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?

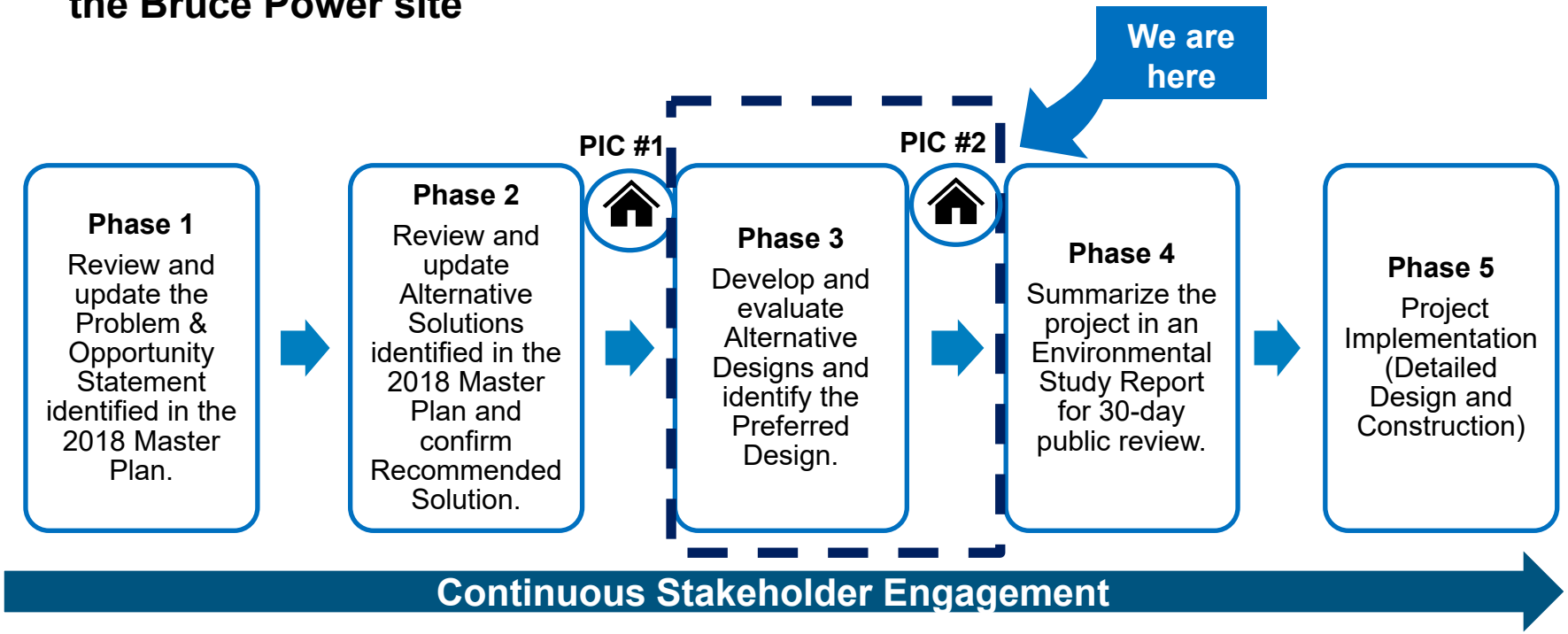
- The purpose of this Schedule C EA study is to review expansion alternatives for the existing WTP and supply system to service anticipated community growth
- Specifically, the project will consider servicing requirements to extend water supply to the Bruce Power site

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.

