6	20	TRUE	0	64.5	20	TRUE	-1	64.5	20	TRUE	-1
189	J-305	198.16	234.3	20	TRUE	231.3	20	TRUE	-3	230.5	20	TRUE	-4	230.5	20	TRUE	-4
190	J-310	199.61	316.2	20	TRUE	310.6	20	TRUE	-6	309.0	20	TRUE	-7	309.0	20	TRUE	-7
191	J-315	198.16	322.9	22	TRUE	317.0	22	TRUE	-6	315.4	22	TRUE	-7	315.4	22	TRUE	-7
194	J-320	199.01	90.2	20	TRUE	89.5	20	TRUE	-1	89.4	20	TRUE	-1	89.4	20	TRUE	-1
195	J-325	191.01	460.1	20	TRUE	346.3	42	TRUE	-114	444.1	20	TRUE	-16	444.1	20	TRUE	-16
197	J-330	196.27	446.5	20	TRUE	357.3	35	TRUE	-89	429.9	20	TRUE	-17	429.9	20	TRUE	-17
199	J-335	192.64	475.4	20	TRUE	355.8	41	TRUE	-120	458.2	20	TRUE	-17	458.2	20	TRUE	-17
200	J-340	194.63	65.7	20	TRUE	65.4	20	TRUE	0	65.3	20	TRUE	0	65.3	20	TRUE	0
202	J-345	194.25	500.0	26	TRUE	351.9	47	TRUE	-148	459.5	30	TRUE	-41	462.2	29	TRUE	-38
205	J-350	199.72	99.1	20	TRUE	98.4	20	TRUE	-1	98.2	20	TRUE	-1	98.2	20	TRUE	-1
207	J-355	201.48	205.9	20	TRUE	203.3	20	TRUE	-3	202.6	20	TRUE	-3	202.6	20	TRUE	-3
208	J-360	201.60	378.7	20	TRUE	369.7	20	TRUE	-9	367.3	20	TRUE	-11	367.3	20	TRUE	-11
211	J-365	194.31	207.8	27	TRUE	205.2	27	TRUE	-3	204.5	27	TRUE	-3	204.5	27	TRUE	-3
213	J-370	194.80	69.2	20	TRUE	68.8	20	TRUE	0	68.7	20	TRUE	0	68.7	20	TRUE	-1
215	J-375	196.44	69.9	20	TRUE	69.4	20	TRUE	0	69.4	20	TRUE	-1	69.4	20	TRUE	-1
218	J-380	198.01	185.9	22	TRUE	183.7	22	TRUE	-2	183.2	22	TRUE	-3	183.2	22	TRUE	-3
219	J-385	196.06	63.5	20	TRUE	63.0	20	TRUE	0	63.0	20	TRUE	0	63.0	20	TRUE	0
220	J-390	195.78	87.4	21	TRUE	86.9	21	TRUE	-1	86.8	21	TRUE	-1	86.8	21	TRUE	-1
222	J-395	195.75	83.3	20	TRUE	82.8	20	TRUE	0	82.7	20	TRUE	-1	82.7	20	TRUE	-1
226	J-400	195.22	74.8	20	TRUE	74.3	20	TRUE	0	74.2	20	TRUE	-1	74.2	20	TRUE	-1
237	J-405	200.13	99.6	20	TRUE	98.9	20	TRUE	-1	98.8	20	TRUE	-1	98.8	20	TRUE	-1
239	J-410	196.76	143.4	20	TRUE	142.2	20	TRUE	-1	141.8	20	TRUE	-2	141.8	20	TRUE	-2
241	J-415	191.98	71.1	20	TRUE	70.8	20	TRUE	0	70.7	20	TRUE	0	70.7	20	TRUE	-1
243	J-420	191.47	64.1	20	TRUE	63.8	20	TRUE	0	63.7	20	TRUE	0	63.7	20	TRUE	0
244	J-425	195.82	66.1	20	TRUE	65.7	20	TRUE	0	65.6	20	TRUE	0	65.6	20	TRUE	-1
245	J-430	199.12	178.2	20	TRUE	176.2	20	TRUE	-2	175.7	20	TRUE	-3	175.7	20	TRUE	-3
247	J-435	195.92	41.6	20	TRUE	41.4	20	TRUE	0	41.4	20	TRUE	0	41.4	20	TRUE	0
253	J-440	195.52	392.6	21	TRUE	383.9	22	TRUE	-9	381.5	22	TRUE	-11	381.5	22	TRUE	-11
255	J-445	193.68	201.9	22	TRUE	199.7	22	TRUE	-2	199.1	22	TRUE	-3	199.1	22	TRUE	-3
257	J-450	192.38	211.8	20	TRUE	209.6	20	TRUE	-2	209.1	20	TRUE	-3	209.1	20	TRUE	-3
258	J-455	195.19	83.3	20	TRUE	83.0	20	TRUE	0	82.9	20	TRUE	0	82.9	20	TRUE	0
260	J-460	196.53	90.4	20	TRUE	90.0	20	TRUE	0	89.9	20	TRUE	0	89.9	20	TRUE	0
261	J-465	196.78	418.9	20	TRUE	410.6	20	TRUE	-8	407.9	20	TRUE	-11	408.4	20	TRUE	-11
262	J-470	192.96	207.0	25	TRUE	204.6	25	TRUE	-2	204.0	25	TRUE	-3	204.0	25	TRUE	-3
264	J-475	195.04	226.9	22	TRUE	224.1	22	TRUE	-3	223.5	22	TRUE	-3	223.4	22	TRUE	-3
267	J-480	190.69	262.9	20	TRUE	259.3	20	TRUE	-4	258.4	20	TRUE	-4	258.4	20	TRUE	-4
272	J-485	197.82	408.0	23	TRUE	397.7	23	TRUE	-10	394.4	23	TRUE	-14	394.9	23	TRUE	-13
274	J-490	201.68	431.4	20	TRUE	354.3	31	TRUE	-77	413.1	20	TRUE	-18	413.1	20	TRUE	-18
276	J-495	189.36	448.4	29	TRUE	406.7	35	TRUE	-42	432.6	30	TRUE	-16	432.9	30	TRUE	-16
281	J-500	196.52	433.8	20	TRUE	421.1	21	TRUE	-13	422.3	20	TRUE	-11	422.7	20	TRUE	-11
283	J-505	196.55	106.0	20	TRUE	105.4	20	TRUE	-1	105.3	20	TRUE	-1	105.3	20	TRUE	-1
284	J-510	196.70	128.6	20	TRUE	127.8	20	TRUE	-1	127.6	20	TRUE	-1	127.6	20	TRUE	-1
288	J-515	196.78	98.0	20	TRUE	97.6	20	TRUE	0	97.6	20	TRUE	0	97.6	20	TRUE	0
289	J-520	198.38	86.7	20	TRUE	86.4	20	TRUE	0	86.4	20	TRUE	0	86.4	20	TRUE	0
292	J-525	197.38	500.0	27	TRUE	428.7	35	TRUE	-71	500.0	25	TRUE	0	500.0	25	TRUE	0
293	J-530	198.01	500.0	28	TRUE	436.9	35	TRUE	-63	500.0	26	TRUE	0	500.0	26	TRUE	0
298	J-535	195.14	472.9	26	TRUE	418.5	33	TRUE	-54	458.5	26	TRUE	-14	458.6	26	TRUE	-14
299	J-540	196.06	112.4	20	TRUE	111.8	20	TRUE	-1	111.6	20	TRUE	-1	111.6	20	TRUE	-1
300	J-545	197.66	500.0	26	TRUE	425.4	35	TRUE	-75	500.0	24	TRUE	0	500.0	24	TRUE	0
301	J-550	197.14	193.2	20	TRUE	191.2	20	TRUE	-2	190.6	20	TRUE	-3	190.6	20	TRUE	-3
304	J-555	198.68	165.9	20	TRUE	164.4	20	TRUE	-1	164.0	20	TRUE	-2	164.0	20	TRUE	-2
307	J-560	197.35	94.8	20	TRUE	94.5	20	TRUE	0	94.4	20	TRUE	0	94.4	20	TRUE	0
308	J-565	198.43	72.8	21	TRUE	72.4	21	TRUE	0	72.4	21	TRUE	0	72.4	21	TRUE	0
310	J-570	198.44	70.4	20	TRUE	70.1	20	TRUE	0	70.0	20	TRUE	0	70.0	20	TRUE	0
311	J-575	199.14	66.1	20	TRUE	65.9	20	TRUE	0	65.8	20	TRUE	0	65.8	20	TRUE	0
312	J-580	197.74	500.0	35	TRUE	431.6	41	TRUE	-68	500.0	33	TRUE	0	500.0	33	TRUE	0
315	J-585	197.41	500.0	35	TRUE	431.7	41	TRUE	-68	500.0	32	TRUE	0	500.0	32	TRUE	0
316	J-590	198.65	500.0	33	TRUE	435.3	39	TRUE	-65	500.0	31	TRUE	0	500.0	31	TRUE	0
318	J-595	197.53	248.7	20	TRUE	245.9	20	TRUE	-3	245.2	20	TRUE	-4	245.2	20	TRUE	-4
321	J-600	197.59	230.1	22	TRUE	227.5	22	TRUE	-3	226.8	22	TRUE	-3	226.8	22	TRUE	-3
324	J-605	202.23	164.3	20	TRUE	162.9	20	TRUE	-1	162.5	20	TRUE	-2	162.5	20	TRUE	-2
327	J-610	201.13	97.6	20	TRUE	97.2	20	TRUE	0	97.1	20	TRUE	0	97.1	20	TRUE	0
331	J-615	202.96	111.2	20	TRUE	110.7	20	TRUE	-1	110.5	20	TRUE	-1	110.5	20	TRUE	-1
332	J-620	199.43	500.0	23	TRUE	439.8	30	TRUE	-60	494.7	21	TRUE	-5	494.8	21	TRUE	-5
335	J-625	204.00	126.9	20	TRUE	126.2	20	TRUE	-1	125.9	20	TRUE	-1	125.9	20	TRUE	-1
337	J-630	204.20	419.1	20	TRUE	409.5	20	TRUE	-10	407.0	20	TRUE	-12	407.0	20	TRUE	-12
339	J-635	205.39	125.9	20	TRUE	125.0	20	TRUE	-1	124.9	20	TRUE	-1	124.9	20	TRUE	-1
340	J-640	209.47	80.7	20	TRUE	80.3	20	TRUE	0	80.2	20	TRUE	0	80.2	20	TRUE	0
341	J-645	199.09	91.6	20	TRUE	91.2	20	TRUE	0	91.2	20	TRUE	0	91.2	20	TRUE	0
342	J-650	203.86	93.9	20	TRUE	93.6	20	TRUE	0	93.6	20	TRUE	0	93.6	20	TRUE	0
344	J-655	204.73	123.7	20	TRUE	123.1	20	TRUE	-1	122.9	20	TRUE	-1	123.0	20	TRUE	-1
348	J-660	205.47	149.7	20	TRUE	148.9	20	TRUE	-1	148.6	20	TRUE	-1	148.6	20	TRUE	-1
352	J-665	205.66	145.6	20	TRUE	144.8	20	TRUE	-1	144.6	20	TRUE	-1	144.6	20	TRUE	-1
355	J-670	201.72	135.6	20	TRUE	135.0	20	TRUE	-1	134.8	20	TRUE	-1	134.8	20	TRUE	-1
358	J-675	205.66	187.3	20	TRUE	185.9	20	TRUE	-1	185.5	20	TRUE	-2	185.5	20	TRUE	-2
359	J-680	205.07	107.3	20	TRUE	106.9	20	TRUE	0	106.8	20	TRUE	-1	106.8	20	TRUE	-1
360	J-685	205.91	92.5	20	TRUE	92.3	20	TRUE	0	92.3	20	TRUE	0	92.3	20	TRUE	0
361	J-690	206.02	171.6	20	TRUE	170.5	20	TRUE	-1	170.2	20	TRUE	-1	170.2	20	TRUE	-1
364	J-695	206.35	169.1	20	TRUE	168.1	20	TRUE	-1	167.8	20	TRUE	-1	167.8	20	TRUE	-1
367	J-700	205.13	500.0	32	TRUE	460.1	34	TRUE	-40	500.0	30	TRUE	0	500.0	30	TRUE	0
369	J-705	205.38	500.0	35	TRUE	479.0	35	TRUE	-21	500.0	33	TRUE	0	500.0	33	TRUE	0
373	J-710	206.88	500.0	44	TRUE	500.0	43	TRUE	0	500.0	43	TRUE	0	500.0	43	TRUE	0

