



The CountyTM

PRINCE EDWARD COUNTY * ONTARIO

WELCOME

Municipal Class Environmental Assessment Studies for

New Wellington Water Treatment Plant

and

New Wellington Wastewater Treatment Plant

Public Information Centre

Wednesday, June 28, 2023

6:00 pm to 8:00 pm

Key Instructions for this Meeting

Schedule 'C' Class Environmental Assessment Studies for New Wellington Water and Wastewater Treatment Plants

1

Please Sign in
Meeting is a “Open House” format.

2

Review Display Materials
Our representatives will be pleased to discuss the studies, or any questions or concerns that you may have.

3

Complete a Comment Sheet
Drop off your completed Comment Sheet in the Box tonight or return it to the people shown on the Comment Sheet by July 14, 2023

Why are we here tonight?

Prince Edward County is undertaking **two separate Schedule ‘C’ Municipal Class Environmental Assessment Studies** to select the preferred treatment concept for the new Wellington Water and Wastewater Treatment Plants.

Objectives of this **Public Information Centre**:



Introduce the project and its background



Present treatment options considered for the new water and wastewater treatment plants and the preliminary recommendations



Receive comments from the public about the preliminary recommended treatment design concepts

Overall Objective of the Class EA Studies

The Wellington Master Servicing Plan for Water, Wastewater and Stormwater, completed in 2021, identified the need to replace the existing Wellington Water and Wastewater Treatment Plants to support the projected growth in Wellington and to address current capacity limitations within the existing system.

The overall objective of the Water and Wastewater Class EA studies is to select the preferred treatment concept for the new plants.

The existing municipal site has sufficient available area to accommodate the new Water and Wastewater Treatment Plants.



Overview of Activities under the EA Process

Phase 1 Getting Started

- Review available information/data
- Identify Problem / Opportunity Statement



The 2021 Wellington Master Servicing Plan for Water, Wastewater and Stormwater, fulfilled Phases 1 & 2 of the EA Process.

Phase 2 Exploring the Options

- Consider ways to address servicing needs
- Identify potential impacts
- Evaluate options and select the recommended **Preferred Servicing Solutions**
- Confirm Preferred Servicing Solutions based on **public and review agency input**



Phase 3 Conceptualizing the Preferred Solution

- Develop design concepts to implement the Preferred Servicing Solutions from Phase 2
- Identify impacts and mitigation measures
- Evaluate options and select the recommended **Preliminary Preferred Design Concepts**



PUBLIC INFORMATION CENTRE
June 28, 2023

Phase 4 Documenting the Process

- **Prepare a Report** and satisfy the documentation requirements of the Class Environmental Assessment process
- Make report available for **public review**

Notice of Completion – Environmental Study Reports
Fall 2023

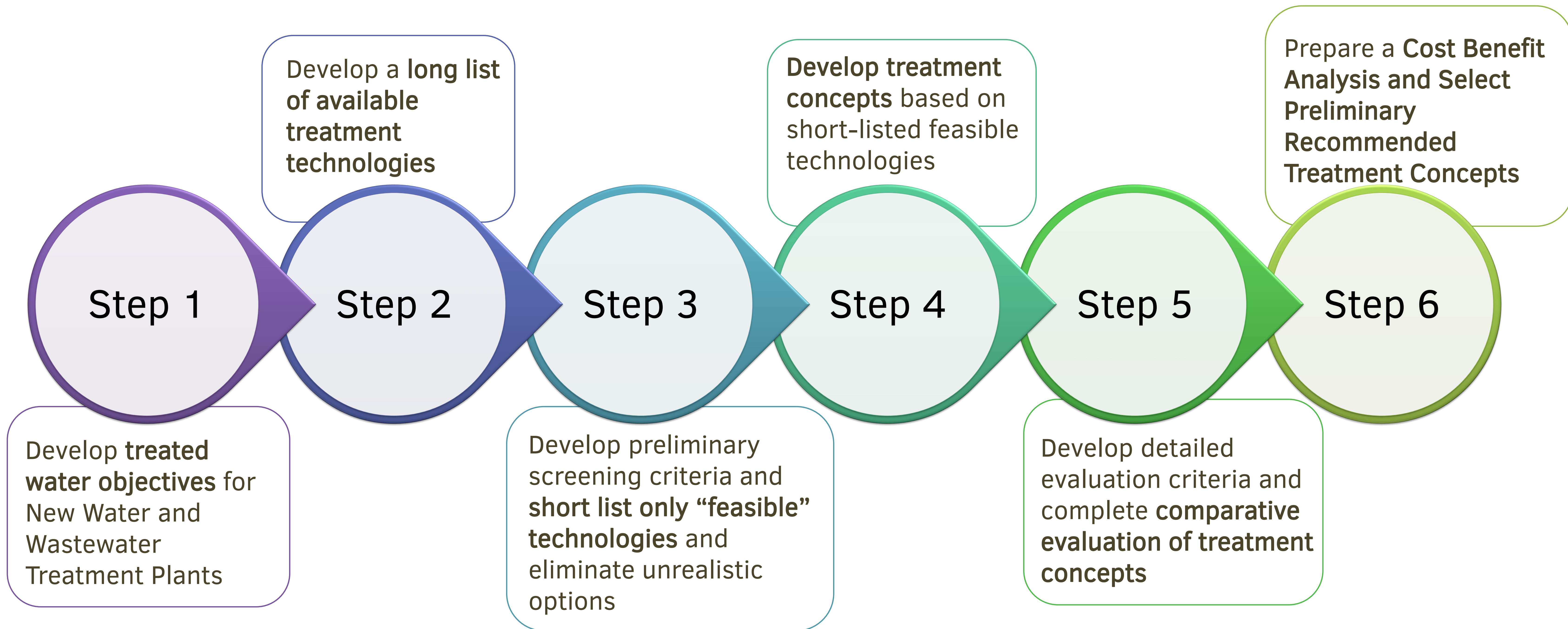
Phase 5 Implementing the Recommendations

- Complete detailed design of the recommended solution
- Initiate construction

Detailed Design To Commence
2024

The Schedule C Class EAs build upon the work of the 2021 Master Servicing Plan and fulfill Phases 3 & 4.



