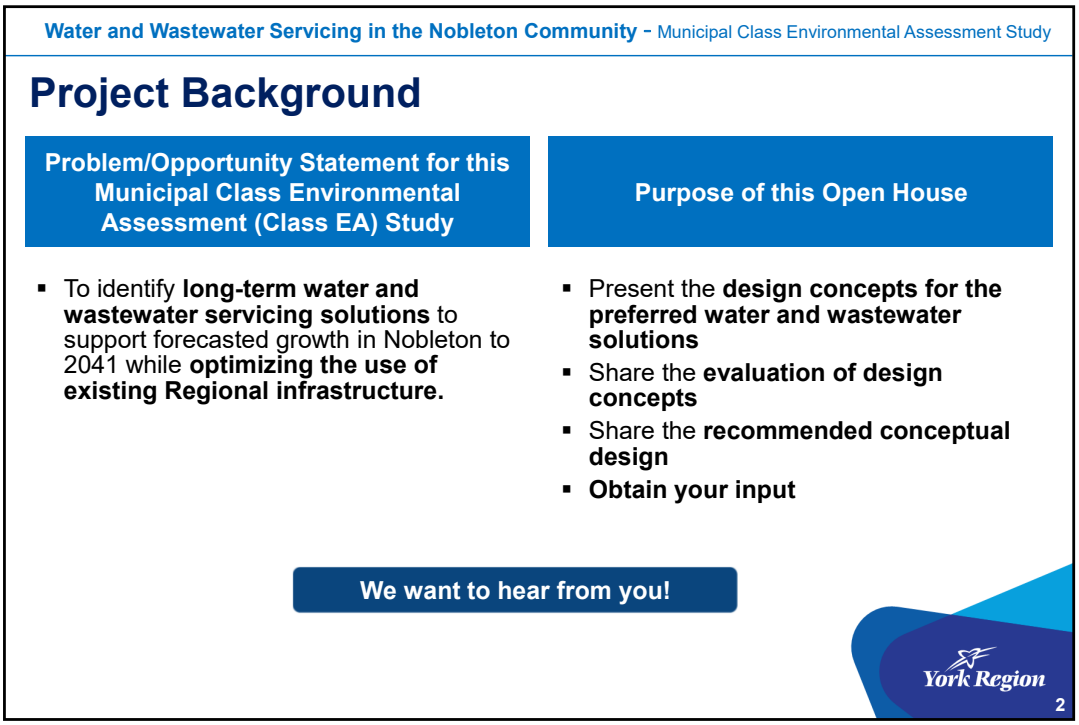
Welcome to York Region's Online Open House Number 3 for the Municipal Class Environmental Assessment Study of Water and Wastewater Servicing in the Nobleton Community. You can download slides for this open house, stay informed about the project and sign up for updates by visiting the project webpage at york.ca/nobletonea .

We acknowledge that the land we are meeting on today is the traditional territory of many First Nations, including the Chippewas of Georgina Island and the Mississaugas of the Credit. These lands are now home to many diverse Indigenous peoples. We also acknowledge that York Region falls under Treaty 13 with the Mississaugas of the Credit and the Williams Treaties with several Mississauga and Chippewas First Nations.

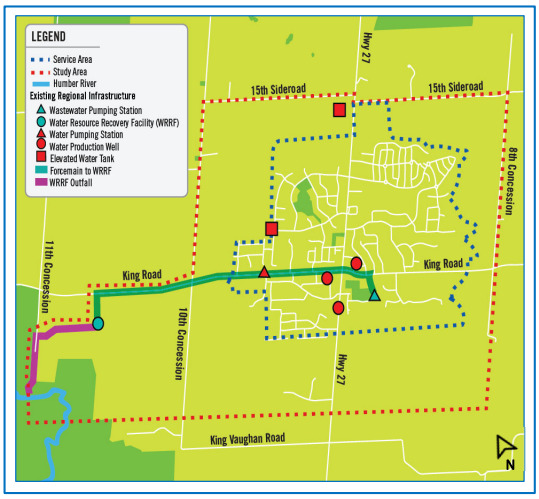
We acknowledge this land and the people as a first step towards reconciliation. A shared understanding of how our collective past brought us to where we are today will help us walk together into a better future.



The purpose of this Class Environmental Assessment is to identify long-term water and wastewater servicing solutions for the Community of Nobleton – this means providing water and collecting and treating wastewater for our residents as our community grows. These solutions will support growth to the year 2041 and leverage existing regional infrastructure where possible.

During this Open House, we will present a series of design concepts describing how water and wastewater treatment and pumping infrastructure could be provided to service population growth. We will also share our evaluation of these concepts, present our recommendations and obtain your input. Your input is important to us, and we want to hear from you! This is the third and final open house that will take place for this project.