375	J-715	206.87	500.0	34	TRUE	500.0	33	TRUE	0	500.0	33	TRUE	0	500.0	33	TRUE	0
378	J-720	206.31	500.0	29	TRUE	500.0	27	TRUE	0	500.0	27	TRUE	0	500.0	27	TRUE	0
381	J-725	208.38	133.1	20	TRUE	132.3	20	TRUE	-1	132.1	20	TRUE	-1	132.1	20	TRUE	-1
385	J-730	209.54	89.8	21	TRUE	89.5	21	TRUE	0	89.4	21	TRUE	0	89.4	21	TRUE	0
386	J-735	205.42	198.2	26	TRUE	196.0	26	TRUE	-2	195.3	26	TRUE	-3	195.3	26	TRUE	-3
389	J-740	206.69	387.8	28	TRUE	377.1	28	TRUE	-11	374.2	28	TRUE	-14	374.3	28	TRUE	-14
390	J-745	207.31	149.9	23	TRUE	148.6	23	TRUE	-1	148.2	23	TRUE	-2	148.2	23	TRUE	-2
392	J-750	206.89	466.5	26	TRUE	451.8	26	TRUE	-15	447.8	26	TRUE	-19	447.7	26	TRUE	-19
397	J-755	207.81	354.3	27	TRUE	345.2	27	TRUE	-9	342.7	27	TRUE	-12	342.8	27	TRUE	-12
398	J-760	212.84	257.2	20	TRUE	252.3	20	TRUE	-5	251.0	20	TRUE	-6	251.0	20	TRUE	-6
399	J-765	210.90	96.3	20	TRUE	95.7	20	TRUE	-1	95.6	20	TRUE	-1	95.6	20	TRUE	-1
400	J-770	210.36	273.9	22	TRUE	268.7	22	TRUE	-5	267.4	22	TRUE	-7	267.4	22	TRUE	-7
403	J-775	207.93	134.6	20	TRUE	133.9	20	TRUE	-1	133.6	20	TRUE	-1	133.6	20	TRUE	-1
404	J-780	209.52	92.8	20	TRUE	92.5	20	TRUE	0	92.4	20	TRUE	0	92.4	20	TRUE	0
405	J-785	209.26	65.2	20	TRUE	65.0	20	TRUE	0	64.9	20	TRUE	0	64.9	20	TRUE	0
406	J-790	210.10	44.5	20	TRUE	44.3	20	TRUE	0	44.3	20	TRUE	0	44.3	20	TRUE	0
407	J-795	209.39	389.1	20	TRUE	379.6	20	TRUE	-10	377.0	20	TRUE	-12	377.0	20	TRUE	-12
408	J-800	210.50	330.8	20	TRUE	322.7	20	TRUE	-8	320.5	20	TRUE	-10	320.5	20	TRUE	-10
411	J-805	211.42	250.0	20	TRUE	245.7	20	TRUE	-4	244.6	20	TRUE	-5	244.6	20	TRUE	-5
414	J-810	176.70	114.3	20	TRUE	113.9	20	TRUE	0	113.8	20	TRUE	-1	113.8	20	TRUE	-1
415	J-815	181.69	94.8	20	TRUE	94.4	20	TRUE	0	94.3	20	TRUE	0	94.3	20	TRUE	0
417	J-820	180.21	500.0	35	TRUE	338.2	63	TRUE	-162	443.2	43	TRUE	-57	445.9	42	TRUE	-54
421	J-825	190.06	499.9	36	TRUE	331.1	57	TRUE	-169	434.9	42	TRUE	-65	437.5	42	TRUE	-62
423	J-830	197.10	500.0	27	TRUE	349.2	45	TRUE	-151	456.1	30	TRUE	-44	458.8	29	TRUE	-41
427	J-835	197.03	500.0	30	TRUE	338.8	48	TRUE	-161	443.3	34	TRUE	-57	446.0	34	TRUE	-54
428	J-840	197.14	500.0	31	TRUE	337.2	49	TRUE	-163	441.4	35	TRUE	-59	444.0	35	TRUE	-56
430	J-845	191.27	491.6	47	TRUE	325.4	62	TRUE	-166	428.6	50	TRUE	-63	431.2	50	TRUE	-60
432	J-850	197.15	493.3	31	TRUE	326.1	50	TRUE	-167	429.3	36	TRUE	-64	431.9	36	TRUE	-61
433	J-855	197.24	498.0	34	TRUE	330.0	51	TRUE	-168	433.1	39	TRUE	-65	435.7	38	TRUE	-62
437	J-860	200.56	219.8	20	TRUE	216.3	20	TRUE	-3	215.3	20	TRUE	-4	215.3	20	TRUE	-4
439	J-865	196.80	147.9	20	TRUE	146.8	20	TRUE	-1	146.5	20	TRUE	-1	146.5	20	TRUE	-1
441	J-870	201.00	268.9	20	TRUE	263.2	20	TRUE	-6	261.7	20	TRUE	-7	261.7	20	TRUE	-7
446	J-875	197.17	208.6	20	TRUE	205.8	20	TRUE	-3	205.0	20	TRUE	-4	205.0	20	TRUE	-4
449	J-880	197.91	483.2	34	TRUE	317.5	51	TRUE	-166	419.3	38	TRUE	-64	421.9	38	TRUE	-61
451	J-885	198.86	483.2	35	TRUE	317.4	51	TRUE	-166	418.9	39	TRUE	-64	421.5	39	TRUE	-62
453	J-890	201.43	491.4	23	TRUE	323.1	43	TRUE	-168	426.0	29	TRUE	-65	428.7	29	TRUE	-63
455	J-895	201.30	468.6	20	TRUE	330.6	39	TRUE	-138	436.0	22	TRUE	-33	438.7	22	TRUE	-30
459	J-900	194.61	500.0	25	TRUE	355.2	45	TRUE	-145	468.7	27	TRUE	-31	471.6	26	TRUE	-28
464	J-905	181.92	488.5	62	TRUE	324.1	77	TRUE	-164	426.9	65	TRUE	-62	429.7	65	TRUE	-59
466	J-910	183.06	487.9	54	TRUE	322.2	72	TRUE	-166	425.7	59	TRUE	-62	428.4	59	TRUE	-60
474	J-915	180.66	492.3	64	TRUE	326.7	78	TRUE	-166	430.2	67	TRUE	-62	433.0	67	TRUE	-59
476	J-920	182.93	469.1	52	TRUE	301.9	71	TRUE	-167	405.2	57	TRUE	-64	408.7	57	TRUE	-60
479	J-925	192.59	482.8	44	TRUE	317.3	60	TRUE	-165	419.3	48	TRUE	-64	421.8	48	TRUE	-61
480	J-930	193.71	482.3	41	TRUE	317.5	57	TRUE	-165	419.4	45	TRUE	-63	421.9	45	TRUE	-60
485	J-935	182.52	449.4	49	TRUE	276.0	71	TRUE	-173	380.1	56	TRUE	-69	383.5	55	TRUE	-66
490	J-940	186.49	447.6	39	TRUE	287.5	62	TRUE	-160	387.3	46	TRUE	-60	390.6	45	TRUE	-57
491	J-945	190.09	446.3	35	TRUE	288.1	57	TRUE	-158	387.9	41	TRUE	-58	390.8	40	TRUE	-56
495	J-950	197.57	428.5	40	TRUE	276.9	53	TRUE	-152	369.0	42	TRUE	-59	371.6	42	TRUE	-57
503	J-955	197.83	454.5	23	TRUE	292.7	46	TRUE	-162	390.9	30	TRUE	-64	393.7	30	TRUE	-61
509	J-960	192.83	451.9	42	TRUE	289.2	59	TRUE	-163	387.8	46	TRUE	-64	390.3	46	TRUE	-62
514	J-965	191.96	400.6	20	TRUE	251.8	50	TRUE	-149	343.4	30	TRUE	-57	346.2	29	TRUE	-54
515	J-970	191.88	392.0	20	TRUE	247.4	50	TRUE	-145	338.0	29	TRUE	-54	340.8	29	TRUE	-51
516	J-975	198.96	381.8	38	TRUE	241.7	51	TRUE	-140	326.0	40	TRUE	-56	328.6	40	TRUE	-53
520	J-980	198.94	337.4	39	TRUE	210.2	51	TRUE	-127	286.8	40	TRUE	-51	289.3	40	TRUE	-48
522	J-985	188.77	97.7	20	TRUE	96.5	20	TRUE	-1	96.2	20	TRUE	-1	96.2	20	TRUE	-1
523	J-990	191.33	234.2	20	TRUE	229.0	20	TRUE	-5	227.6	20	TRUE	-7	227.6	20	TRUE	-7
525	J-995	179.89	145.1	20	TRUE	142.5	20	TRUE	-3	142.2	20	TRUE	-3	141.7	20	TRUE	-3
527	J-1000	181.60	316.2	20	TRUE	179.4	63	TRUE	-137	303.0	21	TRUE	-13	298.3	22	TRUE	-18
528	J-1005	181.78	295.3	20	TRUE	162.1	63	TRUE	-133	283.5	20	TRUE	-12	274.5	24	TRUE	-21
530	J-1010	184.25	229.0	20	TRUE	164.2	47	TRUE	-65	221.0	20	TRUE	-8	220.1	20	TRUE	-9
533	J-1015	183.95	219.6	20	TRUE	145.8	51	TRUE	-74	211.3	20	TRUE	-8	210.3	20	TRUE	-9
536	J-1020	190.44	230.1	20	TRUE	224.4	20	TRUE	-6	223.0	20	TRUE	-7	222.9	20	TRUE	-7
538	J-1025	191.00	215.0	22	TRUE	208.3	22	TRUE	-7	207.2	22	TRUE	-8	207.1	22	TRUE	-8
542	J-1030	191.95	366.8	28	TRUE	221.0	54	TRUE	-146	305.3	37	TRUE	-61	308.2	36	TRUE	-59
547	J-1035	192.25	327.2	20	TRUE	209.6	48	TRUE	-118	291.3	26	TRUE	-36	294.3	25	TRUE	-33
552	J-1040	190.53	57.4	20	TRUE	56.5	20	TRUE	-1	56.3	20	TRUE	-1	56.3	20	TRUE	-1
555	J-1045	192.11	76.9	20	TRUE	75.7	20	TRUE	-1	75.4	20	TRUE	-1	75.4	20	TRUE	-2
556	J-1050	192.08	70.3	20	TRUE	69.2	20	TRUE	-1	69.0	20	TRUE	-1	68.9	20	TRUE	-1
559	J-1055	194.63	151.1	21	TRUE	146.8	21	TRUE	-4	145.4	21	TRUE	-6	145.6	21	TRUE	-5
561	J-1060	195.00	97.5	20	TRUE	95.5	20	TRUE	-2	94.9	20	TRUE	-3	95.0	20	TRUE	-3
564	J-1065	181.57	260.9	21	TRUE	141.4	63	TRUE	-119	249.6	21	TRUE	-11	244.3	23	TRUE	-17
569	J-1070	189.06	212.8	24	TRUE	82.9	60	TRUE	-130	169.6	33	TRUE	-43	145.1	40	TRUE	-68
571	J-1075	189.00	203.5	20	TRUE	80.0	59	TRUE	-123	165.6	30	TRUE	-38	140.7	37	TRUE	-63
572	J-1080	191.25	209.6	21	TRUE	83.4	56	TRUE	-126	167.8	29	TRUE	-42	146.0	35	TRUE	-64
575	J-1085	193.98	99.0	20	TRUE	98.8	20	TRUE	0	98.5	20	TRUE	0	98.5	20	TRUE	0
576	J-1090	195.60	500.0	34	TRUE	364.0	49	TRUE	-136	469.5	35	TRUE	-30	469.9	35	TRUE	-30
583	J-1095	198.24	244.5	20	TRUE	239.7	20	TRUE	-5	238.5	20	TRUE	-6	238.5	20	TRUE	-6
587	J-3055	199.45	439.4	31	TRUE	342.0	41	TRUE	-97	409.1	32	TRUE	-30	409.4	32	TRUE	-30
588	J-1110	197.38	459.2	32	TRUE	347.4	45	TRUE	-112	426.3	34	TRUE	-33	426.7	34	TRUE	-33
591	J-1115	196.23	173.1	20	TRUE	170.9	20	TRUE	-2	170.3	20	TRUE	-3	170.3	20	TRUE	-3
594	J-3050	202.05	430.1	28	TRUE	340.4	38	TRUE	-90	400.9	29	TRUE	-29	401.2	29	TRUE	-29
601	J-1125	202.14	137.2	20	TRUE	135.6	20	TRUE	-2	135.1	20	TRUE	-2	135.1	20	TRUE	-2
606	J-1130	205.27	55.6	20	TRUE	55.4	20	TRUE	0	55.4	20	TRUE	0	55.4	20	TRUE	0
610	J-1135	200.79	387.8	20	TRUE	307.2	33	TRUE	-81	370.1	20	TRUE	-18	370.3	20	TRUE	-17
615	J-1140	200.46	166.7	20	TRUE	164.2	20	TRUE	-2	163.4	20	TRUE	-3	163.5	20	TRUE	-3
617	J-1145	198.65	321.3	20	TRUE	264.5	32	TRUE	-57	307.0	20	TRUE	-14	307.2	20	TRUE	-14
620	J-3045	201.75	414.8	29	TRUE	339.1	37	TRUE	-76	387.5	30	TRUE	-27	387.8	30	TRUE	-27
621	J-3040	200.70	404.2	31	TRUE	339.0	38	TRUE	-65	378.0	32	TRUE	-26	378.5	32	TRUE	-26
627	J-1160	198.56	286.0	20	TRUE	249.7	28	TRUE	-36	273.4	20	TRUE	-13	273.9	20	TRUE	-12
628	J-1165	200.77	178.8	20	TRUE	173.0	20	TRUE	-6	171.1	20	TRUE	-8	171.4	20	TRUE	-7
630	J-1170	199.93	238.4	20	TRUE	231.3	20	TRUE	-7	229.3	20	TRUE	-9	229.4	20	TRUE	-9
632	J-1175	205.90	241.4	20	TRUE	232.5	20	TRUE	-9	229.8	20	TRUE	-12	230.1	20	TRUE	-11
634	J-1185	202.60	126.7	20	TRUE	125.2	20	TRUE	-2	124.7	20	TRUE	-2	124.7	20	TRUE	-2
643	J-1195	203.79	278.0	20	TRUE	270.4	20	TRUE	-8	268.3	20	TRUE	-10	268.4	20	TRUE	-10
650	J-1205	201.73	272.3	20	TRUE	264.8	20	TRUE	-7	262.7	20	TRUE	-10	262.9	20	TRUE	-9
651	J-1210	205.96	227.8	20	TRUE	219.5	20	TRUE	-8	217.0	20	TRUE	-11	217.3	20	TRUE	-10
653	J-1215	205.51	134.2	20	TRUE	130.5	20	TRUE	-4	129.3	20	TRUE	-5	129.4	20	TRUE	-5
655	J-1220	208.06	76.6	20	TRUE	74.4	20	TRUE	-2	73.8	20	TRUE	-3	73.9	20	TRUE	-3
656	J-1225	206.72	500.0	51	TRUE	500.0	51	TRUE	0	500.0	51	TRUE	0	500.0	51	TRUE	0
657	J-1230	208.48	51.9	20	TRUE	51.4	20	TRUE	-1	51.2	20	TRUE	-1	51.2	20	TRUE	-1
658	J-1235	207.08	58.8	20	TRUE	58.2	20	TRUE	-1	58.1	20	TRUE	-1	58.1	20	TRUE	-1
663	J-1240	210.59	299.3	22	TRUE	287.8	22	TRUE	-11	284.7	22	TRUE	-15	284.8	22	TRUE	-15
666	J-1245	210.89	119.3	20	TRUE	118.0	20	TRUE	-1	117.8	20	TRUE	-2	117.6	20	TRUE	-2
670	J-1250	211.11	295.3	20	TRUE	285.3	20	TRUE	-10	282.6	20	TRUE	-13	282.7	20	TRUE	-13
671	J-1255	209.45	291.8	22	TRUE	280.8	23	TRUE	-11	277.8	23	TRUE	-14	277.9	23	TRUE	-14
672	J-1260	212.65	194.0	20	TRUE	189.3	20	TRUE	-5	188.0	20	TRUE	-6	188.0	20	TRUE	-6
677	J-1265	213.34	151.1	20	TRUE	148.7	20	TRUE	-2	147.9	20	TRUE	-3	147.9	20	TRUE	-3
678	J-3000	214.13	267.3	20	TRUE	258.0	20	TRUE	-9	255.4	20	TRUE	-12	255.5	20	TRUE	-12
680	J-1275	214.30	262.0	20	TRUE	253.2	20	TRUE	-9	250.7	20	TRUE	-11	250.8	20	TRUE	-11
682	J-1280	215.00	252.6	20	TRUE	244.3	20	TRUE	-8	242.0	20	TRUE	-11	242.1	20	TRUE	-11
685	J-1285	198.76	303.9	39	TRUE	185.0	51	TRUE	-119	255.6	40	TRUE	-48	258.3	40	TRUE	-46
688	J-1290	199.44	268.2	38	TRUE	157.9	49	TRUE	-110	221.3	39	TRUE	-47	224.2	39	TRUE	-44
691	J-1295	202.09	172.2	21	TRUE	164.9	22	TRUE	-7	162.7	22	TRUE	-10	162.9	22	TRUE	-9
694	J-1300	202.88	110.5	20	TRUE	107.8	20	TRUE	-3	107.0	20	TRUE	-3	107.1	20	TRUE	-3
697	J-1305	199.02	197.0	39	TRUE	108.3	49	TRUE	-89	154.8	39	TRUE	-42	157.8	39	TRUE	-39
701	J-1310	199.81	193.8	38	TRUE	108.3	48	TRUE	-86	152.8	38	TRUE	-41	155.6	38	TRUE	-38
703	J-1315	207.39	67.8	20	TRUE	62.8	20	TRUE	-5	61.1	20	TRUE	-7	61.5	20	TRUE	-6
704	J-1320	210.04	106.9	23	TRUE	95.5	23	TRUE	-11	91.4	23	TRUE	-15	92.4	23	TRUE	-14
707	J-1325	211.89	89.4	20	TRUE	80.6	20	TRUE	-9	77.5	20	TRUE	-12	78.2	20	TRUE	-11
710	J-1330	202.93	202.6	26	TRUE	90.0	43	TRUE	-113	159.8	25	TRUE	-43	157.0	27	TRUE	-46
711	J-1335	210.85	77.8	20	TRUE	70.8	20	TRUE	-7	68.4	20	TRUE	-9	68.9	20	TRUE	-9
712	J-1340	210.67	84.5	21	TRUE	76.7	21	TRUE	-8	74.0	21	TRUE	-11	74.6	21	TRUE	-10
715	J-1345	210.00	63.8	20	TRUE	58.5	20	TRUE	-5	56.7	20	TRUE	-7	57.1	20	TRUE	-7
717	J-1350	190.78	158.2	20	TRUE	79.5	52	TRUE	-79	143.7	20	TRUE	-15	140.9	20	TRUE	-17
720	J-1355	195.31	110.2	20	TRUE	76.3	37	TRUE	-34	99.7	20	TRUE	-11	98.6	20	TRUE	-12
724	J-1360	201.71	185.2	23	TRUE	73.2	44	TRUE	-112	139.1	22	TRUE	-46	130.0	28	TRUE	-55
725	J-1365	178.95	215.5	20	TRUE	94.5	70	TRUE	-121	196.0	25	TRUE	-19	167.0	39	TRUE	-48
731	J-1370	181.76	85.0	20	TRUE	72.8	30	TRUE	-12	81.0	20	TRUE	-4	79.1	20	TRUE	-6
734	J-1375	187.18	90.5	20	TRUE	62.8	42	TRUE	-28	88.8	20	TRUE	-2	81.9	20	TRUE	-9
736	J-1380	189.38	194.2	20	TRUE	76.4	58	TRUE	-116	161.4	29	TRUE	-33	135.7	36	TRUE	-58
737	J-1385	189.79	193.8	20	TRUE	75.0	58	TRUE	-119	159.3	28	TRUE	-35	133.7	36	TRUE	-60
740	J-1390	189.89	192.4	25	TRUE	72.7	59	TRUE	-120	155.2	34	TRUE	-37	130.0	39	TRUE	-62
745	J-1395	191.33	192.3	24	TRUE	74.7	56	TRUE	-118	152.1	32	TRUE	-40	131.3	37	TRUE	-61
750	J-1400	190.37	144.4	20	TRUE	63.5	54	TRUE	-81	140.2	20	TRUE	-4	115.8	26	TRUE	-29
752	J-1405	188.52	116.0	20	TRUE	62.7	51	TRUE	-53	113.3	20	TRUE	-3	103.2	20	TRUE	-13
757	J-1410	191.72	134.9	20	TRUE	60.7	52	TRUE	-74	130.1	20	TRUE	-5	110.6	24	TRUE	-24
759	J-1415	195.36	189.7	22	TRUE	74.7	51	TRUE	-115	145.7	28	TRUE	-44	133.0	32	TRUE	-57
764	J-1420	195.34	117.1	20	TRUE	74.9	40	TRUE	-42	105.4	20	TRUE	-12	103.8	20	TRUE	-13
765	J-1425	191.67	123.8	22	TRUE	74.9	45	TRUE	-49	112.5	22	TRUE	-11	110.3	22	TRUE	-14
767	J-1430	191.10	142.8	20	TRUE	57.7	54	TRUE	-85	131.8	20	TRUE	-11	104.7	30	TRUE	-38
768	J-1435	192.70	70.2	20	TRUE	65.5	20	TRUE	-5	64.8	20	TRUE	-5	64.3	20	TRUE	-6
769	J-1440	195.47	67.7	20	TRUE	62.9	20	TRUE	-5	61.9	20	TRUE	-6	61.6	20	TRUE	-6
772	J-1445	184.00	69.8	20	TRUE	55.6	33	TRUE	-14	68.6	20	TRUE	-1	63.0	20	TRUE	-7
775	J-1450	192.23	150.1	26	TRUE	55.6	54	TRUE	-94	130.9	23	TRUE	-19	100.2	35	TRUE	-50
780	J-1455	190.35	139.2	28	TRUE	49.7	57	TRUE	-89	131.5	30	TRUE	-8	89.5	38	TRUE	-50
783	J-1460	197.48	138.7	29	TRUE	51.6	48	TRUE	-87	105.9	62	TRUE	-33	92.5	31	TRUE	-46
784	J-1465	185.62	58.1	20	TRUE	49.7	26	TRUE	-8	59.2	20	TRUE	-1	51.8	20	TRUE	-6
786	J-1470	189.54	123.7	34	TRUE	43.9	58	TRUE	-80	100.3	62	TRUE	-23	78.9	39	TRUE	-45
788	J-1475	191.15	127.8	32	TRUE	45.5	56	TRUE	-82	106.7	56	TRUE	-21	81.6	38	TRUE	-46
792	J-1480	202.35	125.7	22	TRUE	45.6	40	TRUE	-80	98.1	51	TRUE	-28	81.7	23	TRUE	-44
793	J-1485	201.64	121.8	23	TRUE	43.8	41	TRUE	-78	95.7	52	TRUE	-26	78.6	24	TRUE	-43
797	J-1490	203.29	118.5	20	TRUE	42.4	38	TRUE	-76	93.0	49	TRUE	-25	75.9	21	TRUE	-43
801	J-1495	201.79	110.3	21	TRUE	38.1	40	TRUE	-72	86.8	50	TRUE	-24	68.2	23	TRUE	-43
804	J-1500	199.49	107.4	25	TRUE	36.9	43	TRUE	-71	84.9	53	TRUE	-23	65.9	25	TRUE	-41
808	J-1505	202.39	100.5	20	TRUE	33.9	38	TRUE	-67	80.3	48	TRUE	-20	60.7	20	TRUE	-40
809	J-1510	189.54	58.6	20	TRUE	30.2	44	TRUE	-28	69.5	20	TRUE	11	44.8	20	TRUE	-14
811	J-1515	190.48	59.9	21	TRUE	28.6	45	TRUE	-31	70.5	21	TRUE	11	44.1	21	TRUE	-16
813	J-1520	196.86	91.5	28	TRUE	30.2	44	TRUE	-61	74.4	54	TRUE	-17	60.7	22	TRUE	-31
816	J-1525	195.09	87.8	31	TRUE	28.6	46	TRUE	-59	72.1	56	TRUE	-16	58.5	23	TRUE	-29
818	J-1530	185.88	36.8	20	TRUE	24.7	34	TRUE	-12	47.5	20	TRUE	11	53.4	31	TRUE	17
819	J-1535	190.92	38.4	20	TRUE	28.6	27	TRUE	-10	51.1	20	TRUE	13	29.9	20	TRUE	-8
820	J-1540	191.72	52.5	20	TRUE	24.7	41	TRUE	-28	62.8	20	TRUE	10	53.4	86	TRUE	1
822	J-1545	193.07	75.3	20	TRUE	24.7	45	TRUE	-51	66.4	44	TRUE	-9	53.4	108	TRUE	-22
828	J-1550	196.29	81.5	29	TRUE	26.0	44	TRUE	-56	67.8	52	TRUE	-14	53.3	115	TRUE	-28
830	J-1555	196.49	78.4	25	TRUE	24.7	40	TRUE	-54	66.4	48	TRUE	-12	53.4	109	TRUE	-25
833	J-1560	188.90	43.9	20	TRUE	24.7	39	TRUE	-19	55.0	20	TRUE	11	53.4	65	TRUE	14
835	J-1565	190.15	48.9	20	TRUE	24.7	41	TRUE	-24	59.7	20	TRUE	11	53.4	79	TRUE	4