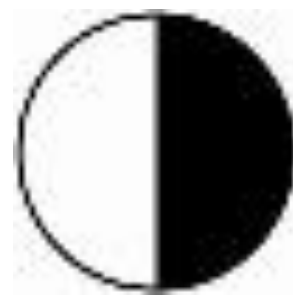


Selecting the Preferred Treatment Concepts – The Process



- Results from Steps 1 to 6 are presented in the next Panels.
- Panels have been separated for Water and Wastewater.

General Scoring Approach – Detailed Evaluation of Design Concepts

Alternative design concepts were assessed relative to each other, and assigned a score based on potential net impact and available mitigation measures. Scores were assigned based on the following scoring approach:

				
Potential impacts are significant, implementation of substantial mitigation measures are required. Risk cannot be eliminated.	Potential impacts are major, implementation of extensive mitigation measures required to reduce/eliminate risks.	Potential impacts are moderate, implementation of many mitigation measures required to reduce/eliminate risks.	Potential impacts are minor and can be easily mitigated through implementation of standard mitigation measures.	Potential impacts are negligible, no mitigation required.



New Wastewater Treatment Plant Display Panels

Wellington Master Servicing Plan (MSP) Preferred WWTP Alternative Solution

Prince Edward County recently completed a Water, Wastewater and Stormwater Management Master Servicing Plan (MSP) to provide safe, sustainable and optimized services to support the current and future community.

The MSP recommended replacement of the existing Wellington WWTP with a new treatment facility on the existing site, reuse of existing facilities for Biosolids Storage, and reuse of existing outfall to Lake Ontario.



The County is completing a **Schedule C Class EA Study** for the new Wellington WWTP for the selection of the treatment processes for this facility.

Design Basis – Wellington WWTP

Wastewater Flow	Existing (2022)	2047 Horizon	Buildout
Rated Capacity (m ³ /d)	~1,500	~3,900	~6,500

Per the MSP the existing facility's rated capacity cannot satisfy future demands. There is a need to increase the treatment capacity to service future demands and continue ongoing environmental stewardship of Lake Ontario.

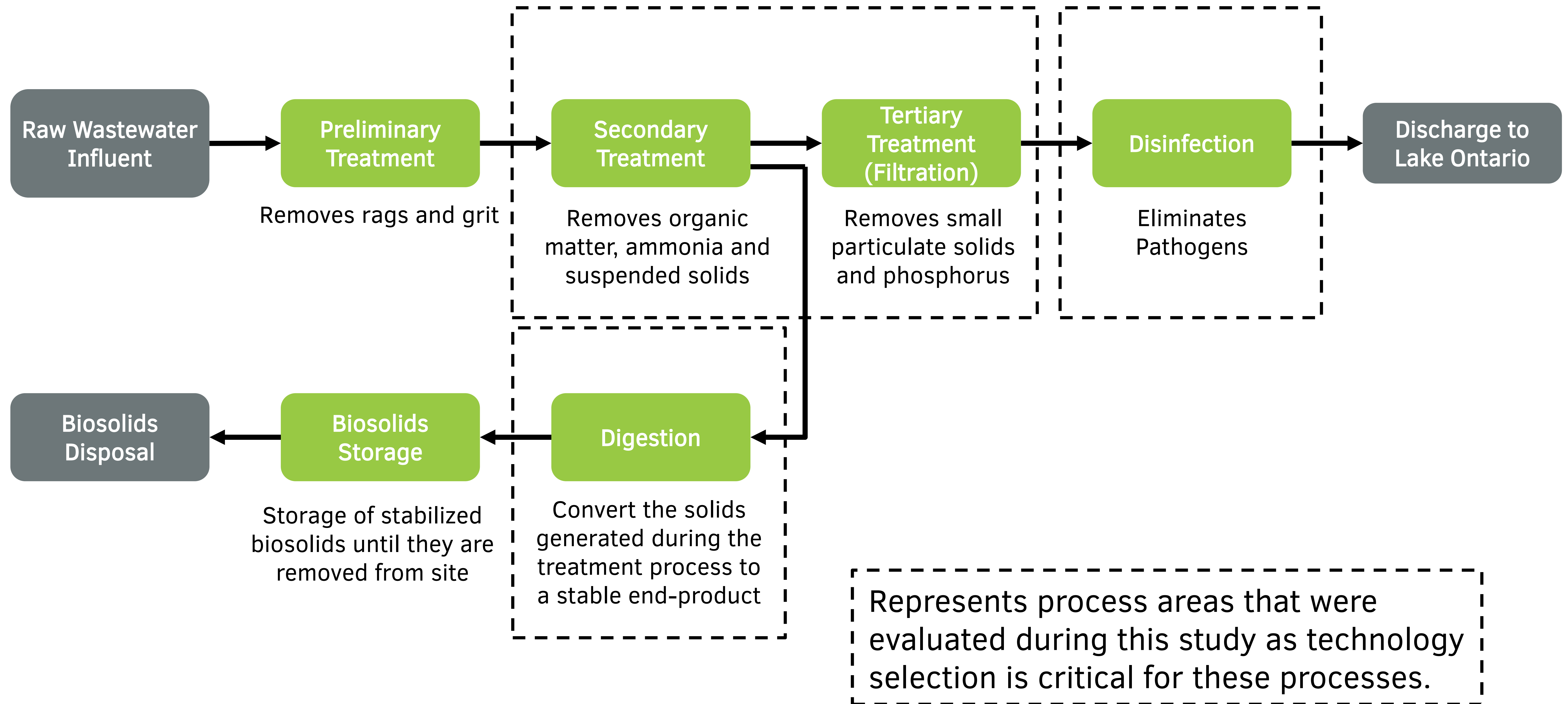
The new facilities present opportunities to select the most appropriate technologies considering future growth and servicing needs.