Project Study and Service Area



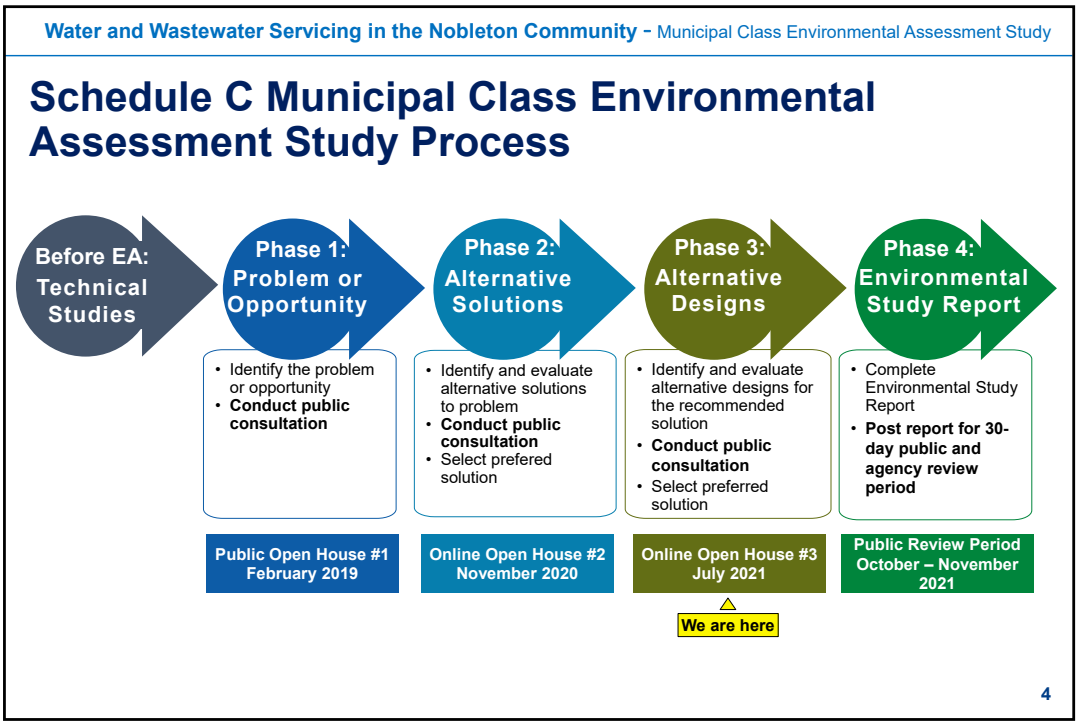
Service Area

Community of Nobleton boundary including current and planned service areas

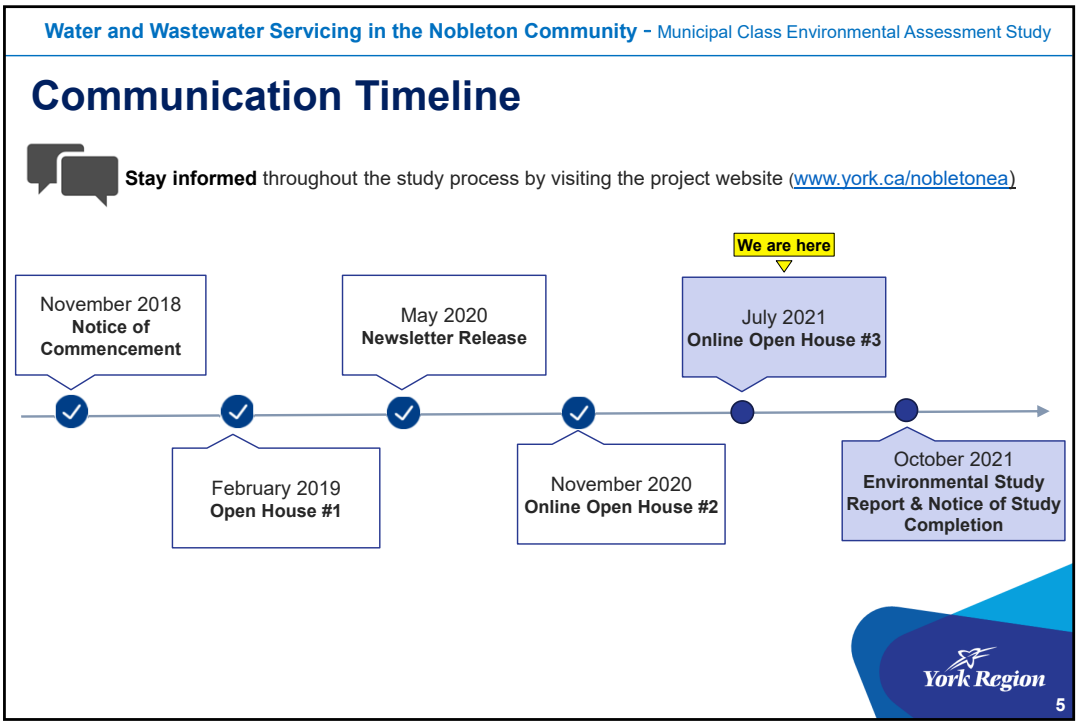
Study Area

All serviced area plus an assessment of potentially impacted lands due to new infrastructure requirements

Nobleton is currently serviced by standalone water and wastewater systems to meet the needs of the current population. For this project, the service area is defined as the Urban Area Village of Nobleton Boundary including current and planned water and wastewater servicing areas. The study area includes the service area with the addition of the potentially impacted lands due to new infrastructure requirements for providing water and collecting and treating wastewater for our residents.



This study is following the process for Municipal Class Environmental Assessment studies set by the province of Ontario. An environmental assessment study (or EA study) is a planning process to assess the environmental impacts of proposed infrastructure initiatives before they are carried out. We are currently in Phase 3 of the study, which aims to identify and evaluate alternative design concepts for the recommended water and wastewater solutions. We incorporated input received during both the first open house (held in February 2019) and the second open house (held in November 2020) into the study. This Open House will be followed by Phase 4 of the Class Environmental Assessment Process which will be a compilation of the studies and investigations completed as part of this EA.

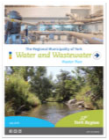


We invite you to stay informed throughout the study process by visiting the project webpage at york.ca/nobletonea. Input received during the current open house will be addressed in the Environmental Study Report (ESR); once drafted, the ESR will be posted for a 30-day public review and comment period.

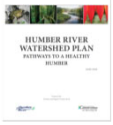
Plans for Consideration

This Class EA must also consider input from various existing documents

Places to Grow



York Region's 2016 Water and Wastewater Master Plan



Humber River Watershed Plan

King Township (Our King) Official Plan, 2019

Oak Ridges Moraine Conservation Plan

Clean Water Act / Source Protection Plan

York Region's 2010 Official Plan

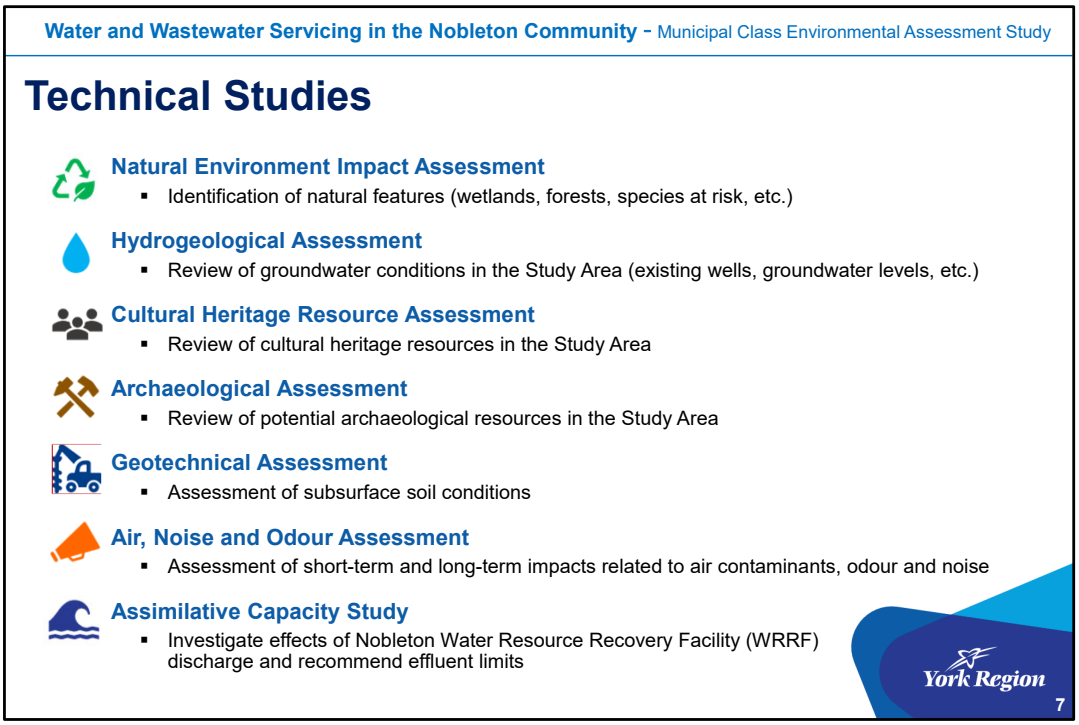
Greenbelt Plan

Provincial Policy Statement

York Region

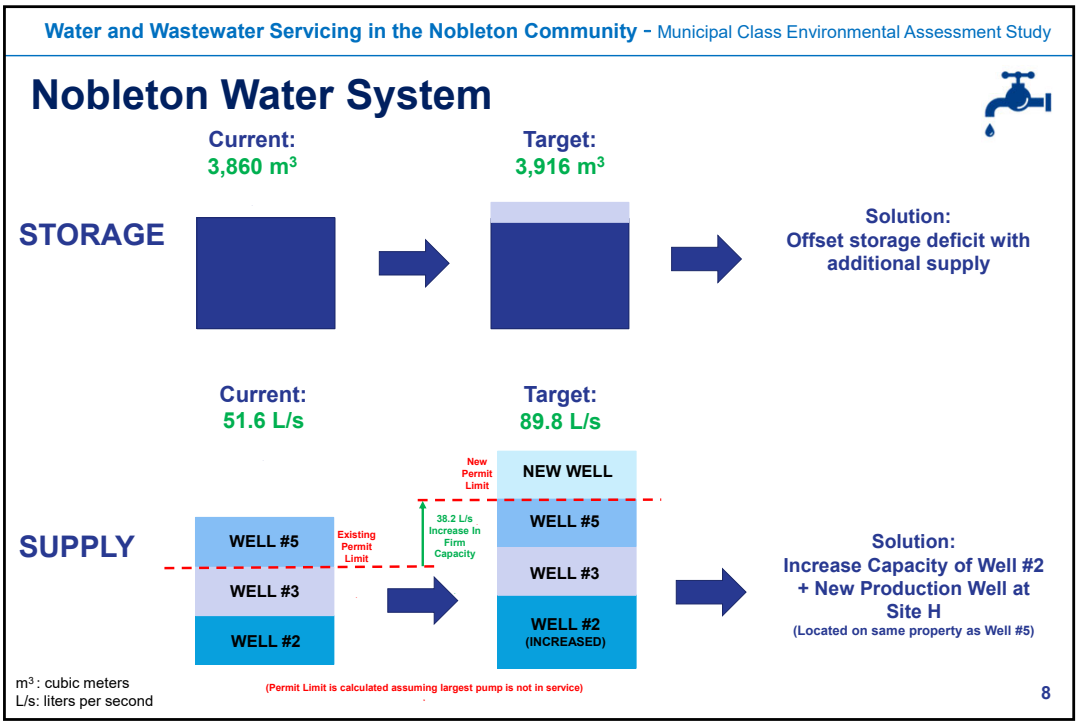
6

This Class Environmental Assessment considers input from various existing plans. This includes all existing and proposed regulations and policies within the documents shown, such as the York Region Water and Wastewater Master Plan, the Greenbelt Plan and the Township of King's Official Plan.