837	J-1570	198.68	71.9	25	TRUE	22.0	38	TRUE	-50	62.7	46	TRUE	-9	53.4	101	TRUE	-18
845	J-1575	182.39	33.4	20	TRUE	19.7	40	TRUE	-14	41.9	20	TRUE	9	48.7	20	TRUE	15
848	J-1580	181.68	36.6	20	TRUE	19.7	44	TRUE	-17	45.1	20	TRUE	8	52.8	20	TRUE	16
850	J-1585	184.07	36.8	20	TRUE	19.7	42	TRUE	-17	45.6	20	TRUE	9	53.4	22	TRUE	17
853	J-1590	201.82	66.1	20	TRUE	19.7	32	TRUE	-46	59.2	39	TRUE	-7	53.3	89	TRUE	-13
856	J-1595	186.62	64.0	37	TRUE	16.9	51	TRUE	-47	54.3	58	TRUE	-10	53.4	98	TRUE	-11
862	J-1600	199.87	64.0	20	TRUE	17.8	33	TRUE	-46	55.9	40	TRUE	-8	53.4	83	TRUE	-11
863	J-1605	182.98	64.0	40	TRUE	16.4	55	TRUE	-48	53.3	62	TRUE	-11	53.4	100	TRUE	-11
868	J-1610	189.90	56.6	20	TRUE	15.2	43	TRUE	-41	51.1	38	TRUE	-5	53.4	71	TRUE	-3
869	J-1615	183.44	62.0	39	TRUE	15.4	53	TRUE	-47	51.3	60	TRUE	-11	53.4	94	TRUE	-9
871	J-1620	183.31	61.4	39	TRUE	15.2	53	TRUE	-46	50.9	59	TRUE	-10	53.4	93	TRUE	-8
873	J-1625	186.56	61.8	32	TRUE	15.3	49	TRUE	-47	51.1	54	TRUE	-11	53.4	87	TRUE	-8
875	J-1630	186.73	61.8	31	TRUE	15.3	48	TRUE	-46	51.1	53	TRUE	-11	53.4	87	TRUE	-8
876	J-1635	179.99	60.4	43	TRUE	14.8	58	TRUE	-46	50.2	64	TRUE	-10	53.4	95	TRUE	-7
877	J-1640	183.67	57.7	38	TRUE	13.9	51	TRUE	-44	48.3	56	TRUE	-9	53.4	83	TRUE	-4
881	J-1645	181.58	57.9	41	TRUE	14.0	54	TRUE	-44	48.4	60	TRUE	-9	53.4	87	TRUE	-5
882	J-1650	182.27	57.9	40	TRUE	14.0	53	TRUE	-44	48.4	59	TRUE	-9	53.4	86	TRUE	-5
883	J-1655	182.00	50.5	20	TRUE	14.0	51	TRUE	-37	48.4	33	TRUE	-2	53.4	55	TRUE	3
885	J-1660	185.78	49.7	20	TRUE	13.4	45	TRUE	-36	47.2	32	TRUE	-2	53.4	51	TRUE	4
886	J-1665	185.01	56.3	36	TRUE	13.4	48	TRUE	-43	47.2	54	TRUE	-9	53.4	77	TRUE	-3
890	J-1670	182.03	52.7	40	TRUE	12.3	51	TRUE	-40	44.5	55	TRUE	-8	53.4	71	TRUE	1
891	J-1675	180.50	49.0	42	TRUE	11.1	50	TRUE	-38	41.5	54	TRUE	-7	53.4	59	TRUE	4
894	J-1680	180.50	47.5	42	TRUE	10.6	49	TRUE	-37	40.3	52	TRUE	-7	53.4	53	TRUE	6
895	J-1685	186.55	50.8	34	TRUE	11.6	43	TRUE	-39	42.9	47	TRUE	-8	53.4	57	TRUE	3
898	J-1690	184.41	45.3	36	TRUE	9.8	41	TRUE	-35	38.4	44	TRUE	-7	50.9	44	TRUE	6
913	J-1695	185.24	43.3	35	TRUE	9.2	38	TRUE	-34	36.6	40	TRUE	-7	48.2	40	TRUE	5
917	J-1700	181.63	43.2	21	TRUE	9.2	42	TRUE	-34	36.6	30	TRUE	-7	48.2	21	TRUE	5
918	J-1705	183.86	42.9	37	TRUE	9.1	40	TRUE	-34	36.3	41	TRUE	-7	47.6	41	TRUE	5
921	J-1710	184.24	39.7	20	TRUE	9.0	38	TRUE	-31	36.3	23	TRUE	-3	45.3	20	TRUE	6
926	J-1715	187.22	42.4	32	TRUE	8.9	35	TRUE	-34	35.9	36	TRUE	-7	47.1	36	TRUE	5
930	J-1720	186.98	41.7	33	TRUE	8.7	34	TRUE	-33	35.2	35	TRUE	-6	46.0	35	TRUE	4
931	J-1725	189.86	41.0	28	TRUE	8.5	29	TRUE	-32	34.5	30	TRUE	-6	45.1	30	TRUE	4
933	J-1730	195.58	34.0	20	TRUE	7.8	20	TRUE	-26	31.2	20	TRUE	-3	39.7	20	TRUE	6
934	J-1735	189.31	39.5	29	TRUE	8.2	29	TRUE	-31	33.6	29	TRUE	-6	43.7	29	TRUE	4
937	J-1740	188.53	40.3	30	TRUE	8.3	30	TRUE	-32	33.9	30	TRUE	-6	44.2	30	TRUE	4
1985	J-3005	212.48	277.7	21	TRUE	267.7	22	TRUE	-10	264.9	22	TRUE	-13	265.0	22	TRUE	-13
1986	J-3065	198.77	455.3	31	TRUE	346.3	43	TRUE	-109	422.9	32	TRUE	-32	423.2	32	TRUE	-32
1988	J-3060	198.45	447.5	31	TRUE	344.2	43	TRUE	-103	416.1	33	TRUE	-31	416.5	33	TRUE	-31
1989	J-3035	203.38	383.0	27	TRUE	339.5	32	TRUE	-43	359.1	28	TRUE	-24	359.8	28	TRUE	-23
1990	J-3030	205.06	362.4	26	TRUE	341.0	27	TRUE	-21	341.0	27	TRUE	-21	341.9	27	TRUE	-20
1991	J-3025	206.09	342.8	27	TRUE	328.3	27	TRUE	-15	324.3	27	TRUE	-19	324.4	27	TRUE	-18
1992	J-3020	205.62	320.5	29	TRUE	307.6	29	TRUE	-13	304.1	29	TRUE	-16	304.2	29	TRUE	-16
1993	J-3015	208.92	299.7	25	TRUE	288.2	25	TRUE	-12	285.0	25	TRUE	-15	285.1	25	TRUE	-15
1994	J-3010	209.67	288.3	25	TRUE	277.6	25	TRUE	-11	274.7	25	TRUE	-14	274.8	25	TRUE	-14
2054	J-1461	198.56	147.7	27	TRUE	55.2	47	TRUE	-93	109.8	62	TRUE	-38	99.1	31	TRUE	-49
2058	J-1451	191.62	146.5	35	TRUE	54.9	56	TRUE	-92	125.5	30	TRUE	-21	98.4	39	TRUE	-48
2062	J-846	187.27	490.1	52	TRUE	325.1	68	TRUE	-165	428.4	56	TRUE	-62	431.0	55	TRUE	-59
2073	J-FUT-1	189.48	(N/A)	(N/A)	(N/A)	8.3	28	TRUE	(N/A)	33.9	26	TRUE	(N/A)	44.2	25	TRUE	(N/A)
2074	J-FUT-2	191.00	(N/A)	(N/A)	(N/A)	8.3	25	TRUE	(N/A)	33.8	20	TRUE	(N/A)	43.5	20	TRUE	(N/A)
2085	J-BPS-SiteA-01	200.05	161.6	25	TRUE	62.0	45	TRUE	-100	110.6	20	TRUE	-51	110.9	29	TRUE	-51
2088	J-BPS-SiteA-02	199.97	160.8	25	TRUE	61.6	45	TRUE	-99	115.4	62	TRUE	-45	110.2	29	TRUE	-51
2091	FUT-J-BPS-SiteA-03	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	110.6	21	TRUE	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2092	FUT-J-BPS-SiteA-04	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	115.1	77	TRUE	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2102	FUT-J-VLV-01	198.45	147.7	27	TRUE	55.1	47	TRUE	-93	119.7	20	TRUE	-28	99.1	31	TRUE	-49
2113	FUT-J-VLV-02	201.70	126.0	21	TRUE	45.6	41	TRUE	-80	98.7	50	TRUE	-27	81.8	24	TRUE	-44
2118	FUT-J-VLV-03	201.07	122.1	22	TRUE	43.9	42	TRUE	-78	96.6	51	TRUE	-25	78.7	24	TRUE	-43
2124	FUT-J-VLV-04	202.85	117.2	20	TRUE	42.4	39	TRUE	-75	94.6	48	TRUE	-23	76.1	22	TRUE	-41
2136	J-BPS-SiteB-01	196.25	81.7	29	TRUE	26.0	44	TRUE	-56	67.9	53	TRUE	-14	53.4	20	TRUE	-28
2140	FUT-J-BPS-SiteB-03	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	53.4	23	TRUE	(N/A)
2141	FUT-J-BPS-SiteB-02	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	53.4	121	TRUE	(N/A)