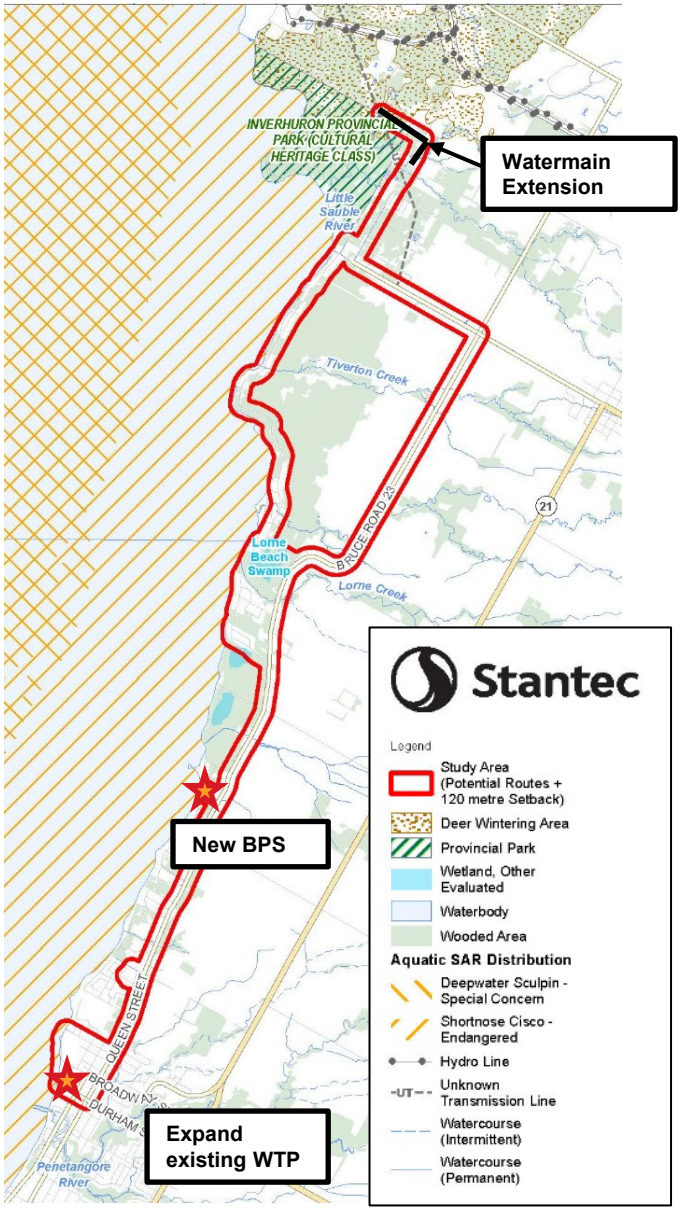
A preferred alternative will be identified to address current and future water treatment and supply needs, the ability to boost required water flows where needed, and to enable future system expansion. A preferred solution will be identified that will seek to avoid significant adverse impacts on the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

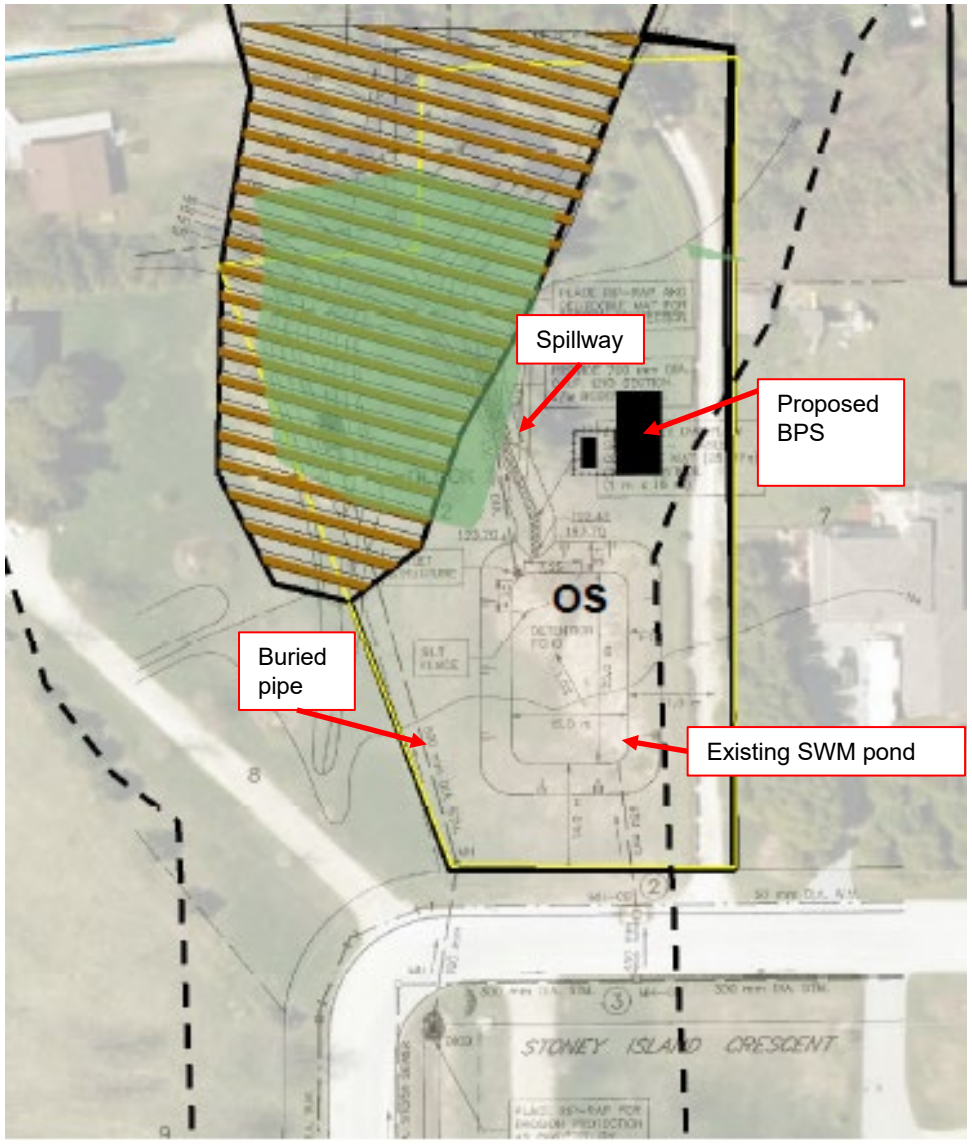
What We Heard in PIC1?