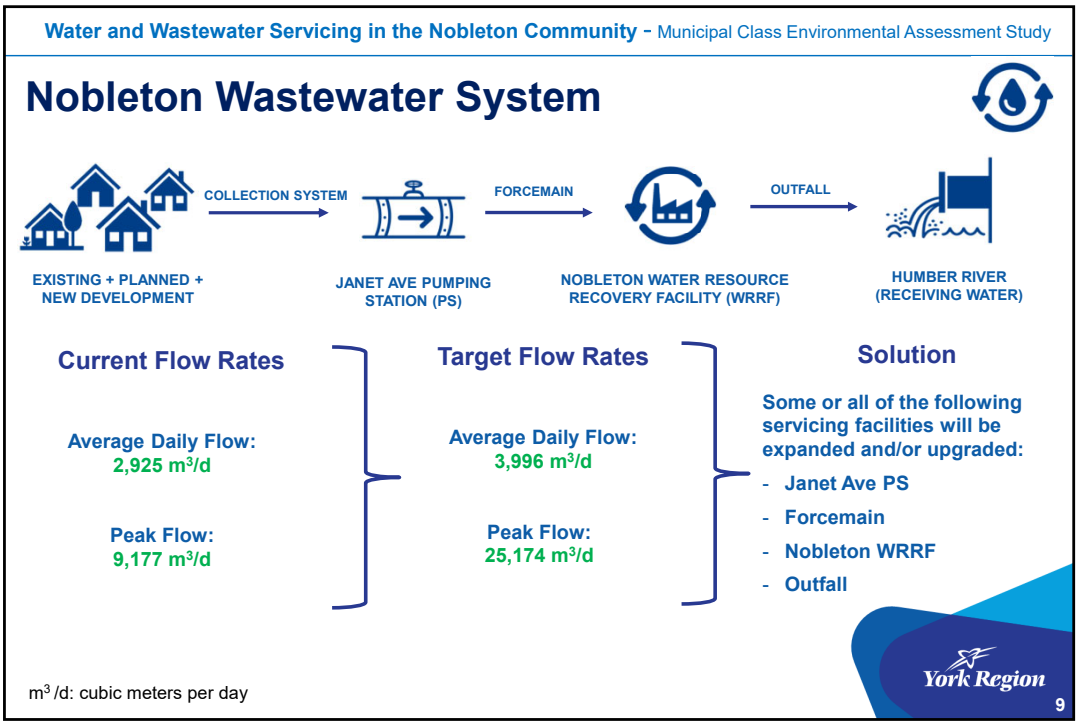


Several technical studies were undertaken/are underway to better understand the existing natural, social and built environments within the Study Area to inform the evaluation of design concepts. These studies tell us how the natural environment, groundwater conditions, cultural heritage resources, potential archaeological resources, soil conditions, air, noise and odours, effluent limits and contaminants may impact or be impacted by the various design concepts being considered.

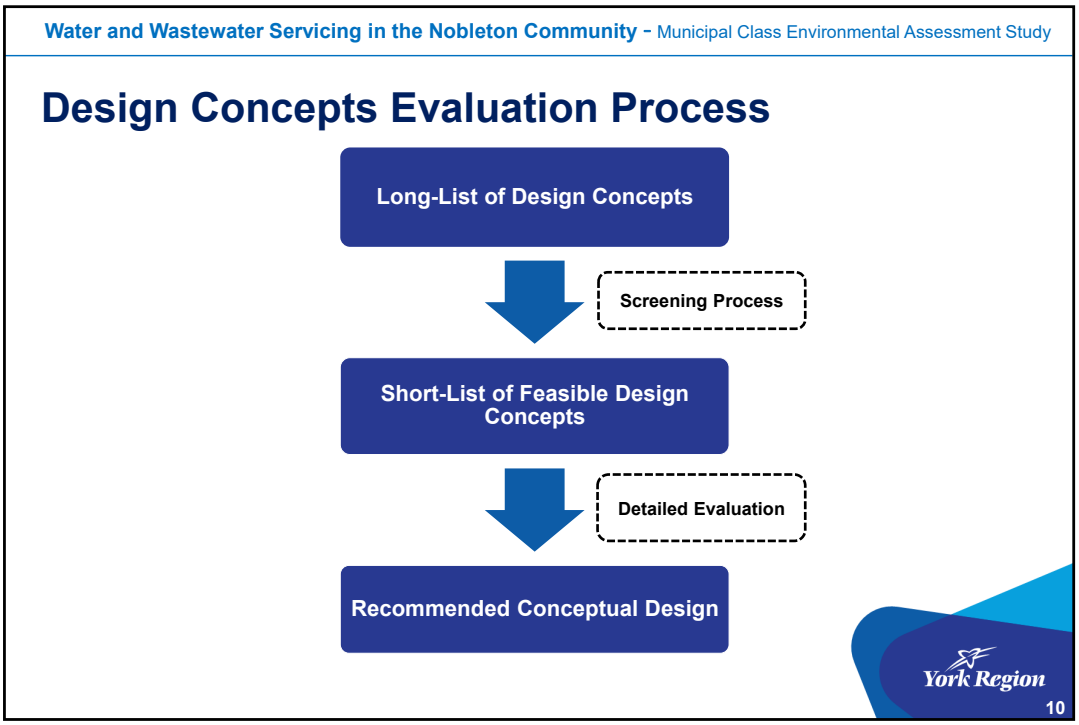
Since all upgrades and expansions for the water and wastewater design concepts are expected to occur within existing property lines of the facilities, it is expected there will be negligible immediate or long-term impacts. Unavoidably, during construction an increase in noise will be experienced in nearby the areas where construction will take place. However, proper noise mitigation measures will be put in place to minimize disturbances. Any long-term noise and odour concerns will be addressed during the design stage by incorporating design elements that will mitigate these effects.



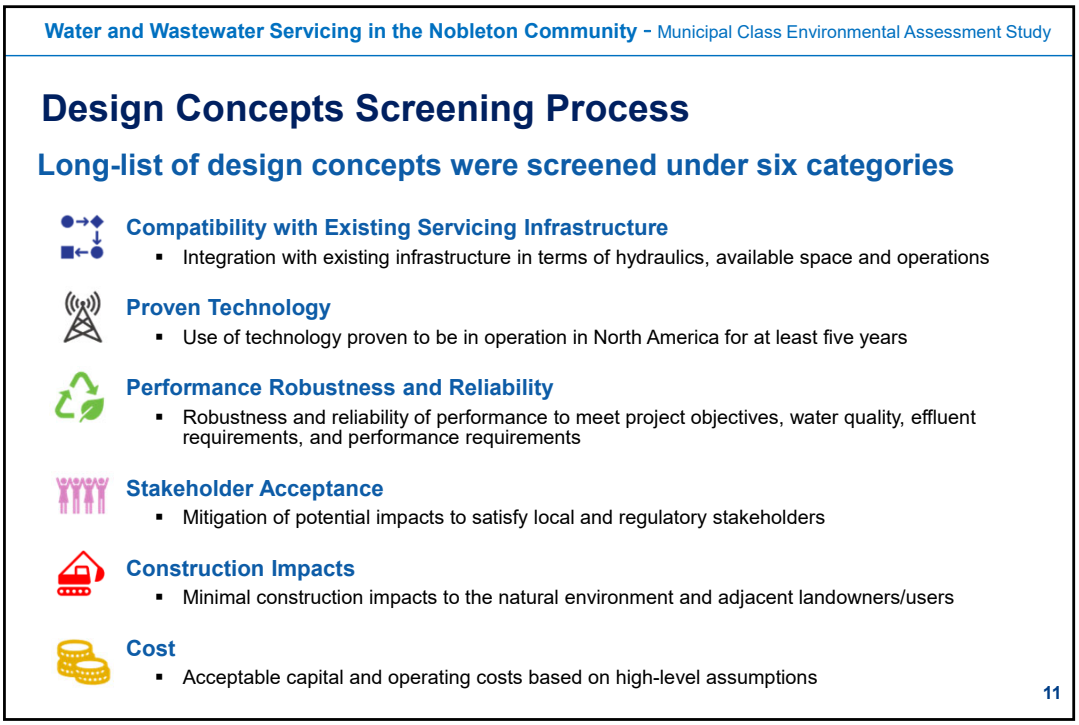
To recap, in Phase 1 of this Environmental Assessment study, we assessed Nobleton's water system storage and supply needs. The results showed that to meet forecasted growth, additional water supply and storage capacity is needed. In Phase 2, different alternative solutions were evaluated. The additional storage needed is minimal and a new storage facility will be underutilized. Thus, to address both the storage and supply needs, the most feasible solution will be to expand the capacity of Well #2 in addition to a new well and treatment facility at Site H. The additional wells will provide enough water to meet the projected supply demands and the additional pumping capacity will address storage needs. In Phase 3, design concepts for this solution were screened and evaluated as described in the next few slides.