The design basis for concepts evaluation evaluated alternatives for a rated capacity of 3,900 m³/d (2047 Horizon), and also considered flexibility to expand to 6,500 m³/d (Buildout) on the same site.

As part of this study, an Assimilative Capacity Study was completed to ensure limited environmental impact up to the 2047 Horizon.



Overview of the Wastewater Treatment Process

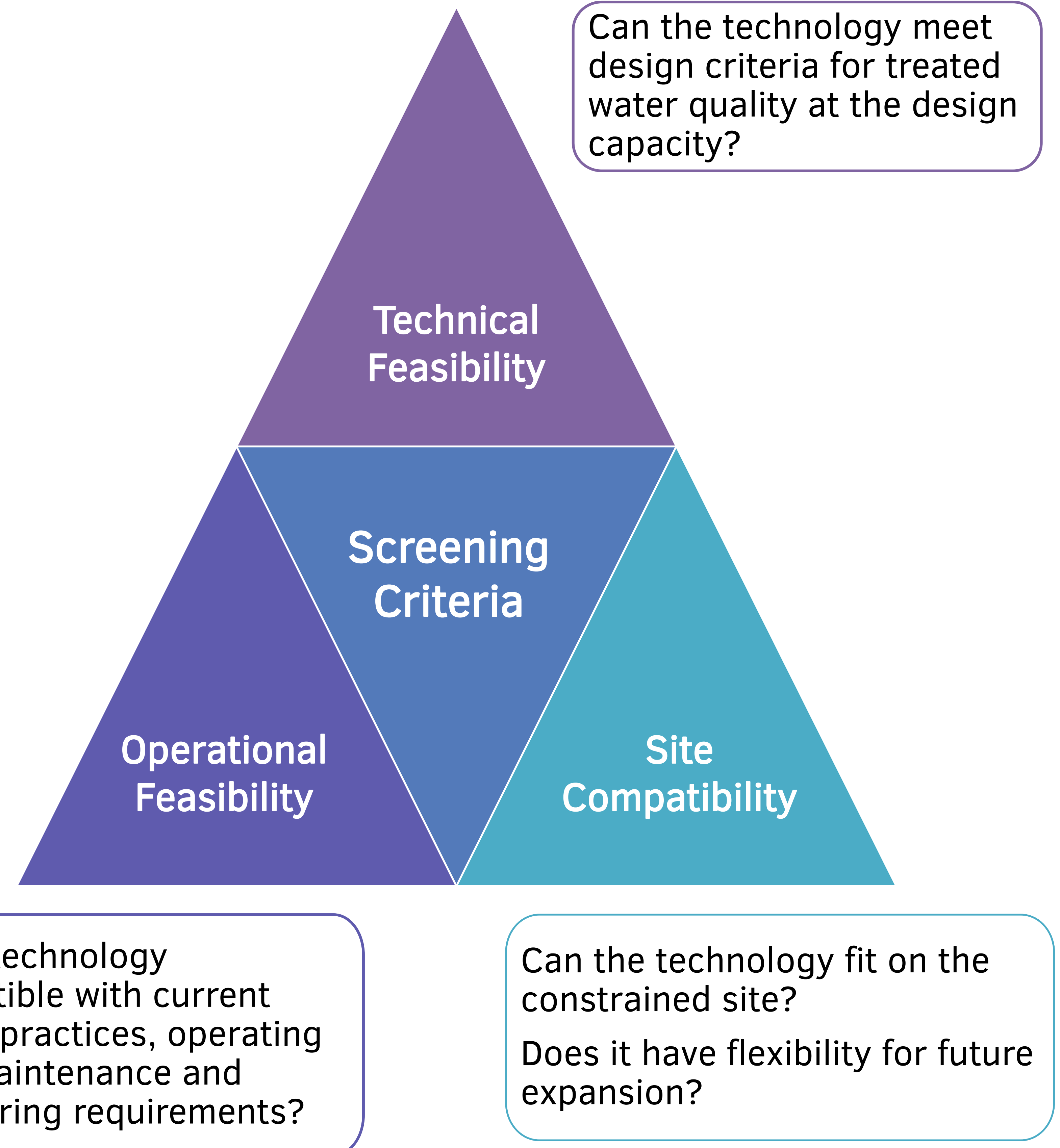


Preliminary Screening of WWTP Technologies

Preliminary screening criteria were developed to examine the long list of available treatment technologies and identify only those that are feasible.

Screening criteria represented key project objectives in terms of compliance, capacity and technical feasibility.

Treatment technologies that fail one or more screening criteria were eliminated from further consideration.