- 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



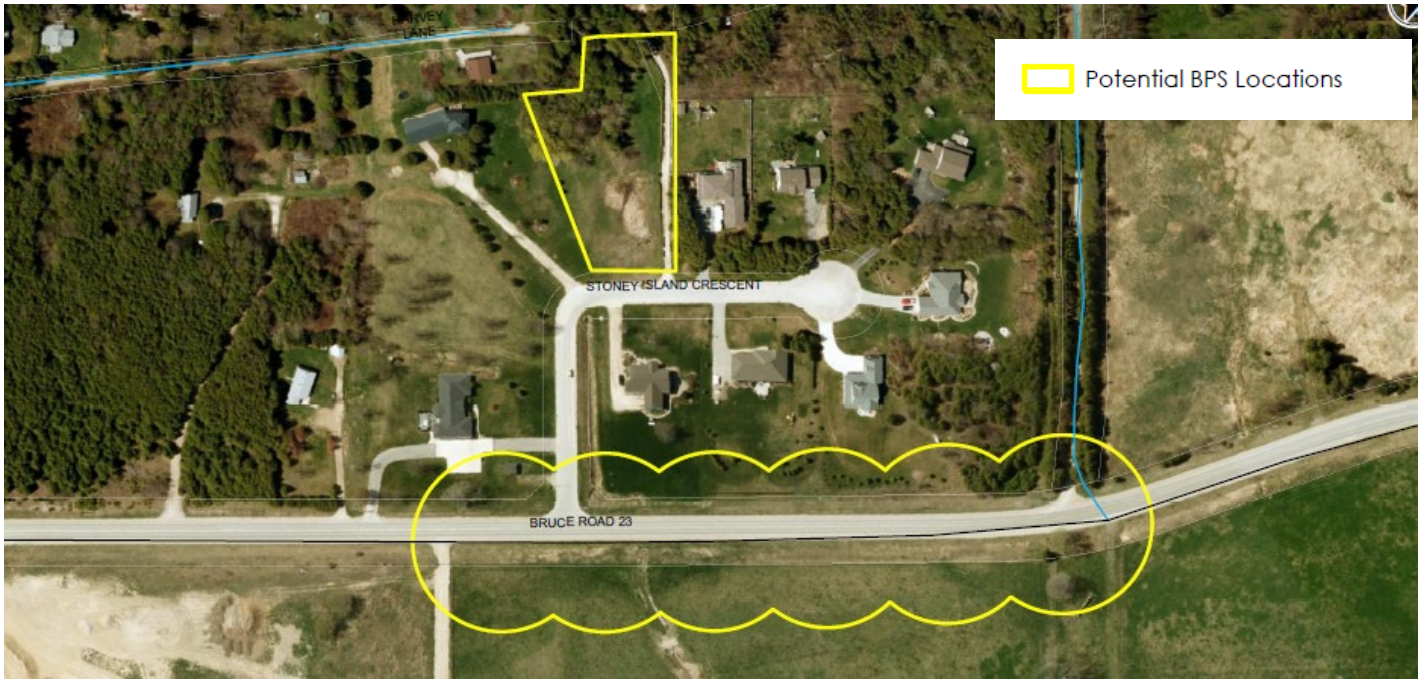
Overlay of original SWM pond construction drawings on property boundaries and environmental mapping