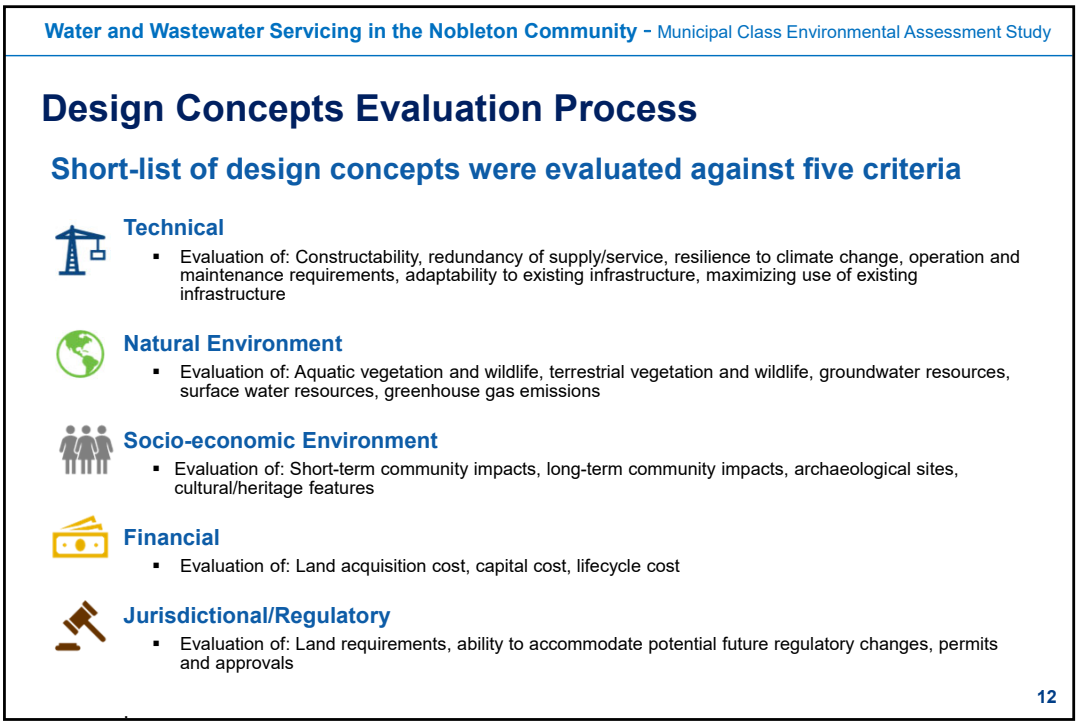
In Phase 1 of this Environmental Assessment study, Nobleton's wastewater system needs were assessed, and it was identified that both the daily and peak wastewater system capacity needed to be increased. In Phase 2, several alternative solutions were evaluated. It was determined that some or all of the wastewater servicing facilities might be expanded or upgraded to meet our community's needs.



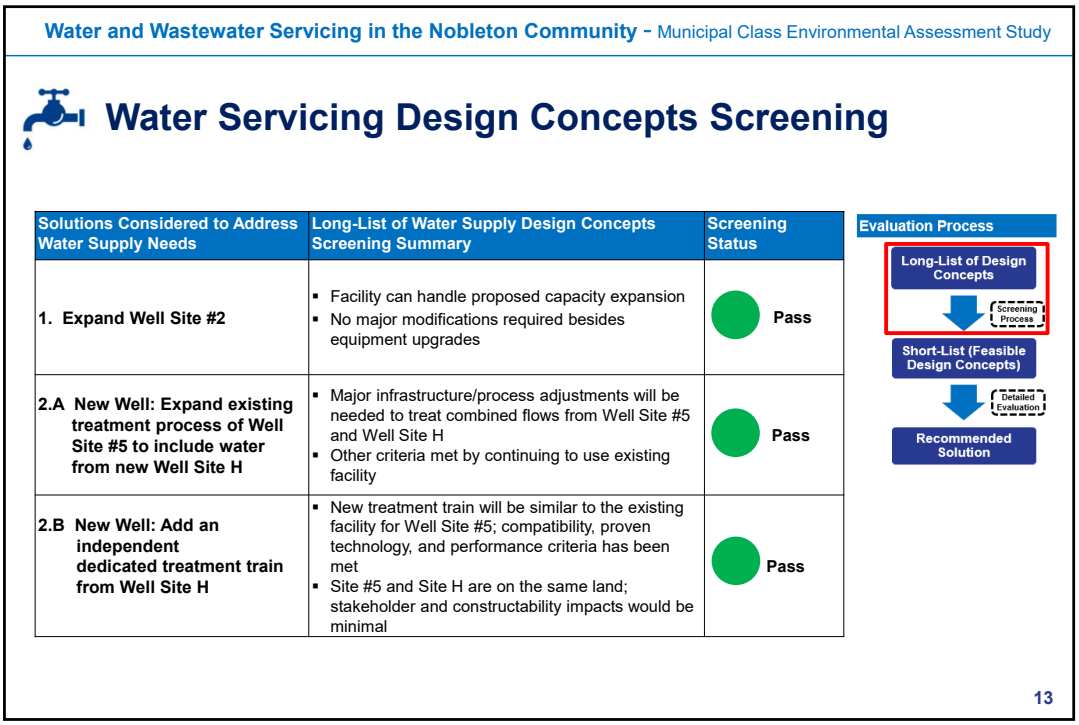
The design concepts for water and wastewater servicing were developed, refined, and evaluated using a two-stage process. First, a long list of design concepts was screened with a set of “pass/fail” screening criteria. Design concepts that passed the screening were included in a shortlist of feasible design concepts. Shortlisted design concepts were then evaluated in detail. Following a detailed evaluation, recommended design concepts were identified and developed for water and wastewater servicing.



The long list of design concepts was screened based on six categories. These categories included their compatibility with existing servicing infrastructure, proven technology, performance robustness and reliability, stakeholder acceptance, minimal construction impacts, and cost. Performance robustness and reliability, for example, looks at the ability of the infrastructure to withstand stress over its lifetime – providing residents with consistent water and wastewater servicing over time.



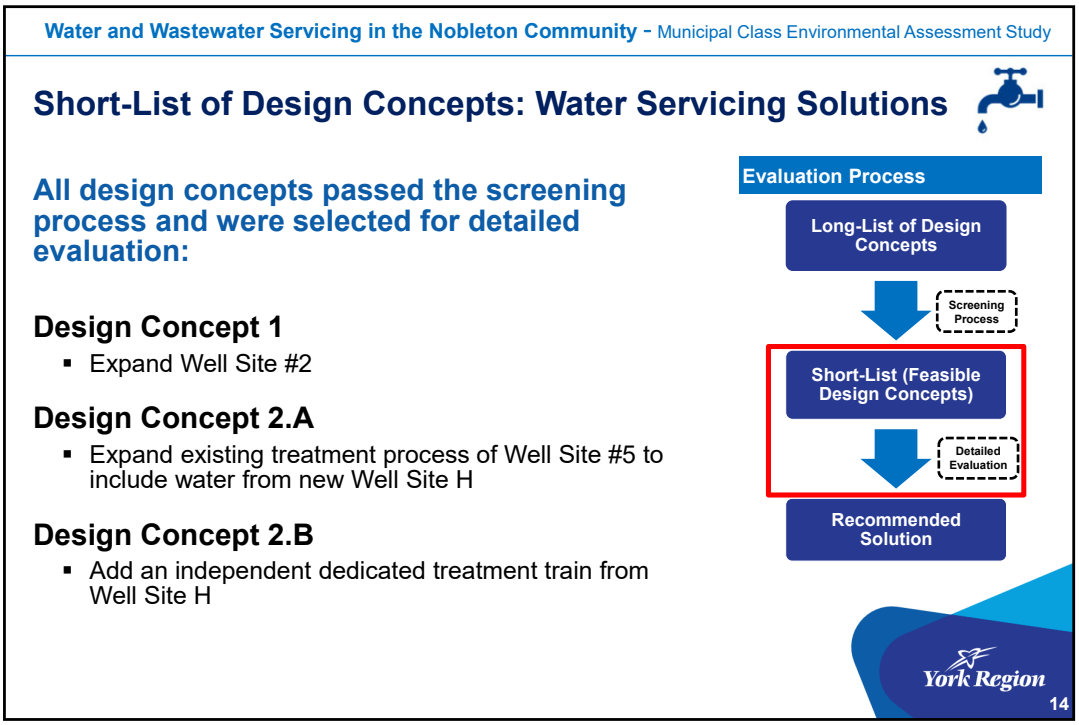
The design concepts that passed the initial screening criteria underwent a detailed evaluation against technical, natural environment, socio-economic environment, financial, and jurisdictional/regulatory criteria to assess both the short-term and long-term impacts of the proposed design concepts.