PHD Pressure Model Output

Scenario	# of Nodes per Range in Pressure						Total Nodes
	< 40 psi (276 kPa)	40 - 50 psi (276 - 345 kPa)	50 - 70 psi (345 - 483 kPa)	70 - 80 psi (483 - 552 kPa)	80 - 100 psi (552 - 689 kPa)	> 100 psi (689 kPa)	
MDD (Ex + Fut Growth)	0	28	201	89	45	0	363
MDD (Ex + Fut Growth + BP)	6	44	234	59	22	0	365
MDD (Ex + Fut Growth + BP) w/ BPS @ Site A	0	31	195	80	61	0	367
MDD (Ex + Fut Growth + BP) w/ BPS @ Site B	0	35	220	71	41	0	367

MIN		*176.70*		*240.01*	*41*		*214.08*	*28*	*-35*		*232.06*	*40*	*-10*		*229.42*	*40*	*-14*
AVG		*196.39*		*243.71*	*67*		*240.68*	*63*	*-4*		*244.05*	*68*	*0*		*242.52*	*65*	*-2*
MAX		*215.00*		*248.56*	*98*		*247.69*	*97*	*0*		*263.14*	*98*	*26*		*249.25*	*97*	*10*
SUM		*186.4*				*218.4*				*218.4*				*218.4*			
			PHD (Ex + Fut Growth)			PHD (Ex + Fut Growth) + BP MDD				PHD (Ex + Fut Growth) + BP MDD w/ BPS @ Site A				PHD (Ex + Fut Growth) + BP MDD w/ BPS @ Site B			
ID	Label	Elevation (m)	HLP2&3 On (Firm Capacity); Standpipe LWL 243m			HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing	HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing	HLP2&3 On (Firm Capacity); Standpipe LWL 243m			Pressure Difference from Existing
			Demand	Hydraulic Grade	Pressure	Demand	Hydraulic Grade	Pressure		Demand	Hydraulic Grade	Pressure		Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	
			(L/s)	(m AD)	(psi)	(L/s)	(m AD)	(psi)	(psi)	(L/s)	(m AD)	(psi)	(psi)	(L/s)	(m AD)	(psi)	(psi)
29	J-5	179.91	0.350	244.17	***91***	0.350	243.60	***90***	-1	0.350	243.60	***90***	-1	0.350	243.60	***90***	-1
31	J-10	190.02	0.350	244.11	77	0.350	243.56	76	-1	0.350	243.56	76	-1	0.350	243.56	76	-1
34	J-15	191.50	0.350	244.10	75	0.350	243.55	74	-1	0.350	243.56	74	-1	0.350	243.55	74	-1
37	J-20	195.58	0.350	244.10	69	0.350	243.56	68	-1	0.350	243.56	68	-1	0.350	243.56	68	-1
40	J-25	198.51	0.350	244.10	65	0.350	243.55	64	-1	0.350	243.56	64	-1	0.350	243.55	64	-1
42	J-30	195.01	0.350	244.10	70	0.350	243.55	69	-1	0.350	243.56	69	-1	0.350	243.55	69	-1
46	J-35	194.14	0.350	244.10	71	0.350	243.55	70	-1	0.350	243.56	70	-1	0.350	243.55	70	-1
48	J-40	193.08	0.350	244.10	72	0.350	243.56	72	0	0.350	243.56	72	0	0.350	243.56	72	0
50	J-45	194.80	0.350	244.10	70	0.350	243.55	69	-1	0.350	243.56	69	-1	0.350	243.55	69	-1
52	J-50	177.54	0.350	244.17	***95***	0.350	243.60	***94***	-1	0.350	243.61	***94***	-1	0.350	243.60	***94***	-1
56	J-55	181.13	0.350	244.18	***89***	0.350	243.61	***89***	0	0.350	243.61	***89***	0	0.350	243.61	***89***	0
57	J-60	192.68	0.350	244.10	73	0.350	243.56	72	-1	0.350	243.56	72	-1	0.350	243.56	72	-1
58	J-65	188.44	0.350	244.14	79	0.350	243.58	78	-1	0.350	243.58	78	-1	0.350	243.58	78	-1
59	J-70	188.35	0.350	244.14	79	0.350	243.59	78	-1	0.350	243.59	78	-1	0.350	243.59	78	-1
60	J-75	188.01	0.350	244.16	80	0.350	243.60	79	-1	0.350	243.60	79	-1	0.350	243.60	79	-1
63	J-80	192.01	0.350	244.11	74	0.350	243.56	73	-1	0.350	243.56	73	-1	0.350	243.56	73	-1
66	J-85	198.37	0.350	244.09	65	0.350	243.55	64	-1	0.350	243.56	64	-1	0.350	243.55	64	-1
72	J-90	195.86	0.350	244.53	69	0.350	243.92	68	-1	0.350	243.92	68	-1	0.350	243.92	68	-1
74	J-95	195.16	0.350	243.63	69	0.350	243.23	68	-1	0.350	243.23	68	-1	0.350	243.23	68	-1
83	J-100	198.36	0.350	243.67	64	0.350	243.26	64	0	0.350	243.26	64	0	0.350	243.26	64	0
85	J-105	193.69	0.350	243.65	71	0.350	243.25	70	-1	0.350	243.25	70	-1	0.350	243.25	70	-1
89	J-110	195.72	0.350	243.70	68	0.350	243.29	68	0	0.350	243.29	68	0	0.350	243.29	68	0
92	J-115	195.19	0.350	243.63	69	0.350	243.23	68	-1	0.350	243.23	68	-1	0.350	243.23	68	-1
99	J-120	196.70	0.350	243.60	67	0.350	243.21	66	-1	0.350	243.21	66	-1	0.350	243.21	66	-1
102	J-125	199.91	0.350	243.58	62	0.350	243.19	61	-1	0.350	243.19	61	-1	0.350	243.19	61	-1
104	J-130	199.43	0.350	243.58	63	0.350	243.19	62	-1	0.350	243.19	62	-1	0.350	243.19	62	-1
106	J-135	198.26	0.350	243.59	64	0.350	243.20	64	0	0.350	243.20	64	0	0.350	243.20	64	0
110	J-140	198.71	0.350	243.58	64	0.350	243.20	63	-1	0.350	243.20	63	-1	0.350	243.20	63	-1
112	J-145	200.14	0.350	243.58	62	0.350	243.20	61	-1	0.350	243.20	61	-1	0.350	243.20	61	-1
113	J-150	200.09	0.350	243.57	62	0.350	243.18	61	-1	0.350	243.18	61	-1	0.350	243.18	61	-1
116	J-155	200.72	8.168	243.57	61	8.168	243.18	60	-1	8.168	243.18	60	-1	8.168	243.18	60	-1
117	J-160	198.53	0.350	243.58	64	0.350	243.20	63	-1	0.350	243.20	63	-1	0.350	243.20	63	-1
120	J-165	196.85	0.350	243.59	66	0.350	243.21	66	0	0.350	243.21	66	0	0.350	243.21	66	0
121	J-170	197.96	0.350	243.58	65	0.350	243.20	64	-1	0.350	243.20	64	-1	0.350	243.20	64	-1
124	J-175	198.98	0.350	243.57	63	0.350	243.19	63	0	0.350	243.19	63	0	0.350	243.19	63	0
126	J-180	198.52	0.350	243.57	64	0.350	243.18	63	-1	0.350	243.18	63	-1	0.350	243.18	63	-1
131	J-185	194.93	0.350	244.52	70	0.350	243.90	70	0	0.350	243.91	70	0	0.350	243.90	70	0
132	J-190	195.55	0.350	243.88	69	0.350	243.42	68	-1	0.350	243.42	68	-1	0.350	243.42	68	-1
134	J-195	195.54	0.350	244.59	70	0.350	243.97	69	-1	0.350	243.97	69	-1	0.350	243.97	69	-1
135	J-200	197.10	0.350	244.78	68	0.350	244.13	67	-1	0.350	244.13	67	-1	0.350	244.13	67	-1
139	J-205	196.72	0.350	244.11	67	0.350	243.60	67	0	0.350	243.60	67	0	0.350	243.60	67	0
140	J-210	197.78	0.350	244.09	66	0.350	243.59	65	-1	0.350	243.59	65	-1	0.350	243.59	65	-1
143	J-215	197.43	0.350	243.90	66	0.350	243.44	65	-1	0.350	243.44	65	-1	0.350	243.44	65	-1
145	J-220	197.36	0.350	243.89	66	0.350	243.44	65	-1	0.350	243.44	65	-1	0.350	243.44	65	-1
149	J-225	197.28	0.350	243.70	66	0.350	243.30	65	-1	0.350	243.30	65	-1	0.350	243.30	65	-1
151	J-230	196.69	0.350	243.59	67	0.350	243.22	66	-1	0.350	243.22	66	-1	0.350	243.22	66	-1
156	J-235	200.00	0.350	243.59	62	0.350	243.22	61	-1	0.350	243.22	61	-1	0.350	243.22	61	-1
159	J-240	200.17	0.350	243.58	62	0.350	243.22	61	-1	0.350	243.22	61	-1	0.350	243.22	61	-1
161	J-245	181.69	0.350	244.39	***89***	0.350	243.79	***88***	-1	0.350	243.80	***88***	-1	0.350	243.79	***88***	-1
165	J-250	191.97	0.350	244.45	74	0.350	243.84	74	0	0.350	243.84	74	0	0.350	243.84	74	0
167	J-255	190.96	0.350	244.56	76	0.350	243.94	75	-1	0.350	243.94	75	-1	0.350	243.94	75	-1
170	J-260	197.55	0.350	245.04	67	0.350	244.34	66	-1	0.350	244.34	66	-1	0.350	244.34	66	-1
172	J-265	191.51	0.350	245.19	76	0.350	244.47	75	-1	0.350	244.47	75	-1	0.350	244.47	75	-1
174	J-270	191.93	0.350	245.19	76	0.350	244.47	75	-1	0.350	244.47	75	-1	0.350	244.47	75	-1
177	J-275	194.07	0.350	245.41	73	0.350	244.66	72	-1	0.350	244.66	72	-1	0.350	244.66	72	-1
179	J-280	200.70	0.350	244.25	62	0.350	243.71	61	-1	0.350	243.72	61	-1	0.350	243.71	61	-1
181	J-285	197.54	0.350	244.03	66	0.350	243.55	65	-1	0.350	243.55	65	-1	0.350	243.55	65	-1
182	J-290	197.43	0.350	245.07	68	0.350	244.37	67	-1	0.350	244.37	67	-1	0.350	244.37	67	-1
184	J-295	200.83	0.350	244.60	62	0.350	243.99	61	-1	0.350	244.00	61	-1	0.350	243.99	61	-1
186	J-300	200.15	0.350	244.24	63	0.350	243.71	62	-1	0.350	243.72	62	-1	0.350	243.71	62	-1
189	J-305	198.16	0.350	243.83	65	0.350	243.40	64	-1	0.350	243.40	64	-1	0.350	243.40	64	-1
190	J-310	199.61	0.350	243.59	62	0.350	243.22	62	0	0.350	243.22	62	0	0.350	243.22	62	0
191	J-315	198.16	0.350	243.59	64	0.350	243.22	64	0	0.350	243.22	64	0	0.350	243.22	64	0
194	J-320	199.01	0.350	244.03	64	0.350	243.54	63	-1	0.350	243.55	63	-1	0.350	243.54	63	-1
195	J-325	191.01	0.350	245.60	77	0.350	244.83	76	-1	0.350	244.84	76	-1	0.350	244.83	76	-1
197	J-330	196.27	0.350	245.12	69	0.350	244.40	68	-1	0.350	244.40	68	-1	0.350	244.40	68	-1
199	J-335	192.64	0.350	245.13	75	0.350	244.41	73	-2	0.350	244.41	73	-2	0.350	244.41	73	-2
200	J-340	194.63	0.350	244.15	70	0.350	243.65	70	0	0.350	243.65	70	0	0.350	243.65	70	0
202	J-345	194.25	0.350	245.16	72	0.350	244.42	71	-1	0.350	244.42	71	-1	0.350	244.42	71	-1
205	J-350	199.72	0.350	244.41	63	0.350	243.85	63	0	0.350	243.85	63	0	0.350	243.85	63	0
207	J-355	201.48	0.350	244.41	61	0.350	243.85	60	-1	0.350	243.85	60	-1	0.350	243.85	60	-1
208	J-360	201.60	0.350	244.25	61	0.350	243.73	60	-1	0.350	243.73	60	-1	0.350	243.73	60	-1
211	J-365	194.31	0.350	243.56	70	0.350	243.19	69	-1	0.350	243.19	69	-1	0.350	243.19	69	-1
213	J-370	194.80	0.350	243.50	69	0.350	243.13	69	0	0.350	243.13	69	0	0.350	243.13	69	0
215	J-375	196.44	0.350	243.50	67	0.350	243.13	66	-1	0.350	243.13	66	-1	0.350	243.13	66	-1
218	J-380	198.01	0.350	243.56	65	0.350	243.18	64	-1	0.350	243.18	64	-1	0.350	243.18	64	-1
219	J-385	196.06	0.350	243.50	67	0.350	243.12	67	0	0.350	243.13	67	0	0.350	243.12	67	0
220	J-390	195.78	0.350	243.51	68	0.350	243.14	67	-1	0.350	243.14	67	-1	0.350	243.14	67	-1
222	J-395	195.75	0.350	243.50	68	0.350	243.13	67	-1	0.350	243.13	67	-1	0.350	243.13	67	-1
226	J-400	195.22	0.350	243.50	69	0.350	243.13	68	-1	0.350	243.13	68	-1	0.350	243.13	68	-1
237	J-405	200.13	0.350	243.58	62	0.350	243.21	61	-1	0.350	243.22	61	-1	0.350	243.21	61	-1
239	J-410	196.76	0.350	243.58	66	0.350	243.22	66	0	0.350	243.22	66	0	0.350	243.22	66	0
241	J-415	191.88	0.350	243.50	73	0.350	243.12	73	0	0.350	243.12	73	0	0.350	243.12	73	0
243	J-420	191.47	0.350	243.49	74	0.350	243.12	73	-1	0.350	243.12	73	-1	0.350	243.12	73	-1
244	J-425	195.82	0.350	243.50	68	0.350	243.12	67	-1	0.350	243.12	67	-1	0.350	243.12	67	-1
245	J-430	199.12	3.707	243.55	63	3.707	243.18	63	0	3.707	243.18	63	0	3.707	243.18	63	0
247	J-435	195.92	0.350	243.39	67	0.350	243.12	67	0	0.350	243.12	67	0	0.350	243.12	67	0
253	J-440	195.52	0.350	243.57	68	0.350	243.22	68	0	0.350	243.22	68	0	0.350	243.22	68	0
255	J-445	193.68	0.350	243.59	71	0.350	243.24	70	-1	0.350	243.24	70	-1	0.350	243.24	70	-1
257	J-450	192.38	0.350	243.62	73	0.350	243.26	72	-1	0.350	243.26	72	-1	0.350	243.26	72	-1
258	J-455	195.19	0.350	243.59	69	0.350	243.23	68	-1	0.350	243.24	68	-1	0.350	243.23	68	-1
260	J-460	196.53	0.350	243.63	67	0.350	243.27	66	-1	0.350	243.27	66	-1	0.350	243.27	66	-1
261	J-465	196.78	0.350	243.55	66	0.350	243.21	66	0	0.350	243.21	66	0	0.350	243.21	66	0
262	J-470	192.96	0.350	243.63	72	0.350	243.27	71	-1	0.350	243.27	71	-1	0.350	243.27	71	-1
264	J-475	195.04	0.350	243.65	69	0.350	243.28	68	-1	0.350	243.28	68	-1	0.350	243.28	68	-1
267	J-480	196.69	0.350	243.67	67	0.350	243.30	66	-1	0.350	243.30	66	-1	0.350	243.30	66	-1
272	J-485	197.82	0.350	244.15	66	0.350	243.65	65	-1	0.350	243.65	65	-1	0.350	243.65	65	-1
274	J-490	201.68	0.350	245.13	62	0.350	244.40	61	-1	0.350	244.40	61	-1	0.350	244.40	61	-1
276	J-495	189.36	0.350	243.96	78	0.350	243.52	77	-1	0.350	243.52	77	-1	0.350	243.52	77	-1
281	J-500	196.52	0.350	243.54	67	0.350	243.21	66	-1	0.350	243.21	66	-1	0.350	243.21	66	-1
283	J-505	196.55	0.350	243.65	67	0.350	243.28	66	-1	0.350	243.28	66	-1	0.350	243.28	66	-1
284	J-510	196.70	0.350	243.53	66	0.350	243.21	66	0	0.350	243.21	66	0	0.350	243.21	66	0
288	J-515	196.78	0.350	243.41	66	0.350	243.14	66	0	0.350	243.14	66	0	0.350	243.14	66	0
289	J-520	198.38	0.350	243.39	64	0.350	243.13	64	0	0.350	243.13	64	0	0.350	243.13	64	0
292	J-525	197.38	0.350	243.52	65	0.350	243.21	65	0	0.350	243.21	65	0	0.350	243.21	65	0
293	J-530	198.01	0.350	243.48	65	0.350	243.18	64	-1	0.350	243.18	64	-1	0.350	243.18	64	-1
298	J-535	195.14	0.350	243.70	69	0.350	243.33	68	-1	0.350	243.33	68	-1	0.350	243.33	68	-1
299	J-540	196.06	0.350	243.67	68	0.350	243.30	67	-1	0.350	243.30	67	-1	0.350	243.30	67	-1
300	J-545	197.66	0.350	243.59	65	0.350	243.26	65	0	0.350	243.26	65	0	0.350	243.26	65	0
301	J-550	197.14	0.350	243.53	66	0.350	243.21	65	-1	0.350	243.21	65	-1	0.350	243.21	65	-1
304	J-555	198.68	0.350	243.57	64	0.350	243.24	63	-1	0.350	243.24	63	-1	0.350	243.24	63	-1
307	J-560	197.35	0.350	243.57	66	0.350	243.24	65	-1	0.350	243.24	65	-1	0.350	243.24	65	-1
308	J-565	198.43	0.350	243.69	64	0.350	243.32	64	0	0.350	243.32	64	0	0.350	243.32	64	0
310	J-570	198.44	0.350	243.69	64	0.350	243.32	64	0	0.350	243.32	64	0	0.350	243.32	64	0
311	J-575	199.14	0.350	243.69	63	0.350	243.32	63	0	0.350	243.32	63	0	0.350	243.32	63	0
312	J-580	197.74	0.350	243.52	65	0.350	243.21	65	0	0.350	243.21	65	0	0.350	243.21	65	0
315	J-585	197.41	0.350	243.52	65	0.350	243.21	65	0	0.350	243.21	65	0	0.350	243.21	65	0
316	J-590	198.65	0.350	243.52	64	0.350	243.21	63	-1	0.350	243.21	63	-1	0.350	243.21	63	-1
318	J-595	197.53	0.350	243.46	65	0.350	243.18	65	0	0.350	243.18	65	0	0.350	243.18	65	0
321	J-600	197.59	0.350	243.47	65	0.350	243.18	65	0	0.350	243.18	65	0	0.350	243.18	65	0
324	J-605	202.23	0.350	243.53	59	0.350	243.22	58	-1	0.350	243.22	58	-1	0.350	243.22	58	-1
327	J-610	201.13	0.350	243.39	60	0.350	243.13	60	0	0.350	243.13	60	0	0.350	243.13	60	0
331	J-615	202.96	0.350	243.39	57	0.350	243.13	57	0	0.350	243.13	57	0	0.350	243.13	57	0
332	J-620	199.43	0.350	243.46	63	0.350	243.17	62	-1	0.350	243.17	62	-1	0.350	243.17	62	-1
335	J-625	204.00	0.350	243.39	56	0.350	243.13	56	0	0.350	243.13	56	0	0.350	243.13	56	0
337	J-630	204.20	0.350	243.39	56	0.350	243.13	55	-1	0.350	243.13	55	-1	0.350	243.13	55	-1
339	J-635	205.39	1.175	243.25	54	1.175	243.05	53	-1	1.175	243.05	53	-1	1.175	243.05	53	-1
340	J-640	209.47	1.175	243.25	48	1.175	243.04	48	0	1.175	243.04	48	0	1.175	243.04	48	0
341	J-645	199.09	0.350	243.47	63	0.350	243.18	63	0	0.350	243.18	63	0	0.350	243.18	63	0
342	J-650	203.86	0.350	243.29	56	0.350	243.09	56	0	0.350	243.09	56	0	0.350	243.09	56	0
344	J-655	204.73	0.350	243.29	55	0.350	243.09	54	-1	0.350	243.09	54	-1	0.350	243.09	54	-1
348	J-660	205.47	0.350	243.23	54	0.350	243.07	53	-1	0.350	243.07	53	-1	0.350	243.07	53	-1
352	J-665	205.66	0.350	243.21	53	0.350	243.06	53	0	0.350	243.06	53	0	0.350	243.06	53	0
355	J-670	201.72	0.350	243.22	59	0.350	243.06	59	0	0.350	243.06	59	0	0.350	243.06	59	0
358	J-675	205.66	0.350	243.22	53	0.350	243.06	53	0	0.350	243.06	53	0	0.350	243.06	53	0
359	J-680	205.07	0.350	243.22	54	0.350	243.06	54	0	0.350	243.06	54	0	0.350	243.06	54	0
360	J-685	205.91	0.350	243.19	53	0.350	243.06	53	0	0.350	243.06	53	0	0.350	243.06	53	0
361	J-690	206.02	0.350	243.21	53	0.350	243.06	53	0	0.350	243.06	53	0	0.350	243.06	53	0
364	J-695	206.35	0.350	243.19	52	0.350	243.06	52	0	0.350	243.06	52	0	0.350	243.06	52	0
367	J-700	205.13	0.350	243.53	55	0.350	243.23	54	-1	0.350	243.23	54	-1	0.350	243.23	54	-1
369	J-705	205.38	0.350	243.49	54	0.350	243.20	54	0	0.350	243.20	54	0	0.350	243.20	54	0
373	J-710	206.88	0.350	243.17	52	0.350	243.06	51	-1	0.350	243.06	51	-1	0.350	243.06	51	-1