Screening Results – WWTP Technologies

Must Have Criteria	Secondary Treatment Process					
	Extended Aeration	Aerobic Granular Sludge (AGS)	Membrane Bioreactor	Conventional Activated Sludge	Moving-Bed Biofilm Reactor	IFAS Process (MBBR, MABR)
Technical Feasibility	✓	✓	✓	✓	✓	✓
Operational Feasibility	✓	✓	✓	✓	✗	✗
Site Conditions Compatibility	✓	✓	✓	✗	✗	✗
Pass / Fail	Pass	Pass	Pass	Fail	Fail	Fail

Must Have Criteria	Tertiary Treatment Treatment Process			
	Sand Filters	Discfilters	Ballasted Flocculation	Membranes
Technical Feasibility	✓	✓	✓	✓
Operational Feasibility	✓	✓	✓	✓
Site Conditions Compatibility	✓	✓	✗	✗
Pass / Fail	Pass	Pass	Fail	Fail

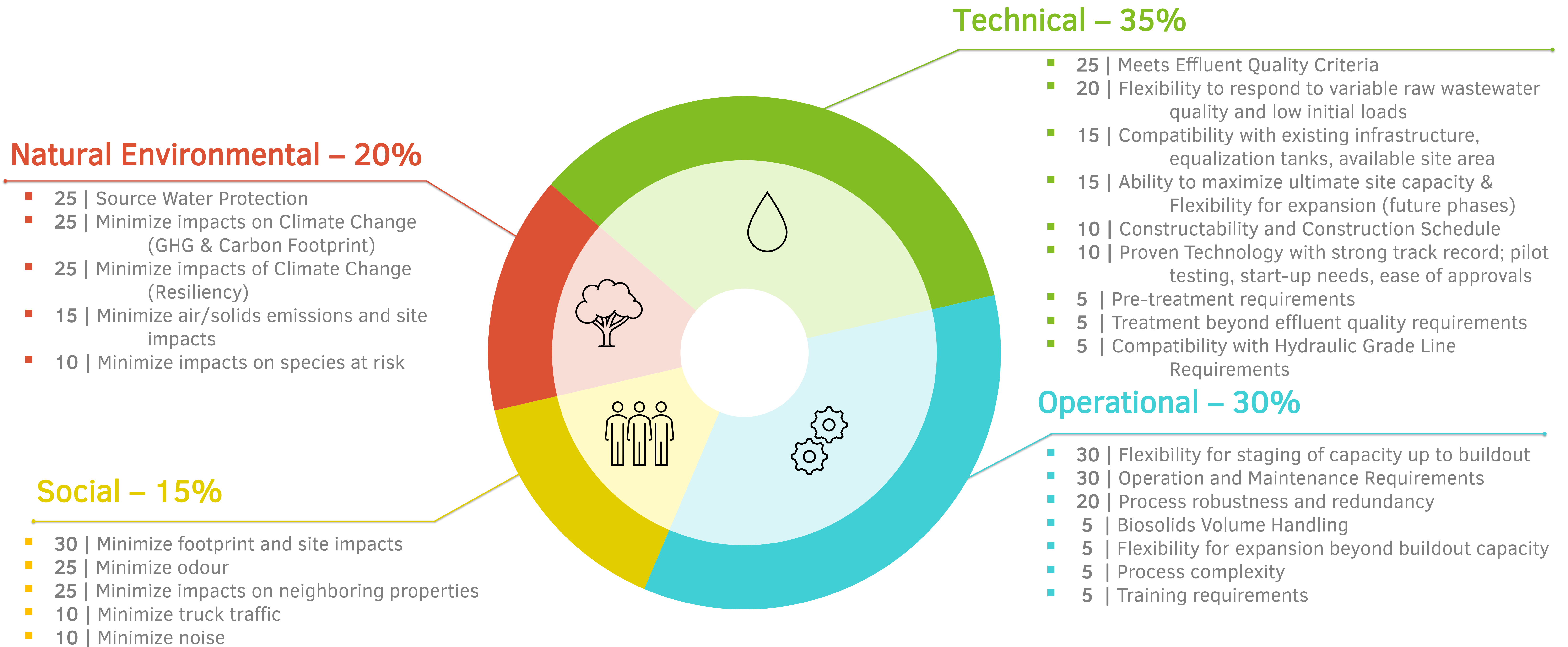
Screening Results – WWTP Technologies

Must Have Criteria	Disinfection Treatment		
	Ozonation	UV Disinfection	Clorination/ Dechlorination
Technical Feasibility	✓	✓	✓
Operational Feasibility	✓	✓	✓
Site Conditions Compatibility	✓	✓	✓
Pass / Fail	Pass	Pass	Pass




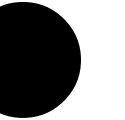
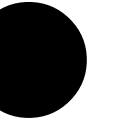



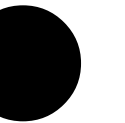





















Must Have Criteria	Biosolids Digestion		
	Auto-Thermal Aerobic Digestion	Aerobic Digestion	Anaerobic Digestion
Technical Feasibility	✓	✓	✓
Operational Feasibility	✓	✓	✗
Site Conditions Compatibility	✓	✓	✓
Pass / Fail	Pass	Pass	Fail

Evaluating Alternative Design Concepts – WWTP


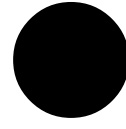
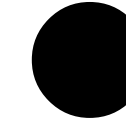

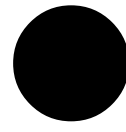
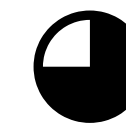
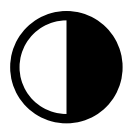

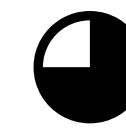

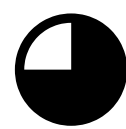
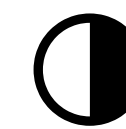
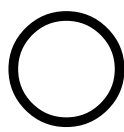
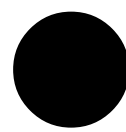
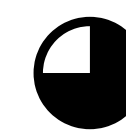

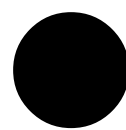

The project team established weightings and criteria to evaluate the non-financial impacts and benefits of each alternative relative to each other. Alternatives with the highest cumulative scores are preferred.