Three design concepts were developed to address the previously identified water supply need. All three solutions passed the initial screening and were included in the short list of feasible design concepts.

Design Concept 1: Expand Well Site #2 was carried forward since expansion can be completed using the existing facility infrastructure and equipment. Additional chemical feed will be required to treat additional flows, but no other major infrastructure adjustments are needed.

For the new well at Site H, two alternative design concepts were developed. Design Concept 2.A includes expanding the existing treatment process of Well Site #5 to include water from new Well Site H. Design Concept 2.B involves adding an independent dedicated treatment train (series of treatment steps to obtain drinkable quality water) from Well Site H. Although Design Concepts 2.A and 2.B require additional infrastructure and process requirements, both design concepts passed screening and were advanced for a more detailed evaluation and comparison.

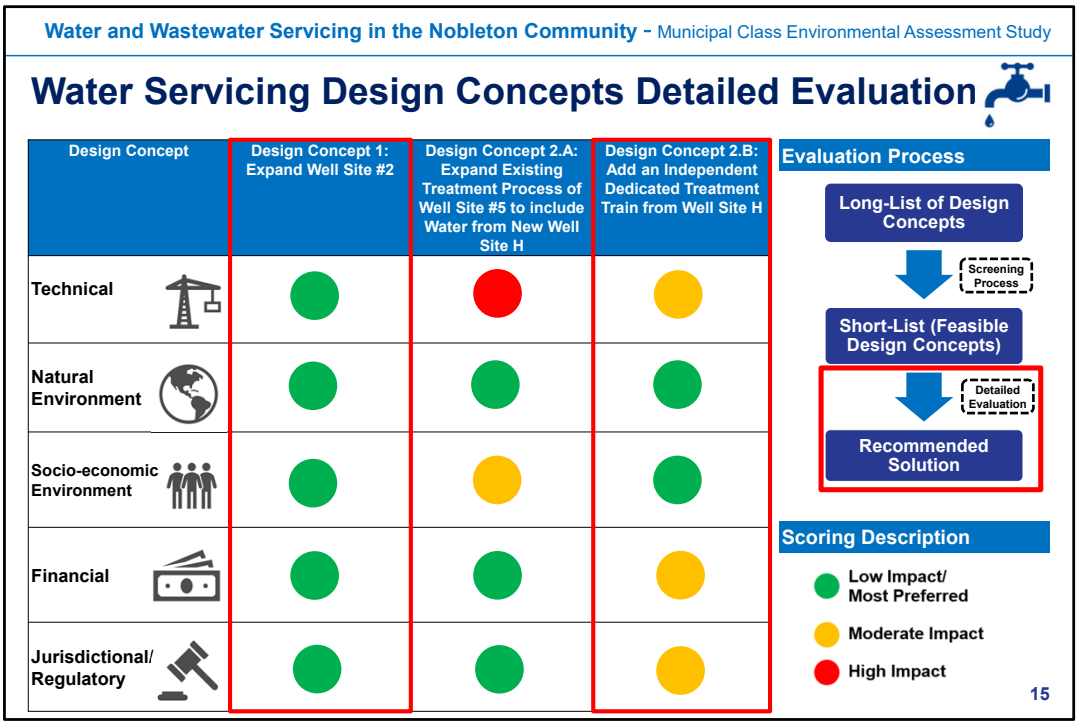


Three alternatives passed the screening process and were included in the shortlist. The shortlisted water supply alternatives are:

Design Concept 1 – Expansion of Well Site #2;

Design Concept 2.A – Expand existing treatment process of Well Site #5 to include water from new Well Site H; and

Design Concept 2.B – Add an independent dedicated treatment train from Well Site H.



As shown in the table, all the shortlisted water design concepts were scored under the five evaluation categories.

Design concept 1: Expand Well Site #2 ranked as having a low impact, low complexity, and high compatibility in all categories.

For the New Well at Site H, the evaluation favoured Design Concept 2.B: Add an Independent Dedicated Treatment Train for Well Site H. This alternative has the least impact on the drinking water supply to the community and was chosen over Design Concept 2.A.

Both Design Concept 1 and Design Concept 2.B are recommended as water servicing solutions. These two design concepts together will meet the water demands to meet the population growth.

Water Servicing Recommended Design Concept: Expansion of Well #2 and Addition of an Independent Dedicated Treatment Train for Well Site H

Expand Well Site #2

Technical
- No challenges

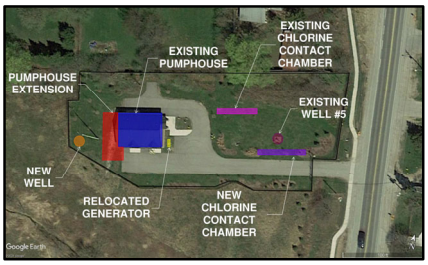
Natural Environment
- No impacts beyond current Well #2 Facility impacts

Socio-Economic
- Minimal community impacts during construction

Financial
- No major cost besides minor equipment upgrades

Jurisdictional/Regulatory
- Minor additional permitting

Add an Independent Dedicated Treatment Train from Well Site H



Technical
- No challenges; no impact on current water supply

Natural Environment
- Minor vegetation impact during construction

Socio-Economic
- Minor impacts during construction and future operation

Financial
- Moderate cost due to new facility construction

Jurisdictional/Regulatory
- Additional permits required

16

In summary, Design Concept 1: Expansion of Well #2 and Design Concept 2.B Addition of an Independent Dedicated Treatment Train for Well Site H ranked the highest during the evaluation and were chosen as the recommended design concepts. A summary of the detailed evaluation of the two recommended design concepts is provided on this slide.

The expansion of well site #2 has no technical, environmental, socio-economic or regulatory challenges since expansion will occur within the already existing and approved facility. Additionally, this design concept has minor costs since only minor equipment upgrades are required.

The Addition of and Independent Dedicated Treatment Train for Well Site H has no technical challenges but there are potential minor impacts to the community and vegetation during construction. Since a new treatment facility will be built, this alternative is of moderate cost and will require additional permitting.

Wastewater Servicing Solutions

Solutions focused on two different parts of the wastewater system:

Pumping and Flow Attenuation

- Design concepts focused on reducing high peak flows through attenuation at Janet Avenue Pumping Station and/or Nobleton Water Resource Recovery Facility

Nobleton Water Resource Recovery Facility (WRRF)

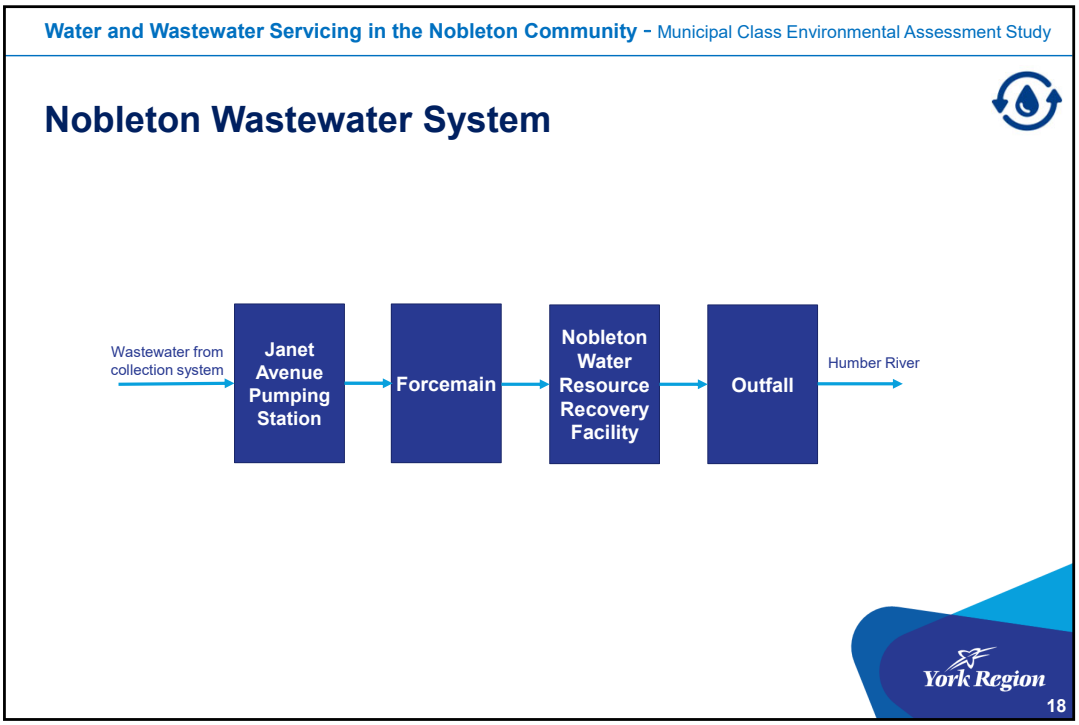
- Design concepts focused on upgrades and expansions in the treatment plant to meet future flows and effluent quality requirements

17

For wastewater servicing, two solutions were developed focusing on two different parts of the wastewater system.