375	J-715	206.67	0.350	243.19	52	0.350	243.06	51	-1	0.350	243.06	51	-1	0.350	243.06	51	-1
378	J-720	206.31	0.350	243.23	52	0.350	243.06	52	0	0.350	243.06	52	0	0.350	243.06	52	0
381	J-725	208.38	0.350	243.19	49	0.350	243.05	49	0	0.350	243.05	49	0	0.350	243.05	49	0
385	J-730	209.54	0.350	243.19	48	0.350	243.05	48	0	0.350	243.05	48	0	0.350	243.05	48	0
386	J-735	205.42	1.175	243.26	54	1.175	243.05	53	-1	1.175	243.05	53	-1	1.175	243.05	53	-1
389	J-740	206.69	1.175	243.27	52	1.175	243.07	52	0	1.175	243.07	52	0	1.175	243.07	52	0
390	J-745	207.31	1.175	243.25	51	1.175	243.05	51	0	1.175	243.05	51	0	1.175	243.05	51	0
392	J-750	206.89	1.175	243.27	52	1.175	243.07	51	-1	1.175	243.07	51	-1	1.175	243.07	51	-1
397	J-755	207.81	1.175	243.27	50	1.175	243.07	50	0	1.175	243.07	50	0	1.175	243.07	50	0
398	J-760	212.84	1.175	243.27	43	1.175	243.07	43	0	1.175	243.07	43	0	1.175	243.07	43	0
399	J-765	210.90	1.175	243.26	46	1.175	243.06	46	0	1.175	243.06	46	0	1.175	243.06	46	0
400	J-770	210.36	3.774	243.27	47	3.774	243.06	46	-1	3.774	243.06	46	-1	3.774	243.06	46	-1
403	J-775	207.93	0.350	243.20	50	0.350	243.05	50	0	0.350	243.05	50	0	0.350	243.05	50	0
404	J-780	209.52	0.350	243.19	48	0.350	243.05	48	0	0.350	243.05	48	0	0.350	243.05	48	0
405	J-785	209.26	0.350	243.19	48	0.350	243.05	48	0	0.350	243.05	48	0	0.350	243.05	48	0
406	J-790	210.10	0.350	243.19	47	0.350	243.05	47	0	0.350	243.05	47	0	0.350	243.05	47	0
407	J-795	209.39	1.175	243.33	48	1.175	243.09	48	0	1.175	243.09	48	0	1.175	243.09	48	0
408	J-800	210.50	1.175	243.40	47	1.175	243.13	46	-1	1.175	243.12	46	-1	1.175	243.13	46	-1
411	J-805	211.42	1.175	243.27	45	1.175	243.06	45	0	1.175	243.06	45	0	1.175	243.06	45	0
414	J-810	176.70	0.350	245.96	**98**	0.350	245.15	**97**	-1	0.350	245.16	**97**	-1	0.350	245.15	**97**	-1
415	J-815	181.69	0.350	246.23	**92**	0.350	245.39	**90**	-2	0.350	245.40	**90**	-2	0.350	245.39	**90**	-2
417	J-820	180.21	0.350	245.96	**93**	0.350	245.15	**92**	-1	0.350	245.16	**92**	-1	0.350	245.15	**92**	-1
421	J-825	190.06	0.350	246.23	80	0.350	245.39	79	-1	0.350	245.40	79	-1	0.350	245.39	79	-1
423	J-830	197.10	0.350	245.19	68	0.350	244.44	67	-1	0.350	244.44	67	-1	0.350	244.44	67	-1
427	J-835	197.03	0.350	245.39	69	0.350	244.59	68	-1	0.350	244.59	68	-1	0.350	244.59	68	-1
428	J-840	197.14	0.350	245.41	69	0.350	244.60	67	-2	0.350	244.61	67	-2	0.350	244.60	67	-2
430	J-845	191.27	0.350	246.49	78	0.350	245.62	77	-1	0.350	245.63	77	-1	0.350	245.62	77	-1
432	J-850	197.15	0.350	246.30	70	0.350	245.45	69	-1	0.350	245.45	69	-1	0.350	245.45	69	-1
433	J-855	197.24	0.350	245.50	69	0.350	244.67	67	-2	0.350	244.67	67	-2	0.350	244.67	67	-2
437	J-860	200.56	0.350	245.18	63	0.350	244.42	62	-1	0.350	244.42	62	-1	0.350	244.42	62	-1
439	J-865	196.80	0.350	244.37	68	0.350	243.79	67	-1	0.350	243.79	67	-1	0.350	243.79	67	-1
441	J-870	201.00	0.350	245.15	63	0.350	244.37	62	-1	0.350	244.37	62	-1	0.350	244.37	62	-1
446	J-875	197.17	0.350	244.55	67	0.350	243.90	66	-1	0.350	243.90	66	-1	0.350	243.90	66	-1
449	J-880	197.91	0.350	245.56	68	0.350	244.70	66	-2	0.350	244.70	66	-2	0.350	244.70	66	-2
451	J-885	198.86	0.350	245.49	66	0.350	244.63	65	-1	0.350	244.64	65	-1	0.350	244.63	65	-1
453	J-890	201.43	0.350	245.38	62	0.350	244.55	61	-1	0.350	244.55	61	-1	0.350	244.55	61	-1
455	J-895	201.30	0.350	245.17	62	0.350	244.37	61	-1	0.350	244.37	61	-1	0.350	244.37	61	-1
459	J-900	194.61	0.350	244.38	71	0.350	243.73	70	-1	0.350	243.73	70	-1	0.350	243.73	70	-1
464	J-905	181.92	0.350	247.87	**94**	0.350	246.99	**92**	-2	0.350	247.00	**92**	-2	0.350	246.99	**92**	-2
466	J-910	183.06	0.350	247.63	**92**	0.350	246.74	**90**	-2	0.350	246.75	**90**	-2	0.350	246.74	**90**	-2
474	J-915	180.66	0.350	248.56	**96**	0.350	247.69	**95**	-1	0.350	247.70	**95**	-1	0.350	247.69	**95**	-1
476	J-920	182.93	0.350	247.55	**92**	0.350	246.63	**90**	-2	0.350	246.65	**90**	-2	0.350	246.63	**90**	-2
479	J-925	192.59	0.350	246.40	76	0.350	245.52	75	-1	0.350	245.53	75	-1	0.350	245.52	75	-1
480	J-930	193.71	0.350	246.36	75	0.350	245.48	73	-2	0.350	245.48	73	-2	0.350	245.48	73	-2
485	J-935	182.52	0.350	246.98	**91**	0.350	246.00	**90**	-1	0.350	246.02	**90**	-1	0.350	246.00	**90**	-1
490	J-940	186.49	0.350	246.67	**85**	0.350	245.70	**84**	-1	0.350	245.71	**84**	-1	0.350	245.70	**84**	-1
491	J-945	190.09	0.350	246.48	80	0.350	245.51	79	-1	0.350	245.53	79	-1	0.350	245.51	79	-1
495	J-950	197.57	0.350	245.34	68	0.350	244.39	66	-2	0.350	244.39	66	-2	0.350	244.39	66	-2
503	J-955	197.83	0.350	245.01	67	0.350	244.10	66	-1	0.350	244.10	66	-1	0.350	244.10	66	-1
509	J-960	192.83	0.350	246.12	76	0.350	245.17	74	-2	0.350	245.18	74	-2	0.350	245.17	74	-2
514	J-965	191.96	0.350	245.71	76	0.350	244.85	75	-1	0.350	244.86	75	-1	0.350	244.85	75	-1
515	J-970	191.88	0.350	245.60	76	0.350	244.52	75	-1	0.350	244.53	75	-1	0.350	244.52	75	-1
516	J-975	198.96	0.350	245.20	66	0.350	244.15	64	-2	0.350	244.14	64	-2	0.350	244.15	64	-2
520	J-980	198.94	0.350	245.01	65	0.350	243.84	64	-1	0.350	243.83	64	-1	0.350	243.84	64	-1
522	J-985	188.77	0.350	245.44	80	0.350	244.25	79	-1	0.350	244.28	79	-1	0.350	244.25	79	-1
523	J-990	191.33	0.350	245.78	77	0.350	244.71	76	-1	0.350	244.72	76	-1	0.350	244.71	76	-1
525	J-995	179.89	0.350	246.25	**94**	0.350	245.04	**92**	-2	0.350	245.11	**93**	-1	0.350	245.04	**92**	-2
527	J-1000	181.60	0.350	246.25	**92**	0.350	245.04	**90**	-2	0.350	245.11	**90**	-2	0.350	245.04	**90**	-2
528	J-1005	181.78	0.350	245.92	**91**	0.350	244.60	**89**	-2	0.350	244.69	**89**	-2	0.350	244.60	**89**	-2
530	J-1010	184.25	0.350	245.69	**87**	0.350	244.34	**85**	-2	0.350	244.43	**85**	-2	0.350	244.34	**85**	-2
533	J-1015	183.95	0.350	245.65	**88**	0.350	244.21	**86**	-2	0.350	244.33	**86**	-2	0.350	244.21	**86**	-2
536	J-1020	190.44	0.350	245.44	78	0.350	244.25	76	-2	0.350	244.28	76	-2	0.350	244.25	76	-2
538	J-1025	191.00	0.350	245.43	77	0.350	244.21	76	-1	0.350	244.24	76	-1	0.350	244.21	76	-1
542	J-1030	191.95	0.350	245.26	76	0.350	244.09	74	-2	0.350	244.09	74	-2	0.350	244.09	74	-2
547	J-1035	192.25	0.350	245.20	75	0.350	243.98	73	-2	0.350	243.99	73	-2	0.350	243.98	73	-2
552	J-1040	190.53	0.350	245.42	78	0.350	244.19	76	-2	0.350	244.23	76	-2	0.350	244.19	76	-2
555	J-1045	192.11	0.350	245.42	76	0.350	244.19	74	-2	0.350	244.23	74	-2	0.350	244.19	74	-2
556	J-1050	192.08	0.350	245.42	76	0.350	244.19	74	-2	0.350	244.23	74	-2	0.350	244.19	74	-2
559	J-1055	194.63	0.350	244.92	71	0.350	243.59	70	-1	0.350	243.58	69	-2	0.350	243.59	70	-1
561	J-1060	195.00	0.350	244.92	71	0.350	243.59	69	-2	0.350	243.58	69	-2	0.350	243.59	69	-2
564	J-1065	181.57	0.350	245.64	**91**	0.350	244.19	**89**	-2	0.350	244.32	**89**	-2	0.350	244.19	**89**	-2
569	J-1070	189.06	0.350	243.92	78	0.350	241.28	74	-4	0.350	241.76	75	-3	0.350	241.28	74	-4
571	J-1075	189.00	0.350	243.84	78	0.350	241.11	74	-4	0.350	241.74	75	-3	0.350	241.11	74	-4
572	J-1080	191.25	0.350	243.89	75	0.350	241.24	71	-4	0.350	241.48	71	-4	0.350	241.24	71	-4
575	J-1085	193.98	0.350	244.18	71	0.350	243.57	70	-1	0.350	243.57	70	-1	0.350	243.57	70	-1
576	J-1090	195.60	0.350	244.18	69	0.350	243.57	68	-1	0.350	243.57	68	-1	0.350	243.57	68	-1
583	J-1095	198.24	0.350	244.46	66	0.350	243.74	65	-1	0.350	243.74	65	-1	0.350	243.74	65	-1
587	J-3055	199.45	0.350	244.19	64	0.350	243.57	63	-1	0.350	243.57	63	-1	0.350	243.57	63	-1
588	J-1110	197.38	0.350	244.19	66	0.350	243.57	66	0	0.350	243.57	66	0	0.350	243.57	66	0
591	J-1115	196.23	0.350	244.19	68	0.350	243.57	67	-1	0.350	243.57	67	-1	0.350	243.57	67	-1
594	J-3050	202.05	0.350	244.19	60	0.350	243.57	59	-1	0.350	243.57	59	-1	0.350	243.57	59	-1
601	J-1125	202.14	0.350	244.19	60	0.350	243.57	59	-1	0.350	243.57	59	-1	0.350	243.57	59	-1
606	J-1130	205.27	0.350	243.53	54	0.350	243.22	54	0	0.350	243.22	54	0	0.350	243.22	54	0
610	J-1135	200.79	0.350	244.75	62	0.350	243.93	61	-1	0.350	243.93	61	-1	0.350	243.93	61	-1
615	J-1140	200.46	0.350	244.43	62	0.350	243.72	61	-1	0.350	243.71	61	-1	0.350	243.72	61	-1
617	J-1145	198.65	0.350	244.99	66	0.350	244.02	64	-2	0.350	244.01	64	-2	0.350	244.02	64	-2
620	J-3045	201.75	0.350	244.18	60	0.350	243.56	59	-1	0.350	243.55	59	-1	0.350	243.56	59	-1
621	J-3040	200.70	0.350	244.17	62	0.350	243.54	61	-1	0.350	243.54	61	-1	0.350	243.54	61	-1
627	J-1160	198.56	0.350	244.89	66	0.350	243.84	64	-2	0.350	243.83	64	-2	0.350	243.84	64	-2
628	J-1165	200.77	0.350	244.58	62	0.350	243.42	61	-1	0.350	243.41	61	-1	0.350	243.42	61	-1
630	J-1170	199.93	0.350	244.71	64	0.350	243.68	62	-2	0.350	243.67	62	-2	0.350	243.68	62	-2
632	J-1175	205.90	0.350	244.50	55	0.350	243.49	53	-2	0.350	243.48	53	-2	0.350	243.49	53	-2
634	J-1185	202.60	0.350	244.19	59	0.350	243.50	58	-1	0.350	243.50	58	-1	0.350	243.50	58	-1
643	J-1195	203.79	0.350	244.14	57	0.350	243.46	56	-1	0.350	243.46	56	-1	0.350	243.46	56	-1
650	J-1205	201.73	0.350	244.22	60	0.350	243.47	59	-1	0.350	243.47	59	-1	0.350	243.47	59	-1
651	J-1210	205.96	0.350	244.50	55	0.350	243.47	53	-2	0.350	243.46	53	-2	0.350	243.47	53	-2
653	J-1215	205.51	0.350	244.49	55	0.350	243.33	54	-1	0.350	243.32	54	-1	0.350	243.33	54	-1
655	J-1220	208.06	5.328	244.41	52	5.328	243.21	50	-2	5.328	243.20	50	-2	5.328	243.21	50	-2
656	J-1225	206.72	0.350	243.00	52	0.350	243.00	52	0	0.350	243.00	52	0	0.350	243.00	52	0
657	J-1230	208.48	0.350	243.68	50	0.350	243.34	49	-1	0.350	243.34	49	-1	0.350	243.34	49	-1
658	J-1235	207.08	0.350	243.95	52	0.350	243.38	52	0	0.350	243.38	52	0	0.350	243.38	52	0
663	J-1240	210.59	0.350	243.96	47	0.350	243.39	47	0	0.350	243.38	47	0	0.350	243.39	47	0
666	J-1245	210.89	0.350	243.88	47	0.350	243.34	46	-1	0.350	243.34	46	-1	0.350	243.34	46	-1
670	J-1250	211.11	0.350	243.96	47	0.350	243.39	46	-1	0.350	243.38	46	-1	0.350	243.39	46	-1
671	J-1255	209.45	0.350	243.60	48	0.350	243.21	48	0	0.350	243.21	48	0	0.350	243.21	48	0
672	J-1260	212.65	0.350	243.88	44	0.350	243.35	44	0	0.350	243.34	44	0	0.350	243.35	44	0
677	J-1265	213.34	0.350	243.85	43	0.350	243.33	43	0	0.350	243.33	43	0	0.350	243.33	43	0
678	J-3000	214.13	0.350	243.84	42	0.350	243.33	41	-1	0.350	243.33	41	-1	0.350	243.33	41	-1
680	J-1275	214.30	0.350	243.80	42	0.350	243.31	41	-1	0.350	243.31	41	-1	0.350	243.31	41	-1
682	J-1280	215.00	0.350	243.75	41	0.350	243.29	40	-1	0.350	243.28	40	-1	0.350	243.29	40	-1
685	J-1285	198.76	0.350	244.83	65	0.350	243.52	64	-1	0.350	243.51	64	-1	0.350	243.52	64	-1
688	J-1290	199.44	0.350	244.62	64	0.350	243.13	62	-2	0.350	243.10	62	-2	0.350	243.13	62	-2
691	J-1295	202.09	0.350	244.55	60	0.350	243.29	58	-2	0.350	243.27	58	-2	0.350	243.29	58	-2
694	J-1300	202.88	0.350	244.52	59	0.350	243.27	57	-2	0.350	243.26	57	-2	0.350	243.27	57	-2
697	J-1305	199.02	0.588	244.10	64	0.588	241.94	61	-3	0.588	241.87	61	-3	0.588	241.94	61	-3
701	J-1310	199.81	0.350	244.09	63	0.350	241.94	60	-3	0.350	241.87	60	-3	0.350	241.94	60	-3
703	J-1315	207.39	5.815	243.93	52	5.815	241.77	49	-3	5.815	241.70	49	-3	5.815	241.77	49	-3
704	J-1320	210.04	0.350	244.03	48	0.350	241.87	45	-3	0.350	241.80	45	-3	0.350	241.87	45	-3
707	J-1325	211.89	0.350	244.03	46	0.350	241.87	43	-3	0.350	241.80	42	-4	0.350	241.87	43	-3
710	J-1330	202.93	1.078	243.89	58	1.078	241.33	54	-4	1.078	241.23	54	-4	1.078	241.33	54	-4
711	J-1335	210.85	1.063	243.97	47	1.063	241.82	44	-3	1.063	241.75	44	-3	1.063	241.82	44	-3
712	J-1340	210.67	0.350	243.97	47	0.350	241.82	44	-3	0.350	241.75	44	-3	0.350	241.82	44	-3
715	J-1345	210.00	5.328	243.91	48	5.328	241.75	45	-3	5.328	241.68	45	-3	5.328	241.75	45	-3
717	J-1350	190.78	0.350	243.74	75	0.350	240.90	71	-4	0.350	241.27	72	-3	0.350	240.90	71	-4
720	J-1355	195.31	0.350	243.64	69	0.350	240.65	64	-5	0.350	240.79	65	-4	0.350	240.65	64	-5
724	J-1360	201.71	5.328	243.58	59	5.328	240.48	55	-4	5.328	239.91	54	-5	5.328	240.48	55	-4
725	J-1365	178.95	0.350	244.49	**93**	0.350	242.25	**90**	-3	0.350	242.61	**90**	-3	0.350	242.25	**90**	-3
731	J-1370	181.76	0.350	243.62	**88**	0.350	240.59	**84**	-4	0.350	241.72	**85**	-3	0.350	240.59	**84**	-4
734	J-1375	187.18	0.350	243.39	80	0.350	239.95	75	-5	0.350	243.53	80	0	0.350	239.95	75	-5
736	J-1380	189.38	0.350	243.74	77	0.350	240.86	73	-4	0.350	241.73	74	-3	0.350	240.86	73	-4
737	J-1385	189.79	0.350	243.69	77	0.350	240.76	72	-5	0.350	241.73	74	-3	0.350	240.76	72	-5
740	J-1390	189.89	0.350	243.62	76	0.350	240.59	72	-4	0.350	241.72	74	-2	0.350	240.59	72	-4
745	J-1395	191.33	0.350	243.62	74	0.350	240.59	70	-4	0.350	241.25	71	-3	0.350	240.59	70	-4
750	J-1400	190.37	0.350	243.43	75	0.350	240.06	71	-4	0.350	243.24	75	0	0.350	240.06	71	-4
752	J-1405	188.52	0.350	243.39	78	0.350	239.95	73	-5	0.350	243.53	78	0	0.350	239.95	73	-5
757	J-1410	191.72	0.350	243.33	73	0.350	239.75	68	-5	0.350	244.32	75	2	0.350	239.75	68	-5
759	J-1415	195.36	0.350	243.60	68	0.350	240.55	64	-4	0.350	240.59	64	-4	0.350	240.55	64	-4
764	J-1420	195.34	0.350	243.60	69	0.350	240.55	64	-5	0.350	240.72	64	-5	0.350	240.55	64	-5
765	J-1425	191.67	0.350	243.61	74	0.350	240.57	69	-5	0.350	241.06	70	-4	0.350	240.57	69	-5
767	J-1430	191.10	0.350	243.21	74	0.350	239.37	69	-5	0.350	245.84	78	4	0.350	239.37	69	-5
768	J-1435	192.70	0.350	243.61	72	0.350	240.57	68	-4	0.350	241.06	69	-3	0.350	240.57	68	-4
769	J-1440	195.47	0.350	243.60	68	0.350	240.55	64	-4	0.350	240.72	64	-4	0.350	240.55	64	-4
772	J-1445	184.00	0.350	243.14	**84**	0.350	239.13	78	-6	0.350	246.89	**89**	5	0.350	239.13	78	-6
775	J-1450	192.23	1.433	243.14	72	1.433	239.13	67	-5	1.433	246.90	78	6	1.433	239.13	67	-5
780	J-1455	190.35	1.433	243.03	75	1.433	238.71	69	-6	1.433	248.26	**82**	7	1.433	238.71	69	-6
783	J-1460	197.48	1.433	243.05	65	1.433	238.75	59	-6	1.433	259.08	**87**	22	1.433	238.75	59	-6
784	J-1465	185.62	0.350	243.02	**81**	0.350	238.71	75	-6	0.350	248.25	**89**	8	0.350	238.71	75	-6
786	J-1470	189.54	0.350	242.82	76	0.350	237.83	69	-7	0.350	251.22	**88**	12	0.350	237.83	69	-7
788	J-1475	191.15	1.433	242.87	73	1.433	238.03	67	-6	1.433	250.78	**85**	12	1.433	238.03	67	-6
792	J-1480	202.35	1.433	242.87	58	1.433	238.02	51	-7	1.433	256.54	77	19	1.433	238.02	51	-7
793	J-1485	201.64	0.350	242.82	58	0.350	237.78	51	-7	0.350	255.99	77	19	0.350	237.78	51	-7
797	J-1490	203.29	0.350	242.77	56	0.350	237.57	49	-7	0.350	255.55	74	18	0.350	237.57	49	-7
801	J-1495	201.79	0.350	242.62	58	0.350	236.86	50	-8	0.350	254.84	75	17	0.350	236.86	50	-8
804	J-1500	199.49	0.350	242.57	61	0.350	236.62	53	-8	0.350	254.61	78	17	0.350	236.62	53	-8
808	J-1505	202.39	0.350	242.44	57	0.350	235.99	48	-9	0.350	253.97	73	16	0.350	235.99	48	-9
809	J-1510	189.54	0.350	242.23	75	0.350	234.99	65	-10	0.350	252.97	**90**	15	0.350	234.99	65	-10
811	J-1515	190.48	0.350	242.13	73	0.350	234.50	62	-11	0.350	252.48	**88**	15	0.350	234.50	62	-11
813	J-1520	196.86	0.350	242.24	64	0.350	234.99	54	-10	0.350	252.97	80	16	0.350	234.99	54	-10
816	J-1525	195.09	0.350	242.14	67	0.350	234.50	56	-11	0.350	252.48	**81**	14	0.350	234.50	56	-11
818	J-1530	185.88	0.350	241.84	79	0.350	233.00	67	-12	0.350	250.99	**92**	13	0.350	248.35	**89**	10
819	J-1535	190.92	0.350	242.13	73	0.350	234.49	62	-11	0.350	252.47	**87**	14	0.350	234.49	62	-11
820	J-1540	191.72	0.350	241.86	71	0.350	233.02	59	-12	0.350	251.00	**84**	13	0.350	248.37	80	9