Evaluation Results – Secondary, Tertiary Treatment

Criteria	Extended Aeration / Sand Filter	Extended Aeration / Discfilter	Aerobic Granular Sludge / Sand Filter	Aerobic Granular Sludge / Discfilter	Membrane Bioreactor / -
Description of Alternative	<ul style="list-style-type: none"> The Extended Aeration process with Sandfilters is a robust conventional process, with higher footprint requirements. Capital Cost* \$33.5M including headworks facility 	<ul style="list-style-type: none"> The Extended Aeration process with Discfilters is a robust conventional process, with high footprint. This process benefits from the reduced footprint of Discfilters. Capital Cost* \$31.2M including headworks facility 	<ul style="list-style-type: none"> The AGS process with sand filters is an emerging technology that eliminates the need for secondary clarifiers. The process uses less energy, chemicals and has a low carbon footprint. Capital Cost* \$33.7M including headworks facility 	<ul style="list-style-type: none"> The AGS process with discfilters is an emerging technology that eliminates the need for secondary clarifiers & benefits from the reduced footprint of Discfilters. The process uses less energy, chemicals and has a low carbon footprint. Capital Cost* \$31.3M including headworks facility 	<ul style="list-style-type: none"> The MBR process is a low footprint treatment technology that can meet ultra-strict effluent requirements. This process is operationally intensive and requires more energy, chemicals and labour to operate. Capital Cost* \$33.0M including headworks facility
Technical (35%)					
Operational (30%)					
Social (15%)					
Natural Environmental (20%)					
Cost (Lifecycle)					
Benefit:Cost Ratio					
Overall Result	Least Preferred	Least Preferred	Less Preferred	Preferred	Less Preferred

Evaluation Results - Disinfection

Criteria	Ozonation	UV Disinfection	Chlorination / Dechlorination
Description of Alternative	<ul style="list-style-type: none"> Ozonation is an effective disinfection technology with medium footprint and high energy costs and moderate chemical use. The technology requires more mechanical & electrical process support equipment than other technologies and requires additional considerations to limit health and safety risks to operators. It is noted that the existing facility's system is unable to be fully re-used for the new facility. Capital Cost* \$8.6M 	<ul style="list-style-type: none"> UV disinfection is a proven, reliable technology widely used in Ontario for WWTP effluent Disinfection and is also used at PEC's other WWTP facility in Picton. This technology does not require contact tanks and is more adaptable to growing capacity needs over time. Capital Cost* \$1.0M 	<ul style="list-style-type: none"> Chlorination / Dechlorination is a high footprint conventional disinfection technology that requires the most chemical use and handling for disinfection technologies. The technology is reliable but requires construction of large contact tanks. Capital Cost* \$1.5M
Technical (35%)			
Operational (30%)			
Social (15%)			
Natural Environmental (20%)			
Cost (Lifecycle)			
Benefit:Cost Ratio			
Overall Result	Least Preferred	Preferred	Less Preferred

Evaluation Results - Digestion

Criteria	Auto-Thermal Thermophilic Aerobic Digestion (ATAD)	Aerobic Digestion
Description of Alternative	<ul style="list-style-type: none"> The ATAD process is an emerging enhanced digestion process that generates improved biosolids products with less tankage. The process is more complex to operate and poses additional odour risks compared to other technologies. It is noted that the benefit in improved biosolids product is not fully realised as a result of current regulations. Since the retrofit of existing WWTP tankage to suit this technology is also more complex and challenging compared to other technologies, the process provides marginal added benefit in this application. Capital Cost* \$7.1M 	<ul style="list-style-type: none"> Aerobic Digestion is conventional, widely used process with conventional footprint. This technology offers conventional solids reduction and is used at other PEC WWTP facilities. Aerobic Digestion presents low Capital and O&M costs due to its simpler design and operation – more compatible with this retrofit application. Capital Cost* \$4.9M
Technical (35%)	●	●
Operational (30%)	●	●
Social (15%)	●	●
Natural Environmental (20%)	●	●
Cost (Lifecycle)	○	●
Benefit:Cost Ratio	●	●
Overall Result	Least Preferred	Preferred