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**



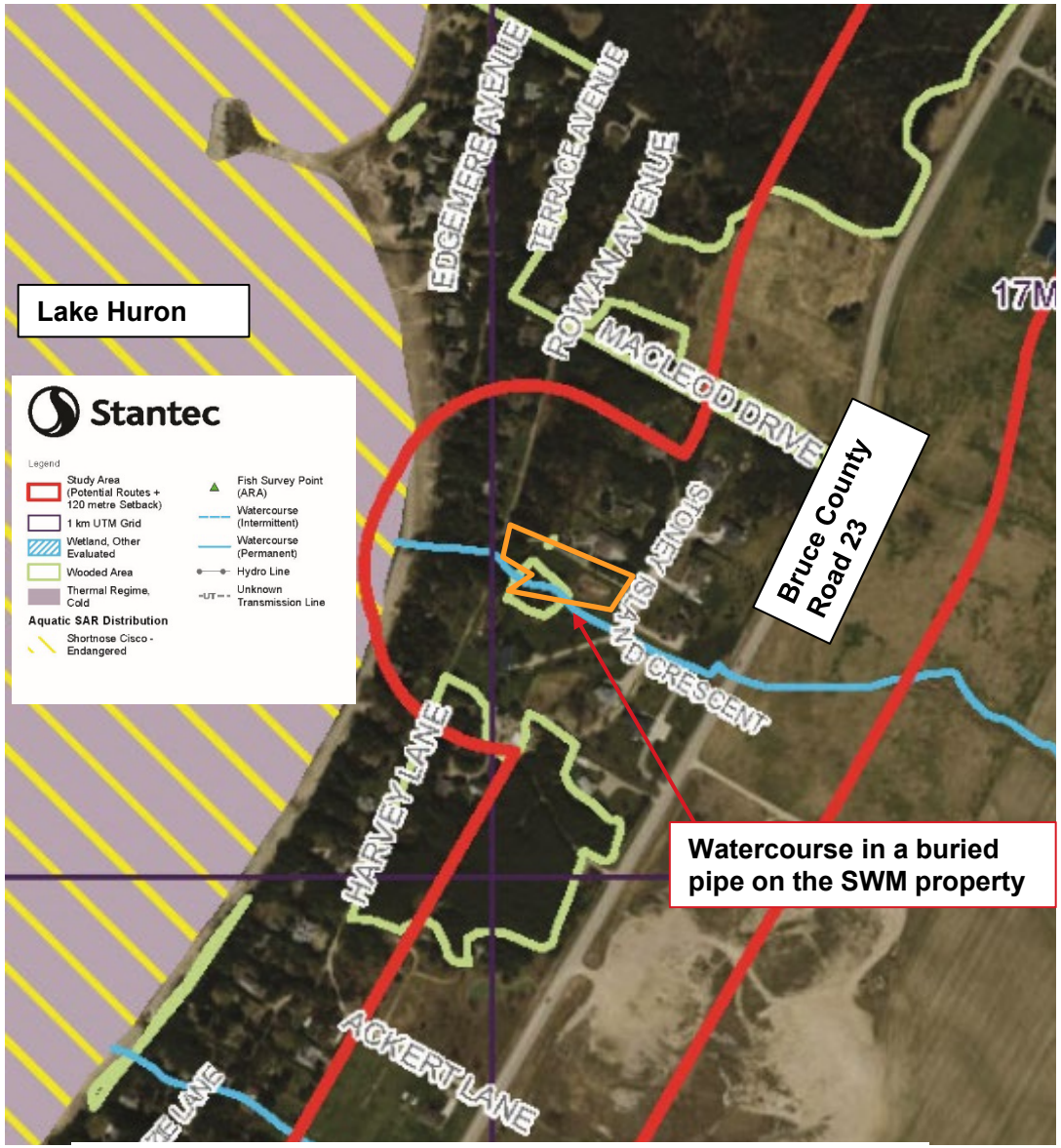
Environment Investigations

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:

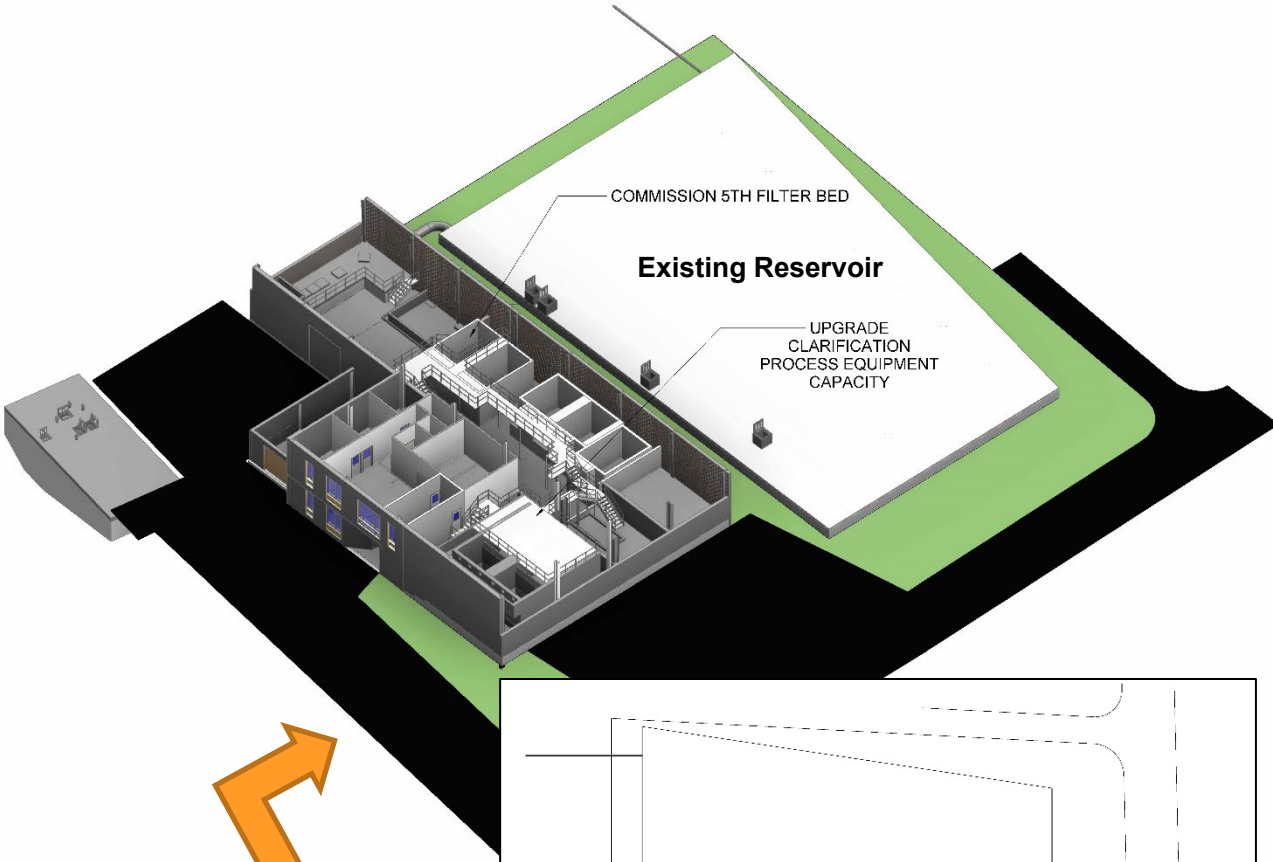
Alternative Design	Description

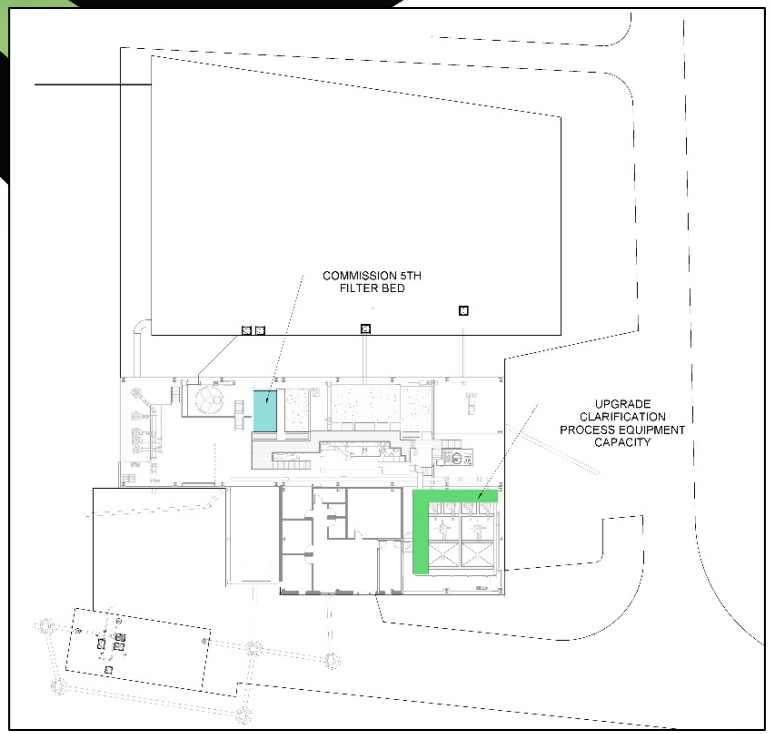
Alternative Design 1: Maintain Chlorine Disinfection Only	• **Can achieve capacity upgrade to 15,500 m³/day**
	• **Maintains the existing gas chlorination system for <u>both</u> primary and secondary disinfection at Kincardine WTP**
	• Ability to achieve higher capacity by:
	  • Increasing chlorine dosing, 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