The first solution focuses on design concepts for pumping and flow attenuation. Flow attenuation is the reduction of high peak flows throughout the wastewater system to better manage wastewater during wet weather events. Attenuation can be achieved through the use of structures such as pipes or tanks that can store wastewater in order to mitigate above average flows. These design concepts will provide flow attenuation at Janet Avenue Pumping Station and/or Nobleton Water Resource Recovery Facility, along with upgrades to the forcemain and/or outfall.

The second solution focuses on design concepts for the Nobleton Water Resource Recovery Facility (WRRF). The water resource recovery facility is a wastewater treatment plant that treats received wastewater and produces treated effluent that is capable of being discharged into the Humber River meeting the Ministry of the Environment, Conservation and Park's (MECP's) compliance limits. As part of the wastewater servicing solution, upgrades and expansions to the different treatment processes in the plant are needed to meet future flows and treated effluent quality.

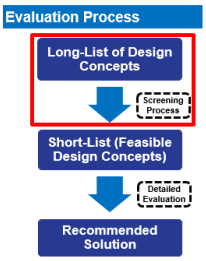


Nobleton's wastewater servicing starts with a gravity collection system that consists of 50 km of gravity sewers that collect wastewater from Nobleton. These gravity sewers carry wastewater to Janet Avenue Pumping Station where three pumps convey wastewater to a 300mm forcemain. Wastewater is carried in the forcemain to the Nobleton Water Resource Recovery Facility where wastewater is treated. The treated water then flows through a 450 mm gravity pipe to the Humber River.

For the wastewater pumping and flow attenuation solution, attenuation could be implemented in any or several of these facilities to minimize peak flow rates.

Wastewater Pumping and Attenuation Design Concepts Screening

Design Concepts for Wastewater Pumping and Attenuation	Long-List of Design Concepts Wastewater Pumping and Attenuation Screening Summary	Screening Status
1. No flow attenuation: expand Janet Avenue Pumping Station, twin existing forcemain, expand Nobleton Water Resource Recovery Facility (WRRF), twin outfall	▪ Requires expansion of entire wastewater system ▪ Results in oversized pump station and forcemain that will remain underutilized ▪ Expensive due to major construction required	Fail
2. Flow attenuation at Nobleton WRRF: expand Janet Avenue Pumping Station, twin existing forcemain, expand Nobleton WRRF, provide equalization tank at Nobleton WRRF	▪ Expanded pump station, twinned forcemain, and Water Resource Recovery Facility will remain underutilized except during large storm events ▪ High cost due to additional pump station required for equalization tank	Fail
3. A Flow attenuation at Janet Avenue Pumping Station with a Below Grade Storage Tank: expand Janet Avenue Pumping Station, provide equalization tank/pipe at pumping station, expand Nobleton WRRF	▪ Alternative eliminates twinning of 4.5 km of forcemain and 670 meters of outfall ▪ Requires the least civil and structural work upgrades	Pass
3. B Flow attenuation at Janet Avenue Pumping Station with a Gravity Pipe: expand Janet Avenue Pumping Station, provide equalization tank/pipe at pumping station, expand Nobleton WRRF	▪ Alternative eliminates twinning of 4.5 km of forcemain and 670 meters of outfall ▪ Requires the least civil and structural work upgrades	Pass

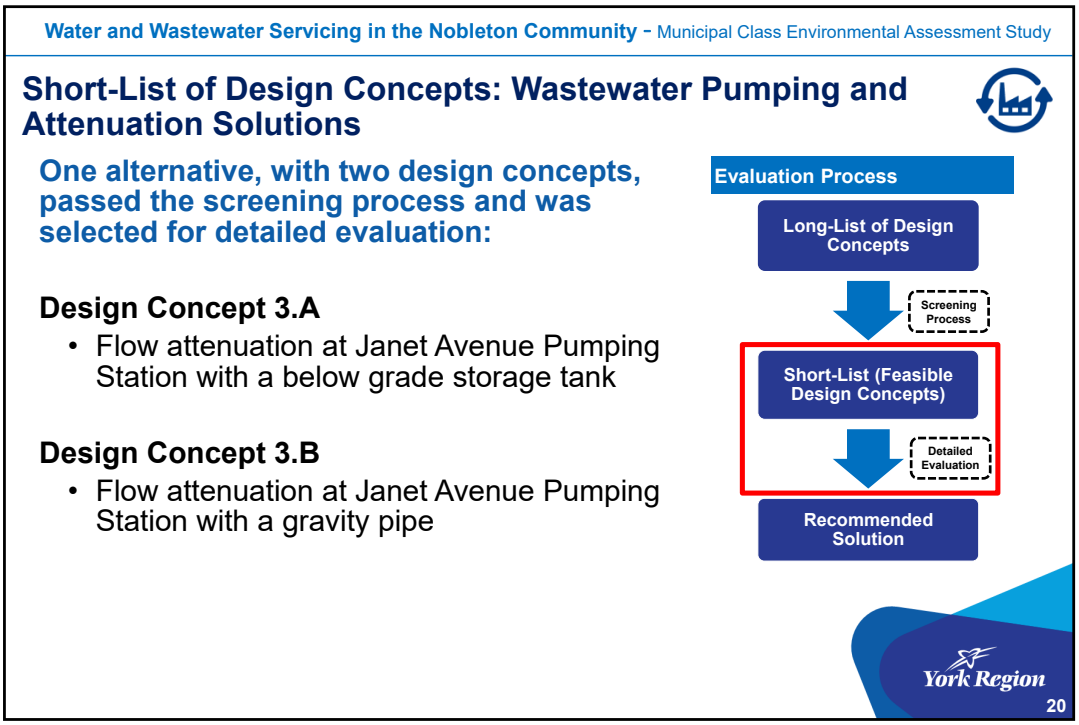


19

A long list of wastewater pumping and attenuation design concepts was developed to address wastewater servicing needs. A design concept with no attenuation and three design concepts with flow attenuation were developed; out of the three, one design concept passed the screening for further evaluation.

No flow attenuation and flow attenuation at the Nobleton Water Resource Recovery Facility did not pass the screening because both design concepts are high-cost expansions and will result in an oversized forcemain and pumping system.

Alternatives 3.A and 3.B: Flow attenuation at Janet Avenue Pumping Station with either an underground storage tank or a gravity pipe met all screening criteria . These alternatives eliminate twinning of the forcemain and outfall, require the least structural and civil modifications to existing facilities, and provide enough storage to accommodate high wastewater flows during storm events, to be released back into the pumping station during low flow periods.

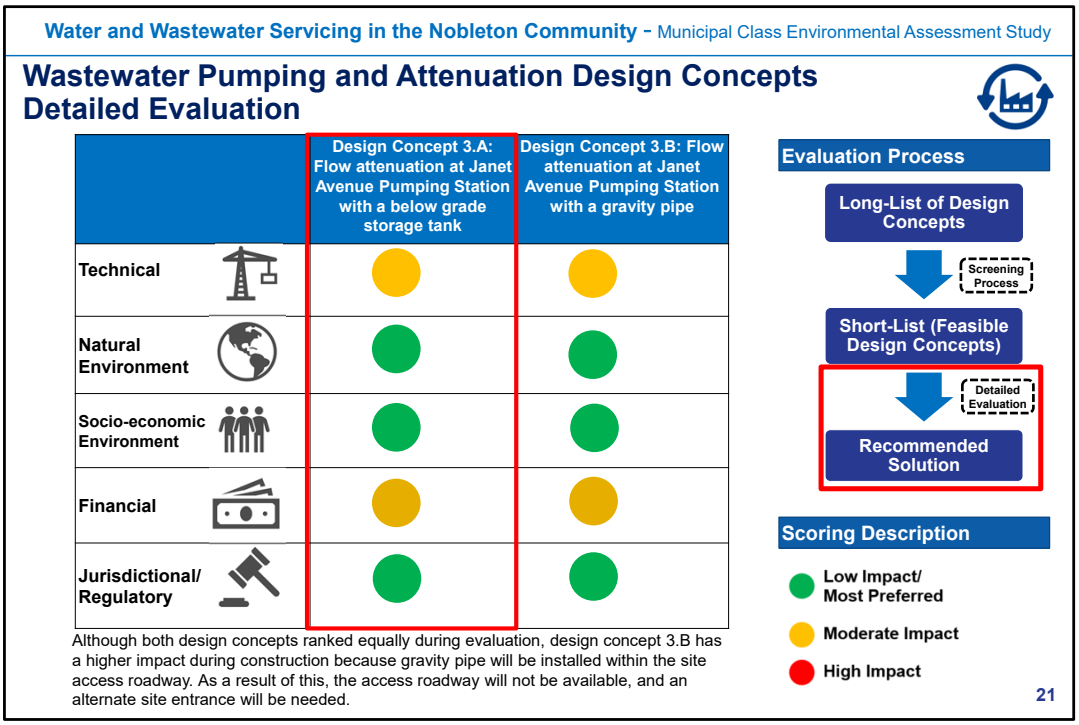


One alternative, with two design concepts, passed the screening process and was included in the shortlist. The shortlisted wastewater pumping, and attenuation design concepts are:

Design Concept 3.A: Flow attenuation at the Janet Avenue Pumping Station with an underground storage tank that will be below grade. This means that flows above the capacity of the Janet Avenue Pumping Station will be automatically diverted to a tank for storage and will be released back to the pumping station when the flows return to normal conditions.

Design Concept 3.B: Flow attenuation at the Janet Avenue Pumping Station with a gravity pipe. This means that flows above capacity of Janet Avenue Pumping Station will be stored either in an oversized pipe or diverted to a new pipe for storage and released back to the pumping station when a storm has passed.

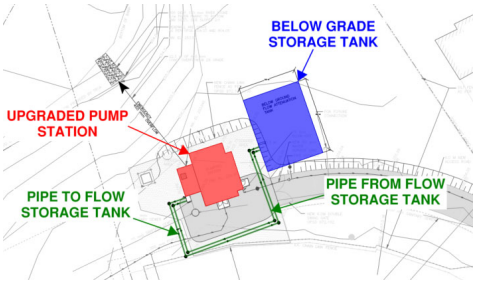
Both design concepts will also require an expansion of Janet Avenue Pumping Station and expansion of the Nobleton WRRF.



As shown in the table, both shortlisted flow attenuation wastewater design concepts were scored under the five evaluation categories.

Both design concepts are generally equal. Design Concept 3.B: Flow attenuation at the Janet Avenue Pumping Station with a gravity pipe would have a higher impact during construction because the gravity pipe will be installed along the access roadway. As a result, the access roadway will not be available and a temporary access road will be required. Since Design Concept 3.A: Flow attenuation at the Janet Avenue Pumping Station with a storage tank would result in lower construction impacts, it was recommended for further conceptual design.

Wastewater Pumping and Attenuation Recommended Design Concept: Storage Tank at Janet Avenue Pumping Station



Technical
- No challenges or impacts during construction
- No interruption to access roadway during construction

Natural Environment
- Minor impact on vegetation, water resources, and wildlife
- Moderate increase in greenhouse gas emissions due to higher energy requirement for pumping

Socio-Economic
- No anticipated community impacts

Financial
- Most economical capital investment and lifecycle cost

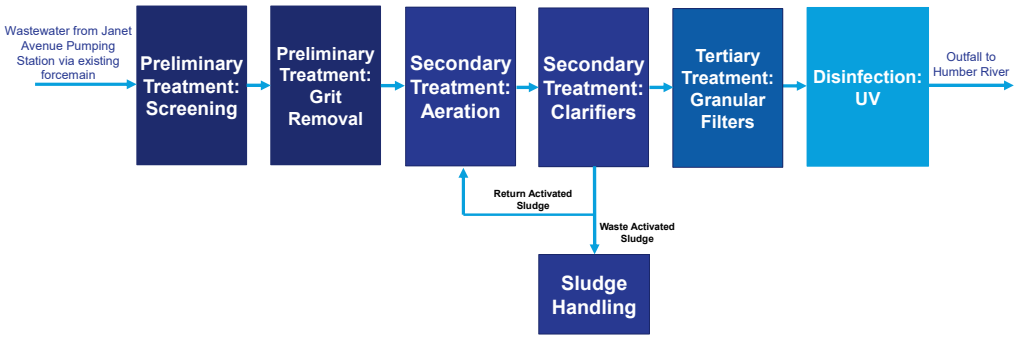
Jurisdictional/Regulatory
- Amendments to existing permits

22

Design Concept 3.A: Flow Attenuation at the Janet Avenue Pumping Station with a storage tank ranked the highest during the evaluation and was chosen as the recommended design concept. Janet Avenue Pumping Station would be upgraded, and a new storage tank would be built below grade for flow attenuation. A summary of the detailed evaluation of the design concept is provided on this slide.

The expansion of Janet Avenue Pumping Station and construction of a storage tank will provide high redundancy and maximize existing infrastructure since all upgrades and construction will occur on the existing site. Overall, this design concept will have low environmental impacts except for an increase in greenhouse gas emissions due to higher energy requirements for pumping . There will be no long-term community impacts and only amendments to existing permits will be required.

Nobleton Water Resource Recovery Facility (WRRF) Processes Overview

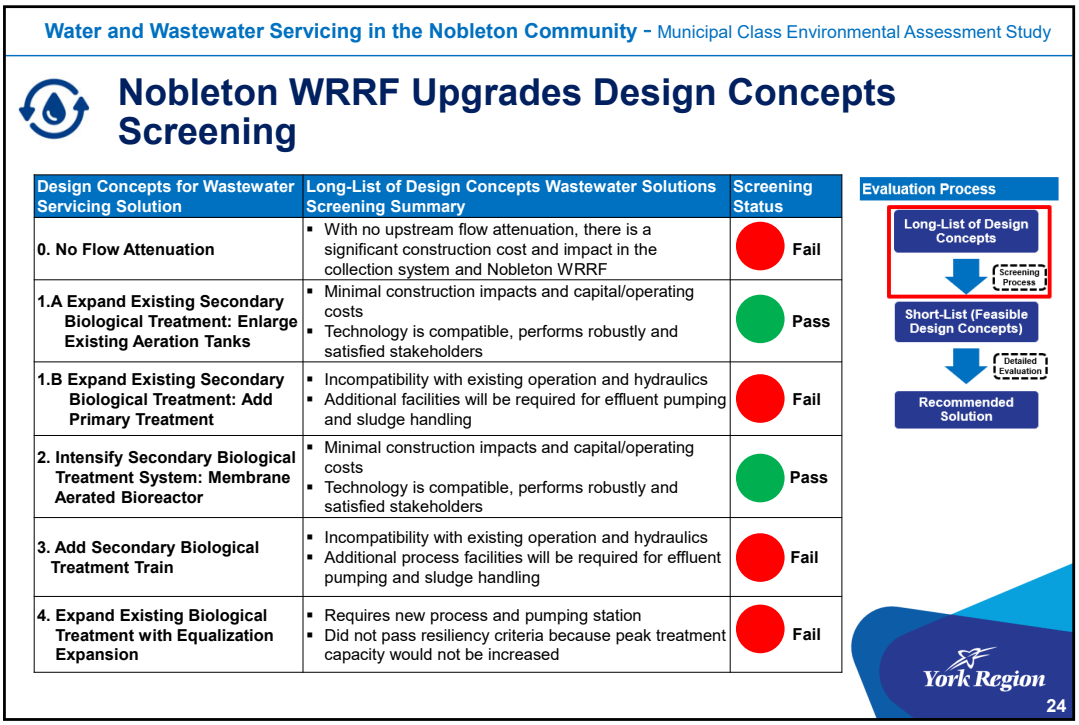


23

Wastewater treatment consists of multiple processes to transform raw sewage into treated effluent.

The diagram shown here highlights the main treatment processes in the Nobleton Water Resource Recovery Facility used to treat wastewater to effluent quality suitable of being discharged into the Humber River. The preliminary treatment removes debris and particulate matter (solids). Then, secondary treatment, tertiary treatment, and disinfection remove remaining particulate matter, organic compounds and pathogens. The most critical process for achieving the desired effluent quality is the secondary biological treatment process. The secondary biological treatment forms the heart of the wastewater treatment process. It is largely responsible for the quality of treated effluent discharged.

Different design concepts were developed for the Nobleton WRRF upgrades, focusing on alternatives to upgrade the secondary biological treatment process.