New Wellington WWTP – Preliminary Preferred Design Concept

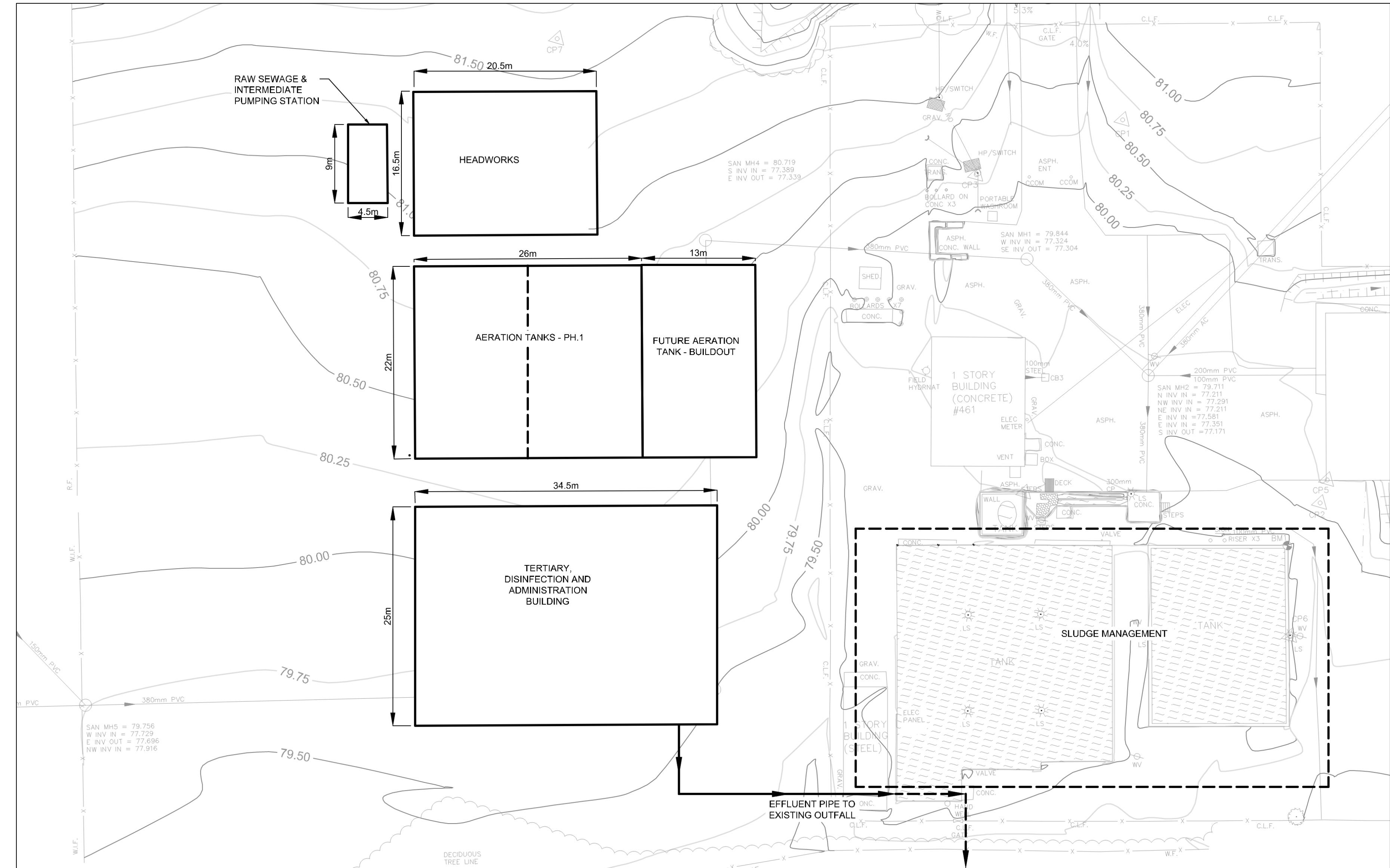
New Wellington WWTP is estimated* at \$37.2M

Preferred Treatment Process

Aerobic Granular Sludge / Discfilters + UV Disinfection + Aerobic Digestion

KEY BENEFITS

- ✓ Compatible with Constrained Site
- ✓ Allows Flexibility for Future Expansion
- ✓ Lowest Lifecycle Cost
 - ✓ Similar Capital Costs vs. Alternatives
 - ✓ Low Operational Costs vs. Alternatives
- ✓ Lowest Energy, Chemical Costs & GHG Impacts
- ✓ Technology Integrates Well with EQ Tanks Currently Under Construction



Plan view of the Preliminary Preferred Solution
Subject to change during detailed design

* Level 4 Estimate (-30% to +50%)