822	J-1545	193.07	0.350	241.86	69	0.350	233.02	57	-12	0.350	251.01	82	13	0.350	248.37	78	9
828	J-1550	196.29	0.350	241.97	65	0.350	233.57	53	-12	0.350	251.55	78	13	0.350	248.91	75	10
830	J-1555	198.49	0.350	241.87	62	0.350	233.03	49	-13	0.350	251.02	75	13	0.350	248.38	71	9
833	J-1560	188.90	0.350	241.84	75	0.350	233.01	63	-12	0.350	250.99	88	13	0.350	248.35	84	9
835	J-1565	190.15	0.350	241.84	73	0.350	233.01	61	-12	0.350	250.99	86	13	0.350	248.35	83	10
837	J-1570	198.68	0.350	241.66	61	0.350	231.78	47	-14	0.350	249.77	73	12	0.350	247.13	69	8
845	J-1575	182.39	0.350	241.40	84	0.350	230.39	68	-16	0.350	248.37	94	10	0.350	245.73	90	6
848	J-1580	181.68	0.350	241.40	85	0.350	230.39	69	-16	0.350	248.37	95	10	0.350	245.73	91	6
850	J-1585	184.07	0.350	241.40	81	0.350	230.39	66	-15	0.350	248.37	91	10	0.350	245.73	88	7
853	J-1590	201.82	0.350	241.45	58	0.350	230.43	41	-15	0.350	248.42	66	10	0.350	245.78	62	6
856	J-1595	186.62	0.350	241.15	77	0.350	228.36	59	-18	0.350	246.34	85	8	0.350	243.70	81	4
862	J-1600	199.87	0.350	241.25	59	0.350	229.07	41	-18	0.350	247.05	67	8	0.350	244.42	63	4
863	J-1605	182.98	0.350	241.08	82	0.350	227.89	64	-18	0.350	245.88	89	7	0.350	243.24	86	4
868	J-1610	189.90	0.350	240.94	72	0.350	226.83	52	-20	0.350	244.81	78	6	0.350	242.17	74	2
869	J-1615	183.44	0.350	240.95	83	0.350	226.90	62	-20	0.350	244.89	87	5	0.350	242.25	83	1
871	J-1620	183.31	0.350	240.93	82	0.350	226.73	62	-20	0.350	244.71	87	5	0.350	242.07	83	1
873	J-1625	186.56	0.350	240.94	77	0.350	226.83	57	-20	0.350	244.81	83	6	0.350	242.17	79	2
875	J-1630	186.73	0.350	240.94	77	0.350	226.83	57	-20	0.350	244.81	82	5	0.350	242.17	79	2
876	J-1635	179.99	0.350	240.89	86	0.350	226.36	66	-20	0.350	244.34	91	5	0.350	241.71	88	2
877	J-1640	183.67	0.350	240.77	81	0.350	225.33	59	-22	0.350	243.31	85	4	0.350	240.67	81	0
881	J-1645	181.58	0.350	240.78	84	0.350	225.43	62	-22	0.350	243.41	88	4	0.350	240.77	84	0
882	J-1650	182.27	0.350	240.78	83	0.350	225.43	61	-22	0.350	243.41	87	4	0.350	240.77	83	0
883	J-1655	182.00	0.350	240.78	83	0.350	225.42	62	-21	0.350	243.41	87	4	0.350	240.77	83	0
885	J-1660	185.78	0.350	240.71	78	0.350	224.76	55	-23	0.350	242.74	81	3	0.350	240.10	77	-1
886	J-1665	185.01	0.350	240.71	79	0.350	224.76	56	-23	0.350	242.74	82	3	0.350	240.11	78	-1
890	J-1670	182.03	0.350	240.57	83	0.350	223.19	58	-25	0.350	241.17	84	1	0.350	238.53	80	-3
891	J-1675	180.50	0.350	240.40	85	0.350	221.27	58	-27	0.350	239.25	83	-2	0.350	236.62	80	-5
894	J-1680	180.50	0.350	240.33	85	0.350	220.40	57	-28	0.350	238.38	82	-3	0.350	235.74	78	-7
895	J-1685	186.55	0.350	240.48	77	0.350	222.22	51	-26	0.350	240.20	76	-1	0.350	237.57	72	-5
898	J-1690	184.41	1.538	240.22	78	1.538	218.94	49	-30	1.538	236.92	75	-4	1.538	234.29	71	-8
913	J-1695	185.24	0.350	240.12	78	0.350	217.47	46	-32	0.350	235.45	71	-7	0.350	232.82	68	-10
917	J-1700	181.63	0.350	240.12	83	0.350	217.47	51	-32	0.350	235.45	76	-7	0.350	232.81	73	-10
918	J-1705	183.86	0.350	240.11	80	0.350	217.17	47	-33	0.350	235.15	73	-7	0.350	232.51	69	-11
921	J-1710	184.24	0.350	240.10	79	0.350	217.17	47	-32	0.350	235.15	72	-7	0.350	232.51	69	-10
926	J-1715	187.22	0.350	240.09	75	0.350	216.87	42	-33	0.350	234.85	68	-7	0.350	232.22	64	-11
930	J-1720	186.98	0.350	240.06	75	0.350	216.25	42	-33	0.350	234.23	67	-8	0.350	231.60	63	-12
931	J-1725	189.86	0.350	240.04	71	0.350	215.68	37	-34	0.350	233.66	62	-9	0.350	231.02	58	-13
933	J-1730	195.58	0.350	240.01	63	0.350	215.10	28	-35	0.350	233.08	53	-10	0.350	230.44	49	-14
934	J-1735	189.31	0.350	240.01	72	0.350	215.10	37	-35	0.350	233.08	62	-10	0.350	230.44	58	-14
937	J-1740	188.53	6.137	240.01	73	6.137	215.10	38	-35	6.137	233.08	63	-10	6.137	230.44	59	-14
1985	J-3005	212.48	0.350	243.88	45	0.350	243.35	44	-1	0.350	243.34	44	-1	0.350	243.35	44	-1
1986	J-3065	198.77	0.350	244.19	64	0.350	243.57	64	0	0.350	243.57	64	0	0.350	243.57	64	0
1988	J-3060	198.45	0.350	244.19	65	0.350	243.57	64	-1	0.350	243.57	64	-1	0.350	243.57	64	-1
1989	J-3035	203.38	0.350	244.14	58	0.350	243.52	57	-1	0.350	243.51	57	-1	0.350	243.52	57	-1
1990	J-3030	205.06	0.350	244.11	55	0.350	243.49	55	0	0.350	243.49	55	0	0.350	243.49	55	0
1991	J-3025	206.09	0.350	244.08	54	0.350	243.46	53	-1	0.350	243.45	53	-1	0.350	243.46	53	-1
1992	J-3020	205.62	0.350	244.03	55	0.350	243.42	54	-1	0.350	243.42	54	-1	0.350	243.42	54	-1
1993	J-3015	208.92	0.991	243.96	50	0.991	243.39	49	-1	0.991	243.38	49	-1	0.991	243.39	49	-1
1994	J-3010	209.67	0.350	243.92	49	0.350	243.37	48	-1	0.350	243.36	48	-1	0.350	243.37	48	-1
2054	J-1461	198.56	1.433	243.14	63	1.433	239.09	58	-5	1.433	260.22	88	25	1.433	239.09	58	-5
2058	J-1451	191.62	1.433	243.13	73	1.433	239.07	67	-6	1.433	247.30	79	6	1.433	239.07	67	-6
2062	J-846	187.27	0.350	247.30	85	0.350	246.43	84	-1	0.350	246.44	84	-1	0.350	246.43	84	-1
2073	J-FUT-1	189.48	(N/A)	(N/A)	(N/A)	0	214.69	36	(N/A)	0	232.67	61	(N/A)	0	230.03	58	(N/A)
2074	J-FUT-2	191.00	(N/A)	(N/A)	(N/A)	32.000	214.08	33	(N/A)	32.000	232.06	58	(N/A)	32.000	229.42	55	(N/A)
2085	J-BPS-SiteA-01	200.05	0	243.35	61	0	239.75	56	-5	0	238.11	54	-7	0	239.75	56	-5
2088	J-BPS-SiteA-02	199.97	0	243.34	62	0	239.71	56	-6	0	261.73	88	26	0	239.71	56	-6
2091	FUT-J-BPS-SiteA-03	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	236.98	61	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2092	FUT-J-BPS-SiteA-04	194.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	263.14	98	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
2102	FUT-J-VLV-01	198.45	0	243.14	63	0	239.09	58	-5	0	247.30	69	6	0	239.09	58	-5
2113	FUT-J-VLV-02	201.70	0	242.87	58	0	238.02	52	-6	0	251.33	70	12	0	238.02	52	-6
2118	FUT-J-VLV-03	201.07	0	242.82	59	0	237.78	52	-7	0	251.22	71	12	0	237.78	52	-7
2124	FUT-J-VLV-04	202.85	0	242.77	57	0	237.57	49	-8	0	252.39	70	13	0	237.57	49	-8
2136	J-BPS-SiteB-01	196.25	0	241.97	65	0	233.60	53	-12	0	251.58	79	14	0	233.60	53	-12
2140	FUT-J-BPS-SiteB-03	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	233.28	57	(N/A)
2141	FUT-J-BPS-SiteB-02	193.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	0	249.25	80	(N/A)