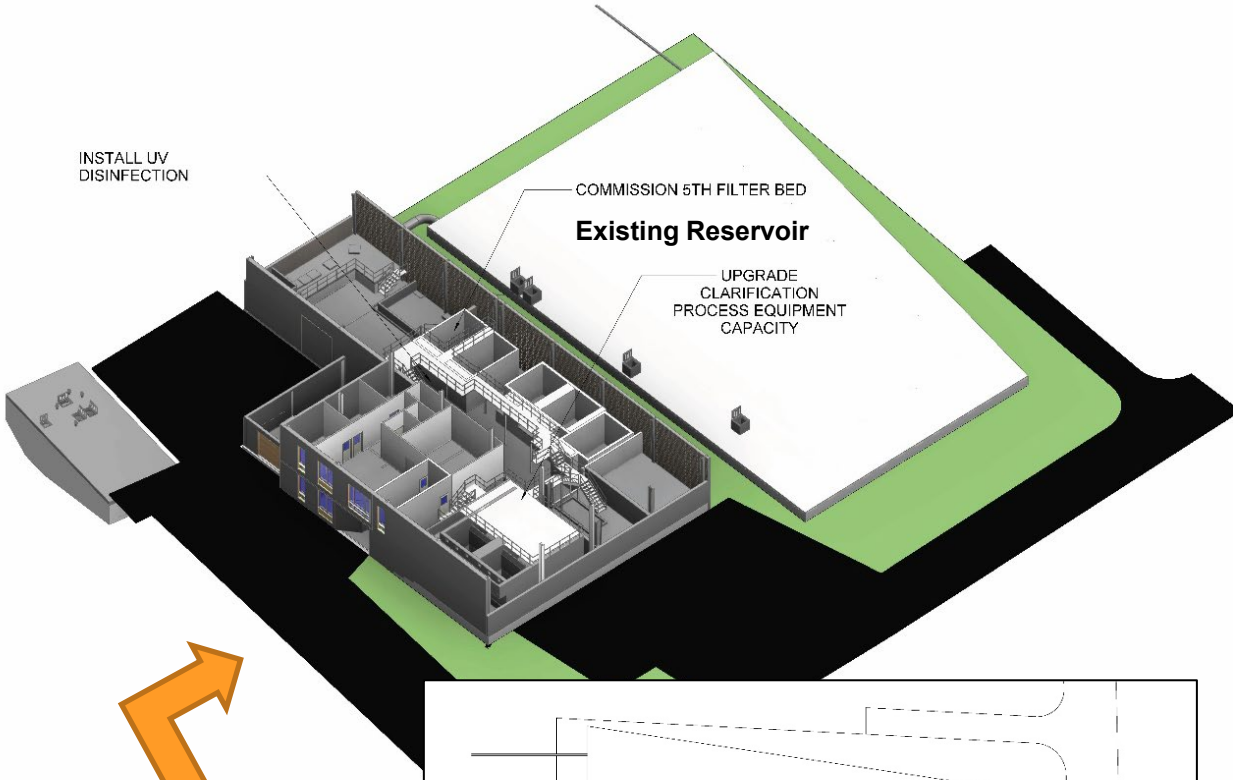




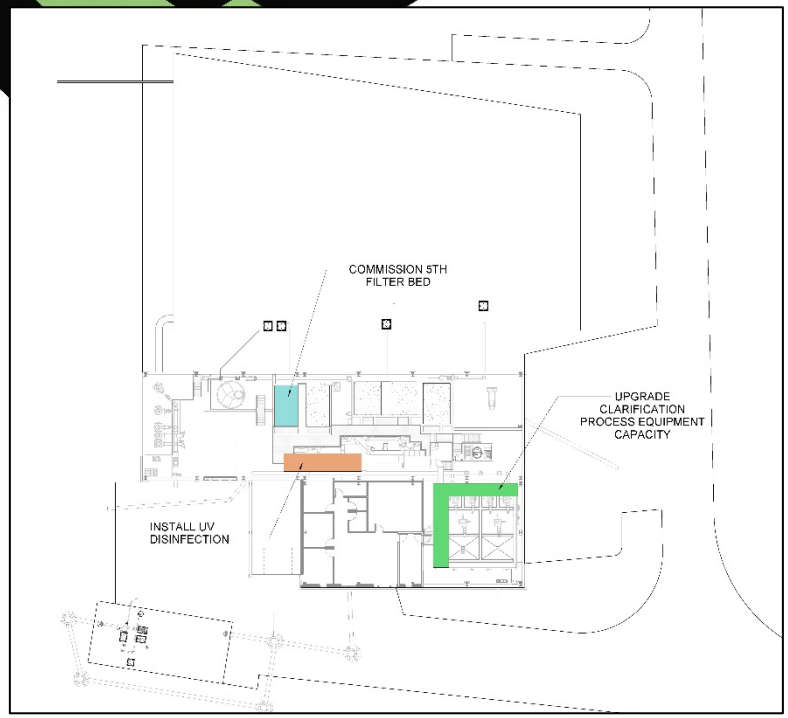
Plan view showing component upgrade locations