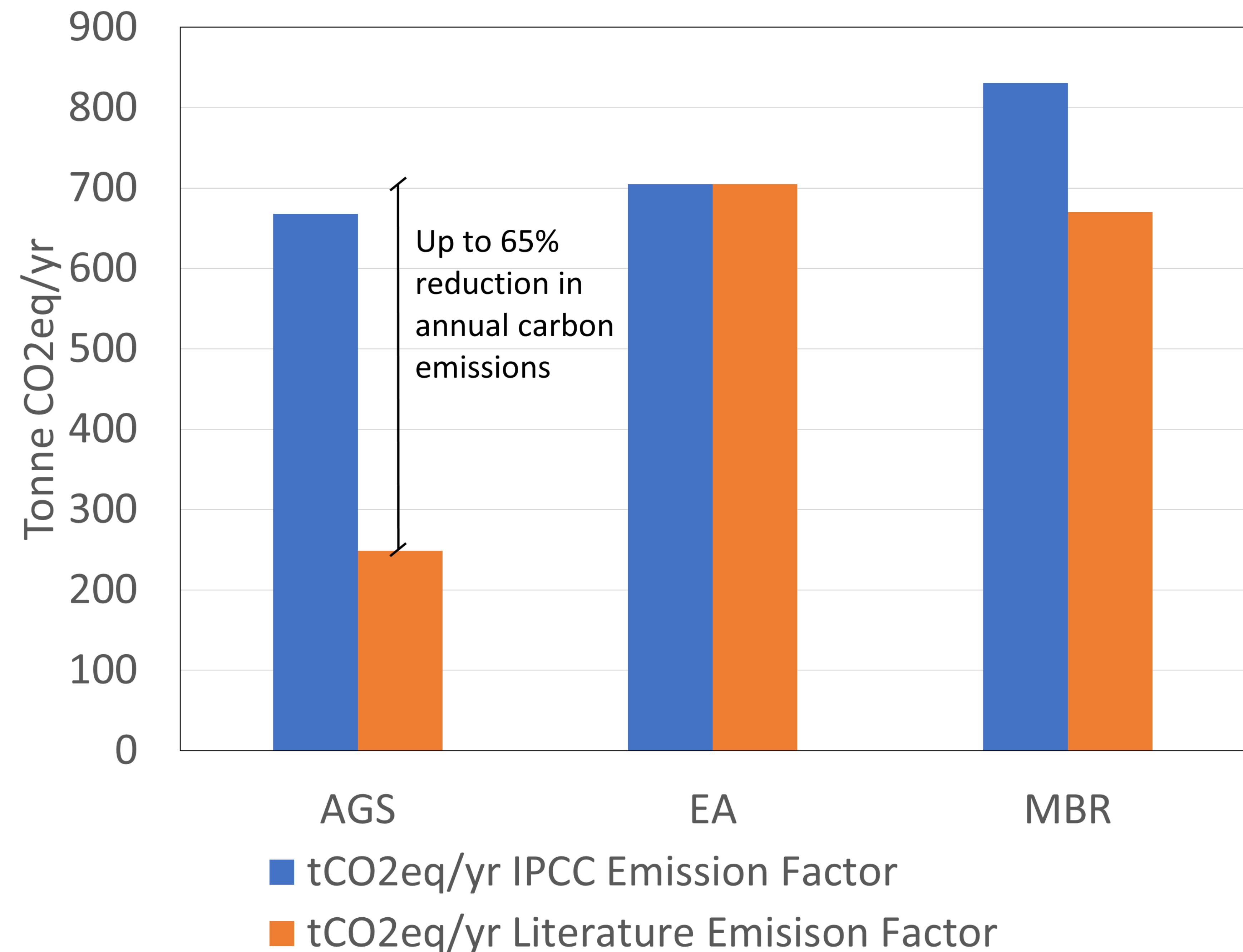
Preferred Alternative & Carbon Emissions Reduction

A new WWTP presents an opportunity to **reduce the County's carbon emissions** over the lifetime of the facility.

Secondary treatment processes have the most impact on the overall carbon emissions of the facility. The preliminary preferred secondary treatment alternative, AGS, can reduce the WWTP's carbon emissions by up to 65% by:

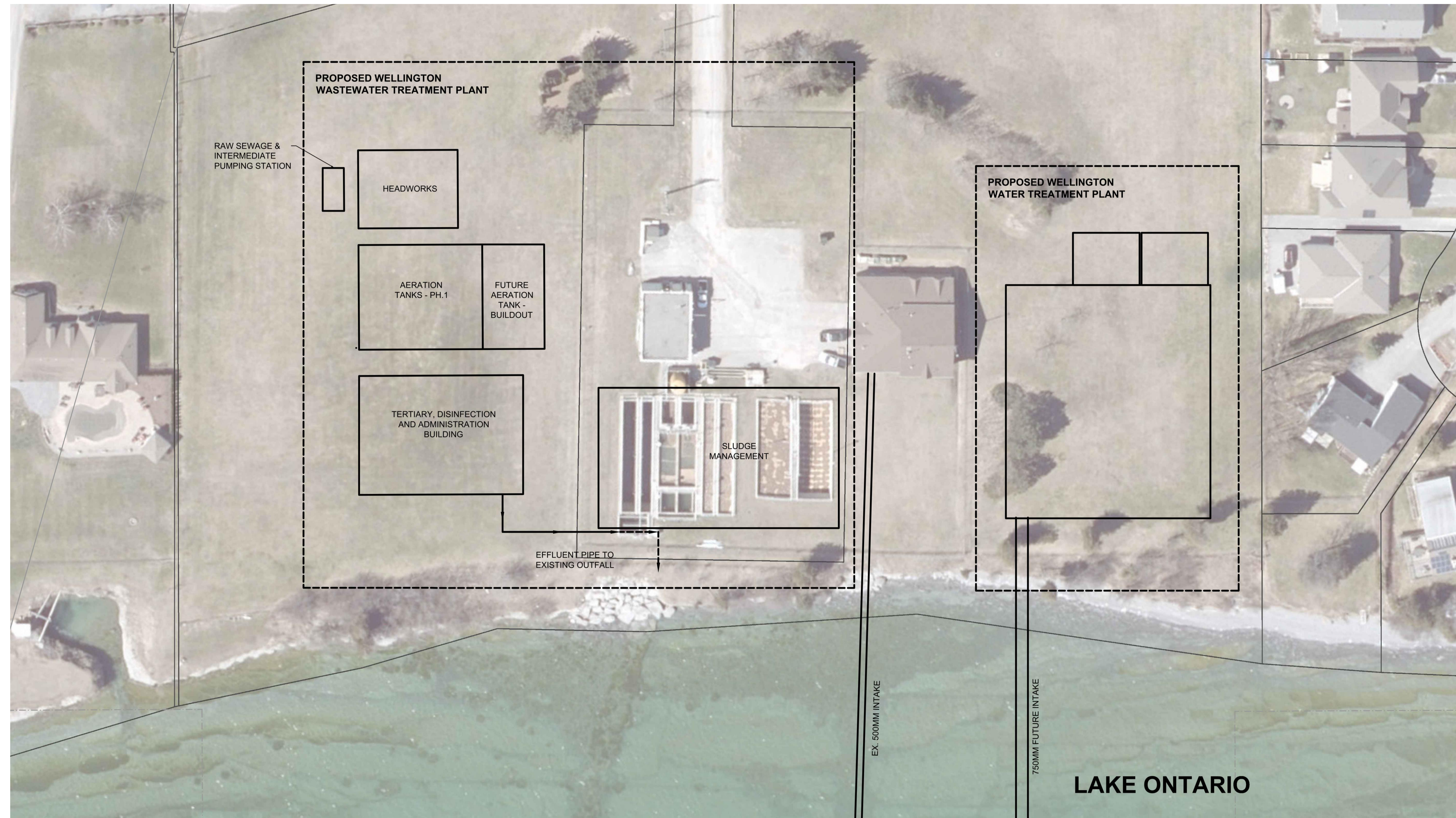
- Reducing energy and chemical use,
- Reducing tankage and construction footprint,
- AGS technology is more efficient in N₂O emissions compared to technology specific research and standardized IPCC emission factors for WWTPs.