Appendix F3: Proposed New Booster Pump Station Design Alternative Review

Stantec

Memo

To:	File	From:	Nelson Oliveira, P.Eng. Stantec
File:	165630238	Date:	July 20, 2023

Reference: Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review

1.0 PURPOSE

The intent of this memorandum is to list the design alternatives that are to be considered as part of the Class EA evaluation process and to ensure general consensus between Stantec and the Municipality of Kincardine (Municipality).

A previous technical memorandum was provided which detailed the alternative concepts related to expansion of the Kincardine Water Treatment Plant (WTP). This technical memorandum is intended to address the design alternatives related to the new Booster Pumping Station (BPS) that was identified as being required to provide water supply to the Bruce Power site as identified through Phase 2 of the Class EA process and presented at Public Information Centre #1 (PIC #1).

2.0 REVIEW OF PREFERRED SOLUTION AND DEVELOPMENT AND EVALUATION OF DESIGN ALTERNATIVES

As part of Phase 2 of the Class EA process, various alternative solutions were identified and evaluated in the context of whether they could address the existing treatment and distribution system constraints to extend servicing to the Bruce Power site per the Problem and Opportunity statement. Based on the assessment of alternative solutions as in the previous technical memorandum and presented as part of PIC #1, the following preferred servicing solution was identified:

- Expansion of the Kincardine WTP within the existing building and site footprint;
- A new BPS to be constructed near Stoney Island Crescent. The BPS will interconnect to the existing watermain on Bruce Road 23; and
- A short watermain extension to the Bruce Power site along Albert Street at Alma Street, to Concession Road 2, extending west along Concession Road 2 to Tie Road.

As noted, this technical memorandum addresses design alternatives related to the proposed new BPS only. Accordingly, based on the preferred solution which identified the need for a new BPS to boost system pressures, various design concepts were developed.

2.1 EVALUATION OF SITE CONCEPTS

Table 1 below provides a general description of each design concept that was developed and evaluated as part of Phase 3 of the Class EA process. Each design concept was assessed against the evaluation criteria developed previously and used as part of the assessment of the design solutions for the WTP capacity expansion.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Table 1: Design Concept Assessment

Design Concept	Description
Alternative Design 1: In-Line Booster Pumping Station	• Facility with inlet (incoming) and outlet (outgoing) watermains. Inlet supply is pumped or "boosted" by means of one or more pumps depending on system demands. • No system storage provided on site. Design may incorporate limited storage by means of pressure tanks subject to final design requirements. • Facility may include sodium hypochlorite dosing system to ensure sufficient secondary disinfection is maintained downstream of the facility. • Facility to include standby generator to maintain pumping capability in the event of interruption to primary power supply.
Alternative Design 2: In-Ground Storage and Booster Pump Station	• Inlet (incoming) watermain enters facility and discharges to an in-ground clearwell for storage. • High-lift pumps draw water from clearwell and provide water to the outlet (outgoing) watermain to meet system demands. • Facility may include sodium hypochlorite dosing system to ensure sufficient secondary disinfection is maintained downstream of the facility. • Facility to include standby generator to maintain pumping capability in the event of interruption to primary power supply.
Alternative Design 3: On-Grade Storage and Booster Pump Station	• Inlet (incoming) watermain enters facility and discharges to an on-grade tank for storage. • High-lift pumps draw water from the tank and provide water to the outlet (outgoing) watermain to meet system demands. • Facility may include sodium hypochlorite dosing system to ensure sufficient secondary disinfection is maintained downstream of the facility. • Facility to include standby generator to maintain pumping capability in the event of interruption to primary power supply.

2.2 EVALUATION METHODOLOGY

As part of the Class EA process, the framework and criteria for assessing Alternative Design Solutions are identified to determine the advantages and disadvantages with respect to the natural, social, cultural, technical and financial categories. **Table 2** 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 2: Evaluation Ratings

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

An assessment of each design option is conducted based on the criteria outlined in **Table 2**Table 3. 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.

The full evaluation of alternatives design options is included in **Table 3**.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Table 3: Short List of Design Options for the Booster Pumping Station

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
Social Environment	Minimizes impacts to existing residences, businesses and community features in the short-term	• Amount and duration of disruption during construction (e.g., noise, odour, visual aesthetics and other disruptions to traffic (congestion, access, and detours) during construction.	• Short-term disruption (noise, dust, traffic, aesthetics) to residents during construction. This disruption would be addressed through standard construction mitigation. • Potential for moderate, but temporary traffic impacts to and from site. • Least potential disruption at BPS site as extent of construction is less than Alternative 2 and 3.	• Short-term disruption (noise, dust, traffic, aesthetics) to residents during construction. This disruption would be addressed through standard construction mitigation. • Potential for moderate, but temporary traffic impacts to and from site. • Moderate disruption as overall footprint is less than Alternative 3, but greater than Alternative 1. • Option would require additional construction equipment associated with earth movement in comparison to Alternative 1.	• Short-term disruption (noise, dust, traffic, aesthetics) to residents during construction. This disruption would be addressed through standard construction mitigation. • Potential for moderate, but temporary traffic impacts to and from site. • Increased disruption as overall footprint is greater than Alternative 1 and 2. • Option would require additional construction equipment associated with earth movement/clearing in comparison to Alternative 1 and 2.
	Minimizes impacts to existing residences, businesses, and community features in the long-term	• Post-construction disruptions due to ongoing operations and maintenance requirements.	• Low potential for operations and maintenance disruption to residents, businesses and community features. Long-term temporary routine operations and maintenance may affect vehicle traffic on a limited basis.	• Low potential for operations and maintenance disruption to residents, businesses and community features. Long-term temporary routine operations and maintenance may affect vehicle traffic on a limited basis.	• Low potential for operations and maintenance disruption to residents, businesses and community features. Long-term temporary routine operations and maintenance may affect vehicle traffic on a limited basis.
	Potential effect on existing land uses or long-term planning	• Compliance with Municipal and County Official Plans and Policies.	• Similar ability to comply with municipal policies for all design alternatives. • Final site selected would comply with current Municipality of Kincardine Official Plan and policies for municipal water supply systems.	• Similar ability to comply with municipal policies for all design alternatives. • Final site selected would comply with current Municipality of Kincardine Official Plan and policies for municipal water supply systems. •	• Similar ability to comply with municipal policies for all design alternatives. • Final site selected would comply with current Municipality of Kincardine Official Plan and policies for municipal water supply systems. •
	Protects health and safety	• Ability to meet or maintain applicable water quality and taste/aesthetic standards.	• Water quality and taste/aesthetic standards similar for all alternatives. • Rechlorination facilities within the BPS to provide added means to ensure sufficient secondary disinfection is maintained.	• Water quality and taste/aesthetic standards similar for all alternatives. • Rechlorination facilities within the BPS to provide added means to ensure sufficient secondary disinfection is maintained, which is particularly important as alternative includes storage where stagnant water conditions need to be considered.	• Water quality and taste/aesthetic standards similar for all alternatives. • Rechlorination facilities within the BPS to provide added means to ensure sufficient secondary disinfection is maintained, which is particularly important as alternative includes storage where stagnant water conditions need to be considered.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
Social Environment Summary			**Most preferred**	**Moderately preferred**	**Least preferred**
Cultural Environment	Protects cultural heritage resources	• Conserves cultural heritage resources (built heritage resources and/or cultural heritage landscapes).	• Alternative requires least land of all options. • Work areas are anticipated to avoid identified built heritage resources older than 40 years outside of the Crescent through avoidance. • If work occurs near those properties, further cultural heritage studies are recommended.	• Alternative requires less land than Alternative 3. • Work areas are anticipated to avoid identified built heritage resources older than 40 years outside of the Crescent through avoidance. • If work occurs near those properties, further cultural heritage studies are recommended.	• Alternative requires more land than other design options. • Proposed building with separate tank could be considered more impactful to surrounding area due to its size and larger footprint. • Work areas are anticipated to avoid identified built heritage resources older than 40 years outside of the Crescent through avoidance. • If work occurs near those properties, further cultural heritage studies are recommended.
	Protects archaeological resources	• Conserves archaeological resources.	• Alternative requires least land of all options. • A Stage 2 archaeological assessment may be required in detailed design if work occurs in areas of identified archaeological potential.	• Alternative requires less land than Alternative 3. • A Stage 2 archaeological assessment may be required in detailed design if work occurs in areas of identified archaeological potential.	• Alternative requires more land than other design options. • A Stage 2 archaeological assessment may be required in detailed design if work occurs in areas of identified archaeological potential. •
Cultural Environment Summary			**Most Preferred**	**Moderately Preferred**	**Least Preferred**