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:

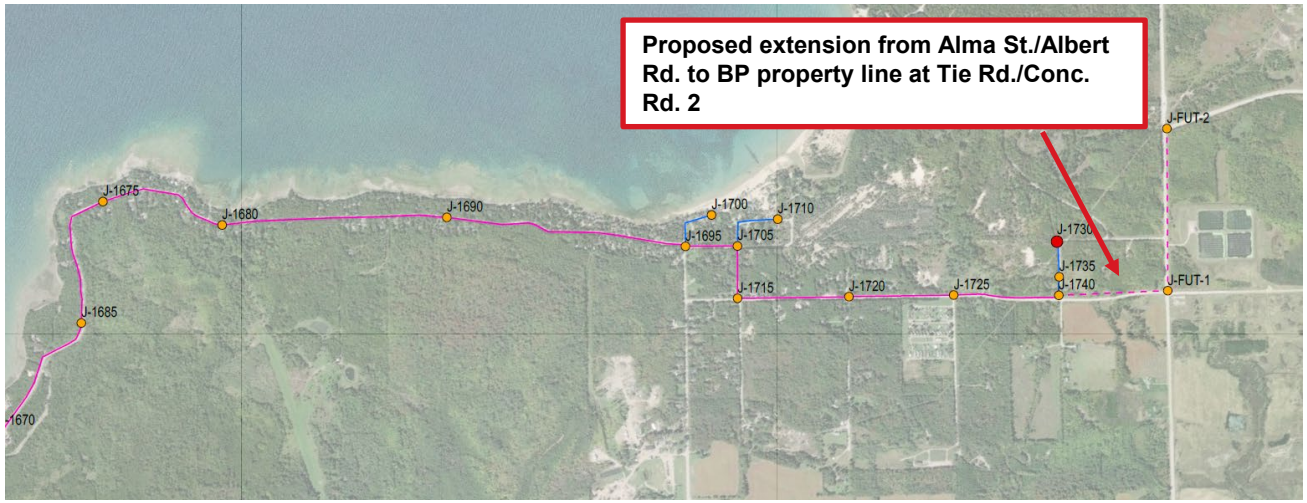
CRITERIA	Alternative Design 1: Maintain Chlorine Disinfection Only	Alternative Design 2: Upgrade Disinfection with Ultraviolet Light (UV)
Social Environment	Moderately Preferred	Most Preferred
Cultural Environment	Moderately Preferred	Most Preferred
Natural Environment	Least Preferred	Most Preferred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