This specific advantage aligns with the County's objectives for carbon emissions reduction.



Preliminary Preferred Solutions – Overall Conceptual Layout for New Wellington WTP and WWTP

(Layouts subject to change during the design stage)



Potential Impacts and Mitigation Measures

Short-Term Construction Impacts

- Health and safety is a priority to the County. All construction will adhere to strict safety guidelines.
- Temporary measures will be undertaken during construction to minimize noise, dust, mud and visual impacts.
- Construction will adhere to local noise by-laws.
- All in-water works associated with construction of the new intake pipeline and structure will comply with the Canadian Navigable Waters Act to ensure no interference with navigation.
- On-shore construction to be confined within County's property limits with minimal interference to the neighbouring residents.

Socio-Cultural Environment

- The new Wellington Water and Wastewater Treatment Plants will be architecturally designed to match the characters of the surrounding areas.
- Odour control measures for the new Wellington WWTP will be implemented in detailed design. No odours are expected from the Wellington WTP.
- Possible visual disturbances will be mitigated through landscape improvements.
- A landscaping plan will be developed during detailed design to enhance the character of the site.

Natural Environment

- New water and wastewater treatment plants will enhance existing municipal water and wastewater services and will not affect the levels of servicing currently provided.
- Implement erosion and sediment control measures.
- All in-water works to be completed within the appropriate timing window for construction.
- All activities to comply with Endangered Species Act. Complete additional field studies as needed.

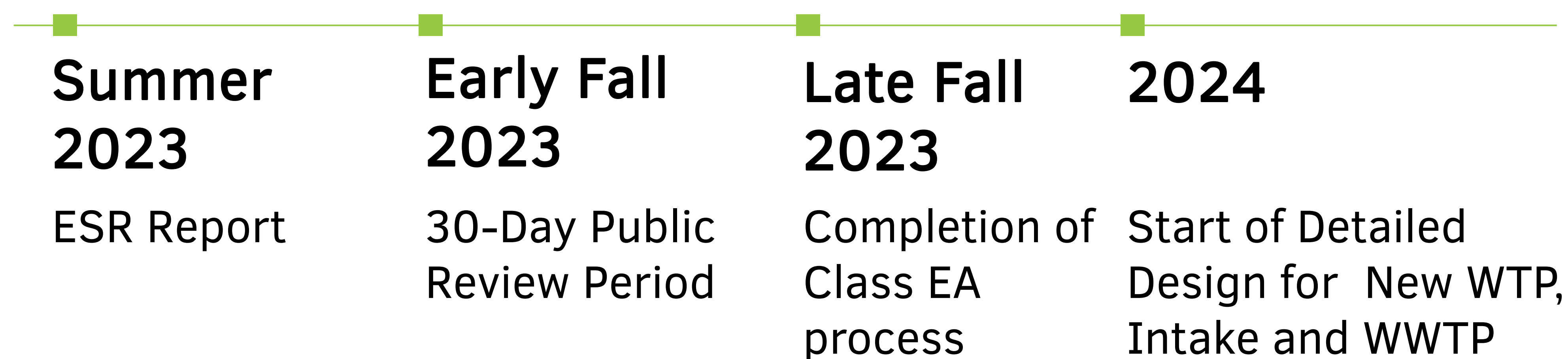
Technical and Operational

- Staging and phased-implementation approach for the protection and continue operation of the existing treatment plants and intake, during construction.
- Bathymetric survey to be completed during detailed design to confirm exact alignment and location of the new intake pipe and structure, respectively.
- Confirm delineation of Intake Protection Zones.
- Complete necessary detailed geotechnical investigations to confirm dewatering requirements and secure permits and approvals

What are the Next Steps?

After this Public Information Centre, the project team will:

- Review and consider input received during this meeting.
- Confirm the preliminary Class EA recommendations presented tonight for the new Wellington WTP, WWTP and new Intake pipe and structure.
- Initiate additional investigations to confirm recommended new intake pipe alignment such as Marine Archaeological Assessment and Source Water Protection Update.
- Prepare Class Environmental Study Reports for water and wastewater.
- File Class Environmental Study Reports on the public record and address comments received during 30-day review period.



Next Steps & Comments

Questions or comments?

Should you have any questions about this presentation or the project, please fill out a comment sheet at the front or contact:



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Engineering for people

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