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
Natural Environment	Protects environmental features	• Potential effects to environmental features, including: – Significant woodlands – Significant wetlands – Environmentally sensitive areas – Environmental protection areas – Environmental conservation areas – Steep slopes/ hazard areas – Changes in vegetation composition or impacts to prime agricultural areas.	• Low potential to impact sensitive environmental features at the BPS site. • No significant woodlands, significant wetlands, environmentally sensitive areas or designated Environmental Protection areas are present. • One steep slope/hazard area is present in the western portion of the SWM pond site, however the conceptual site footprint avoids impacting this feature. • The conceptual SWM pond site has existing cut lawns, and wooded areas would seek to be avoided in detailed design. • Prime Agricultural Areas east of Bruce Road 23 are anticipated to be avoided through tie ins within the ROW. Should additional property be acquired by the Municipality east of Bruce Road 23, further assessment may be required in Detailed Design for loss of agricultural lands. • Requires less land than Alternative 3 as there is no additional storage facility.	• Low potential to impact sensitive environmental features at the BPS site. • No significant woodlands, significant wetlands, environmentally sensitive areas or designated Environmental Protection areas are present. • One steep slope/hazard area is present in the western portion of the SWM pond site, however the conceptual site footprint avoids impacting this feature. • The conceptual SWM pond site has existing cut lawns, and wooded areas would seek to be avoided in detailed design. • Prime Agricultural Areas east of Bruce Road 23 are anticipated to be avoided through tie ins within the ROW. Should additional property be acquired by the Municipality east of Bruce Road 23, further assessment may be required in Detailed Design for loss of agricultural lands. •	• Moderate potential to impact sensitive environmental features at the BPS site depending on final site selection as design option requires more land. • No significant woodlands, significant wetlands, environmentally sensitive areas or designated Environmental Protection areas are present. • One steep slope/hazard area is present in the western portion of the SWM pond site, however the conceptual site footprint avoids impacting this feature. • The conceptual SWM pond site has existing cut lawns, and wooded areas would seek to be avoided in detailed design. • Prime Agricultural Areas east of Bruce Road 23 are anticipated to be avoided through tie ins within the ROW. Should additional property be acquired by the Municipality east of Bruce Road 23, further assessment may be required in Detailed Design for loss of agricultural lands. •
	Protects wildlife and Species at Risk	• Reduction or deterioration of wildlife (terrestrial or aquatic) and Species at Risk (SAR) habitat. • Effects of timing of construction on migratory bird nesting/ breeding periods.	• Subject to final site selection, but generally consistent between design options. A field visit to conduct a migratory bird nest survey, Ecological Land Classification, Significant Wildlife Habitat assessment, and SAR survey should be completed in Detailed Design once the final property and footprint is known.	• Subject to final site selection, but generally consistent between design options. • A field visit to conduct a migratory bird nest survey, Ecological Land Classification, Significant Wildlife Habitat assessment, and SAR survey should be completed in Detailed Design once the final property and footprint is known.	• Subject to final site selection, but generally consistent between design options. • Alternative requires more land for built infrastructure in comparison to other design options which could result in more impacts. • A field visit to conduct a migratory bird nest survey, Ecological Land Classification, Significant Wildlife Habitat assessment, and SAR survey should be completed in Detailed Design once the final property and footprint is known.
	Protects groundwater, streams and rivers	• Reduction or deterioration of fish and fish habitat, and effects of construction timing on spawning periods. • Effects on erosion or flood potential.	• Subject to final site selection, but generally consistent between design options. • The area around Stoney Island Crecent and the watermain extension is within a Conservation Authority regulated area, and further permitting is anticipated for any design option in Detailed Design.	• Subject to final site selection, but generally consistent between design options. • The area around Stoney Island Crecent and the watermain extension is within a Conservation Authority regulated area, and further permitting is anticipated for any design option in Detailed Design.	• Subject to final site selection, but generally consistent between design options. • On-grade storage typically requires overflow feature to protect tank structure. On-site measures would need to be provided to mitigate potential discharge of

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
		• Changes or impacts to groundwater/ surface water quality or quantity. • Impacts to Conservation Authority regulated areas should be minimized. • Avoids impacts to *Clean Water Act* requirements and Sourcewater Protection sensitive areas (Wellhead Protection Areas, Highly Vulnerable Aquifers. Significant Groundwater Recharge Areas, Intake Protection Zones, etc.).	• A field visit to confirm impacts to fish and fish habitat is recommended in detailed design, once the final property and footprint is known. • No change to sourcewater protection sensitive areas as the booster station does not impact groundwater resources. No HVA, SGRS, or IPZ are present in work areas.	• A field visit to confirm impacts to fish and fish habitat is recommended in detailed design, once the final property and footprint is known. • No change to sourcewater protection sensitive areas as the booster station does not impact groundwater resources. No HVA, SGRS, or IPZ are present in work areas.	chlorinated water to the environment in the event of an overflow scenario. • The area around Stoney Island Crecent and the watermain extension is within a Conservation Authority regulated area, and further permitting is anticipated for any design option in Detailed Design. • A field visit to confirm impacts to fish and fish habitat is recommended in detailed design, once the final property and footprint is known. • No change to sourcewater protection sensitive areas as the booster station does not impact groundwater resources. No HVA, SGRS, or IPZ are present in work areas.
	Minimizes climate change impacts	• Minimizes greenhouse gas emissions. • Reducing energy consumption. • Reduction in carbon footprint (efforts to move towards carbon neutrality).	• Alternative involves booster pumping of incoming water. Electrical consumption anticipated to be less than Alternative 2 and 3.	• Alternative requires larger pumps (horsepower) to draw water from storage to supply distribution system, in comparison to Alternative 1.	• Alternative requires larger pumps (horsepower) to draw water from storage to supply distribution system, in comparison to Alternative 1. • Alternative requires more land to construct storage and additional ancillary equipment related to the on-grade facility.
Natural Environment Summary			**Most Preferred**	**Moderately Preferred**	**Least Preferred**
Technical Environment	Minimizes land requirements	• Number and type of properties or easements required. • Amount of land required, including temporary/permanent easements.	• This option would require less land than Alternative 3 and potentially Alternative 2 depending on final footprint of in-ground storage.	• This option would require less land than Alternative 3.	• This option requires the most land as it includes a separate on-grade storage facility and related site works.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
	Operations and Maintenance (Operability)	• Requirement of additional resources or supplies, new technology or training requirements, parts or equipment supplies or replacements. • Increase or reduction in complexity to operate the new system compared to current treatment processes.	• Additional resources or supplies, and technology would be required. Extent of operational complexity not considered significant as Operations staff currently operate similar booster pumping facilities. • Long term maintenance considered standard and not complex or unique to what the Municipality currently performs.	• Additional resources or supplies, and technology would be required. Extent of operational complexity not considered significant as Operations staff currently operate similar booster pumping facilities. • Long term maintenance considered standard and not complex or unique to what the Municipality currently performs. • In comparison to Alternative 1, this option provides the potential for better upstream pressure control and allows for easier recycling of excess flow off the discharge header to improve operations.	• Additional resources or supplies, and technology would be required. Extent of operational complexity not considered significant as Operations staff currently operate similar booster pumping facilities. • Long term maintenance considered standard and not complex or unique to what the Municipality currently performs. • While this alternative provides the same upstream pressure control benefit similar to Alternative 2, the additional facility requires increased maintenance in comparison to the other design options.
	Constructability	• Increase or reduction in complexity to construct the new system. • Ability to address technical considerations related to the site location, depth of excavation, soil conditions, groundwater control, construction duration, and ease of integration into the existing water supply system. • Ability to maintain service level during construction. • Effect on existing utilities and infrastructure (number and type of potential conflicts).	• Low complexity of constructability impacts compared to other design options. • Subject to final site selection, depth of excavation anticipated to be less than other options. • Able to maintain service levels during construction, with minor and short-duration and localized service impacts during tie-ins. • Effect on utilities same for all options.	• Higher complexity of constructability impacts compared to Alternative 1. • Subject to final site selection, depth of excavation anticipated to be greater than Alternative 1. • Able to maintain service levels during construction, with minor and short-duration and localized service impacts during tie-ins. • Effect on utilities same for all options.	• Highest complexity of constructability impacts compared to other design options. • Subject to final site selection, depth of excavation anticipated to be similar to Alternative 2 and greater than Alternative 1. Option requires additional excavation for watermains to connect storage to BPS. • Able to maintain service levels during construction, with minor and short-duration and localized service impacts during tie-ins. • Effect on utilities same for all options.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
	Provides consistent and reliable service and water quality performance	• Ability to provide reliable water quality for the potable water system. • Resilience to climate change impacts. • Improvement in redundancy of supply/service to allow continuous water supply and proper maintenance.	• Ability to provide reliable water quality for the potable water system similar for all design options. • No change in climate change resiliency. • Limited improvement in redundancy of supply/service. Design to consider standby power and bypassing to mitigate service disruption in the event of power failure of issues with pumping equipment.	• Ability to provide reliable water quality for the potable water system similar for all design options. • No change in climate change resiliency, although addition of storage could be considered as improvement to resiliency in the event of water disruption due to climate change related impacts. • Improved redundancy of supply/service as option considers system storage which could provide limited supply in the event of an upstream service disruption. Design to consider standby power and bypassing to mitigate service disruption in the event of power failure of issues with pumping equipment.	• Ability to provide reliable water quality for the potable water system similar for all design options. • No change in climate change resiliency, although addition of storage could be considered as improvement to resiliency in the event of water disruption due to climate change related impacts. • Improved redundancy of supply/service as option considers system storage which could provide limited supply in the event of an upstream service disruption. Design to consider standby power and bypassing to mitigate service disruption in the event of power failure of issues with pumping equipment.
	Meets existing and future water supply quantity needs	• Ability to provide water supply servicing volume for the current and projected population of Kincardine. • Ability to meet future water supply demands or expansion requirements.	• Able to provide water supply servicing for the current population, in addition to planned growth and proposed supply to Bruce Power site. • Site would be selected to be capable of allowing for future expansion.	• Able to provide water supply servicing for the current population, in addition to planned growth and proposed supply to Bruce Power site. • Site would be selected to be capable of allowing for future expansion.	• Able to provide water supply servicing for the current population, in addition to planned growth and proposed supply to Bruce Power site. • Site would be selected to be capable of allowing for future expansion.
	Meets Agency standards, permits and approvals	• Ability to meet Agency standards, permits or approvals.	• Able to meet required standards, permits and approvals. • Would require amendment to the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL). • Site Plan approval may be required for new booster station site. • Additional agency approvals (including SVCA and MECP) will be required.	• Able to meet required standards, permits and approvals. • Would require amendment to the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL). • Site Plan approval may be required for new booster station site. • Additional agency approvals (including SVCA and MECP) will be required.	• Able to meet required standards, permits and approvals. • Would require amendment to the Drinking Water Works Permit (DWWP) and Municipal Drinking Water License (MDWL). • Site Plan approval may be required for new booster station site. • Additional agency approvals (including SVCA and MECP) will be required.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

Category	Criteria	Key Indicators	Alternative Design 1: In-Line Booster Pumping Station	Alternative Design 2: In-Ground Storage and Booster Pump Station	Alternative Design 3: On-Grade Storage and Booster Pump Station
	Aligns with existing and planned infrastructure improvements	• Ability to coordinate with existing and planned water, wastewater and transportation infrastructure improvements (ie. Master Plans).	• High ability to coordinate proposed works with other potential Municipal projects required in vicinity of the project area. • Similar across all design options.	• High ability to coordinate proposed works with other potential Municipal projects required in vicinity of the project area. • Similar across all design options.	• High ability to coordinate proposed works with other potential Municipal projects required in vicinity of the project area. • Similar across all design options.
	Aligns with existing and future land use	• Ability of design option to comply with existing and future land use/zoning. • Ability of a design option to maintain/not negatively affect community cohesiveness.	• BPS to be designed to accommodate known system demands with potential to be expanded over time. • Some potential to negatively affect community cohesiveness depending on final site selection. • Final facility similar in appearance and size (above grade and visual to community) to Alternative 2. perception among residents.	• BPS to be designed to accommodate known system demands with potential to be expanded over time. • Some potential to negatively affect community cohesiveness depending on final site selection. • Final facility similar in appearance and size (above grade and visual to community) to Alternative 1. perception among residents.	• BPS to be designed to accommodate known system demands with potential to be expanded over time. • Some potential to negatively affect community cohesiveness depending on final site selection. • Final facility including aboveground tank may have increased impacts to community as a result of additional land use needed and perceived visual impacts.
Technical Environment Summary			**Moderately Preferred**	**Most Preferred**	**Least Preferred**
Financial	Provides low lifecycle costs	• Costs associated with operations and maintenance.	• Total project costs (design/construction) anticipated to be lower in comparison to the other design options. • Anticipated smaller pumps required as facility is boosting incoming pressure only, reducing energy costs.	• Total project costs (design/construction) anticipated to be highest as construction of in-ground storage is higher than on-ground storage. • Addition of storage means increase maintenance costs over time to replace equipment and undertake cleaning. • Anticipated larger pumps required in comparison to Alternative 1, increasing energy costs.	• Total project costs (design/construction) anticipated to be higher than Alternative 1 but lower than Alternative 2 as construction of in-ground storage is higher than on-ground storage. • Addition of storage means increase maintenance costs over time to replace equipment and undertake cleaning. • Anticipated larger pumps required in comparison to Alternative 1, increasing energy costs.
	Estimated capital cost	• Cost associated with capital costs for design and construction.	• Total capital cost lower in comparison to other options as costs associated with storage are excluded.	• Highest capital costs due to in-ground storage construction being greater than on-ground storage.	• Higher capital cost in comparison to Alternative 1 but lower than Alternative 2 as on-ground storage construction is less.
	Need for Property Acquisition	• Ability to minimize or reduce property acquisition.	• Smallest overall footprint required.	• Potential footprint similar to Alternative 1 but subject to size of in-ground storage. Additional area may be required.	• Requires the largest amount of space to site BPS facility and separate storage facility.
Financial Summary			**Most Preferred**	**Moderately Preferred**	**Least Preferred**

A summary of the evaluation is provided in **Table 2.**

Table 4: Evaluation of Design Alternatives

CRITERIA	ALTERNATIVE DESIGN 1 In-Line Booster Pumping	ALTERNATIVE DESIGN 2 In-Ground Storage and Booster Pumping	ALTERNATIVE DESIGN 3 On-Grade Storage and Booster Pumping
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
Financial Environment	Most Preferred	Moderately Preferred	Least Preferred
OVERALL	**MOST PREFERRED**	**MODERATELY PREFERRED**	**LEAST PREFERRED**
SUMMARY	This design option 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 distribution system.	This design option 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.	This design option provides additional storage and can improve operational items related to hydraulics, but overall benefit is outweighed by higher capital and operational costs, potential need for additional property, and potential issues related to aesthetics depending on final site location and proximity to residents.

Reference: **Technical Memorandum #3 - Proposed New Booster Pump Station – Design Alternative Review**

2.3 PREFERRED ALTERNATIVE DESIGN FOR THE BOOSTER PUMP STATION

Based on screening of the various alternative design options, the preferred solution is Alternative Design Option 1 In-Line Booster Pumping Station.

The proposed BPS site location is to be determined, but will generally be in the vicinity of Stoney Island Crescent, as previous hydraulic modeling confirmed that a facility in this 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.

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