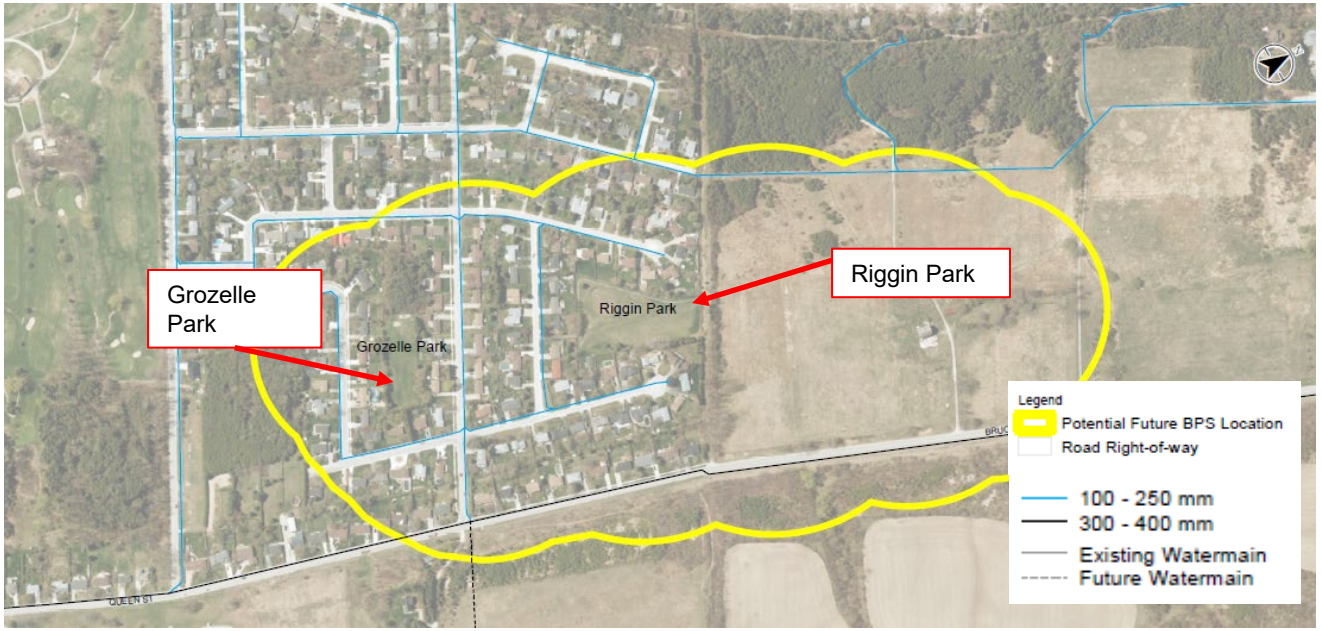
Preferred Design Summary

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

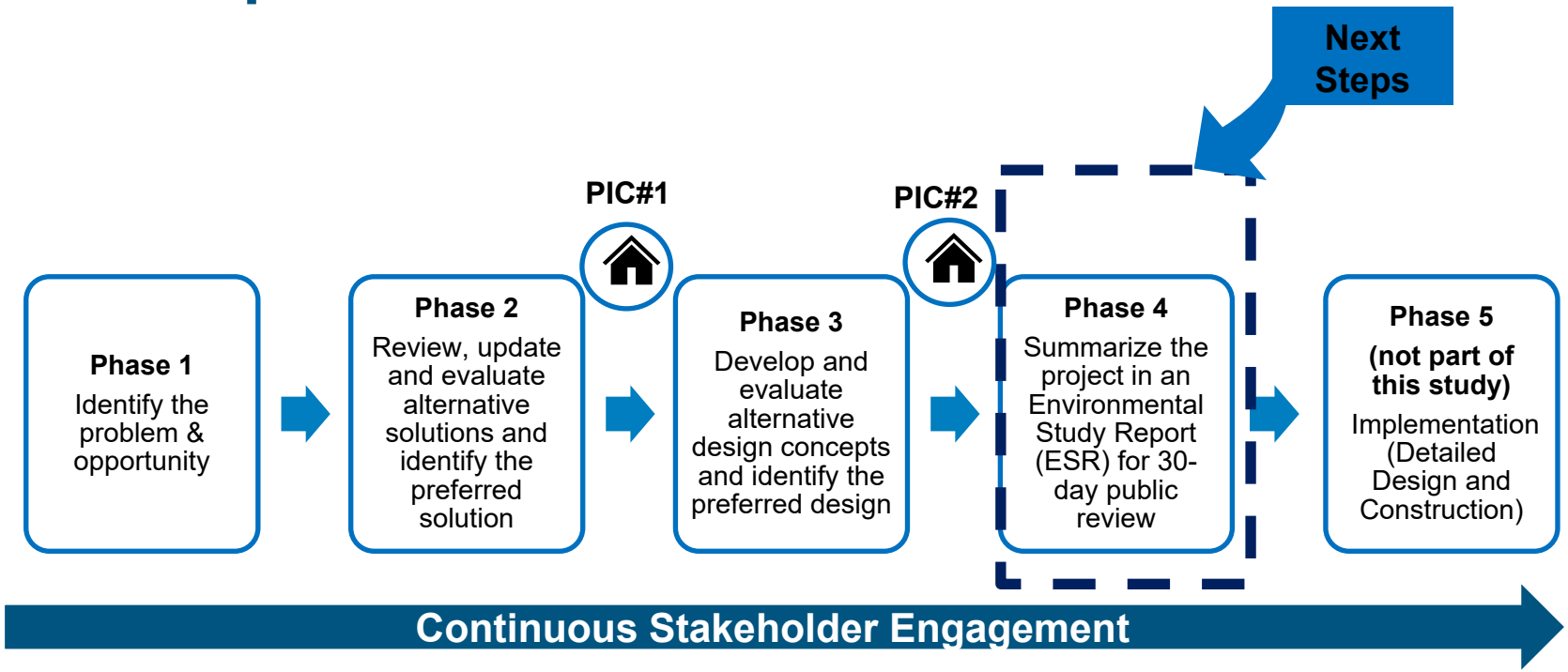


Additional Investigations & Mitigation Measures

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