The Nobleton Water Resource Recovery Facility will need to be expanded and upgraded to meet future flow rates and effluent quality requirements. Design concepts focus on the expansion, intensification and/or upgrade of the secondary biological treatment process. Design Concept 0 does not consider any flow attenuation and would require expanding all facilities at the Nobleton Water Resource Recovery Facility and collection system to treat peak flows. All other design concepts consider some flow attenuation that will reduce the peak flows and focus on expanding only certain facilities. Two design concepts passed the screening and were subjected to further evaluation.

Design Concept 0: No flow attenuation - did not pass the screening due to the high cost and impact of expanding the collection system and all components of the water resource recovery facility.

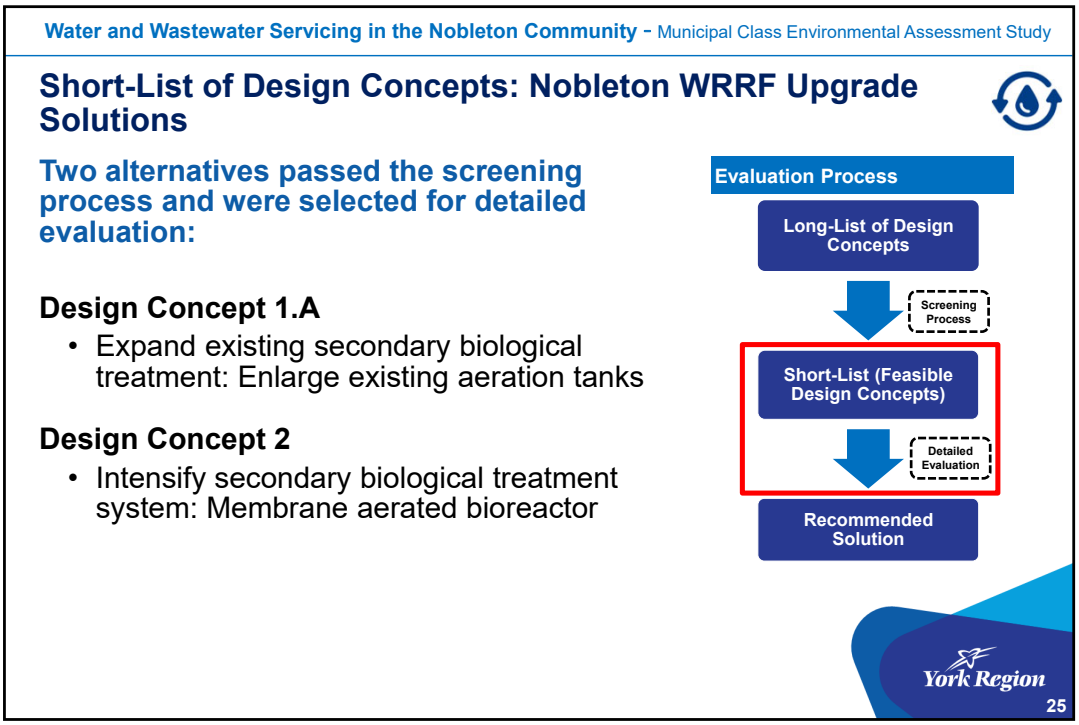
Two design concepts were considered for the expansion of the existing secondary treatment. Design Concept 1.A requires the expansion of existing aeration tanks and passed all the screening criteria. Aeration tanks are biological reactors, where bacteria are used to treat wastewater. Design Concept 1.B requires additional primary treatment to minimize loading on the aeration tanks; this alternative did not pass the screening due to

incompatibility with existing systems.

Design Concept 2: Intensify Secondary Biological Treatment requires the use of technology to increase biological treatment capacity without enlarging existing aeration tanks. This alternative passed all the screening criteria.

Design Concept 3: Add Secondary Biological Treatment Train would include a new, independently operated treatment train. Due to incompatibility with current operations, this alternative did not pass the screening criteria.

Design Concept 4: Expand Existing Biological Treatment with Equalization Expansion did not pass the screening criteria because peak treatment capacity would not be increased under this alternative. Equalization involves shaving off the peak flows received into a storage tank and pumping them back during periods of low flow. The objective is to provide a consistent flow pattern into the treatment plant.

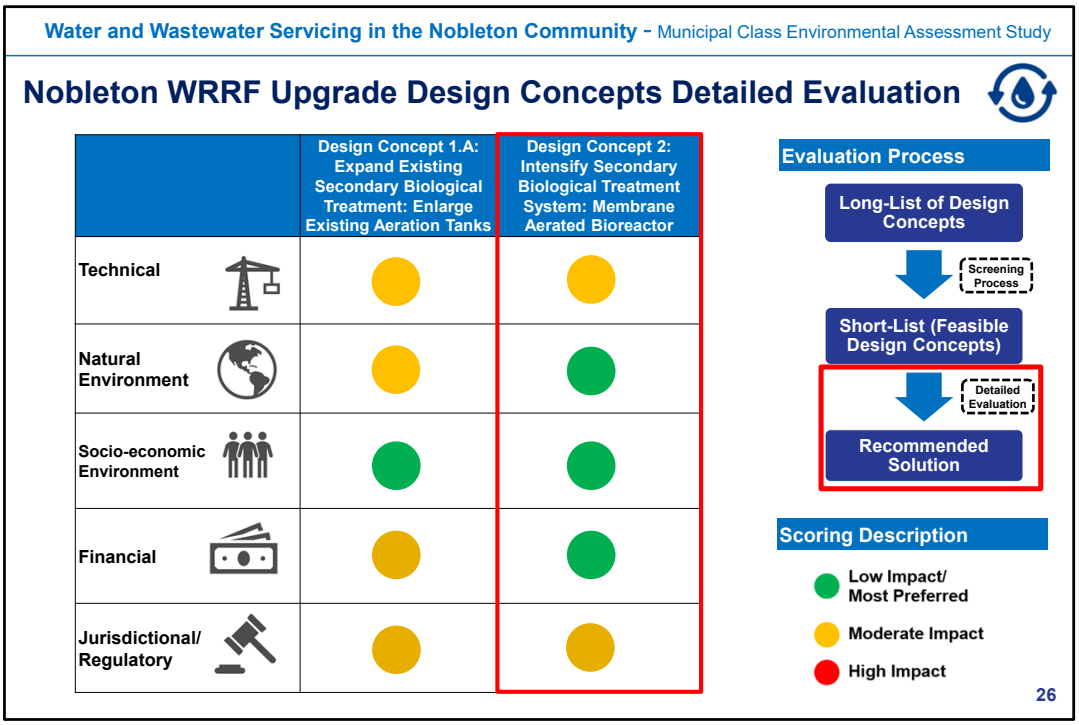


Two alternative design concepts passed the screening process and were included in the shortlist. The shortlisted wastewater servicing design concepts are:

Design Concept 1.A: Expand Existing Secondary Biological Treatment: Enlarge Existing Aeration Tanks;

Design Concept 2: Intensify Secondary Biological Treatment System

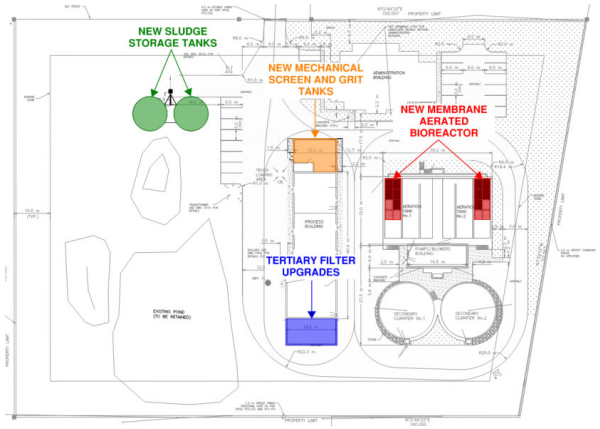
The two Nobleton Water Resource Recovery Facility shortlisted design concepts focus on the upgrades for secondary biological treatment, which is the most critical process to reach effluent quality. All other treatment processes in the Nobleton Water Resource Recovery Facility will require some degree of upgrade. Different technologies for each treatment process were evaluated using the same two-stage process.



As shown in the table, both shortlisted design concepts were scored under the five evaluation categories.

Design Concept 2: Intensify Secondary Biological Treatment System was chosen as the recommended design concept due to its lower energy requirements that result in lower greenhouse gas emissions, lower lifecycle costs, and flexibility to meet future regulatory changes.

Nobleton WRRF Upgrade Recommended Design Concept: Intensify Secondary Biological System – Membrane Aerated Bioreactor (MABR)



Technical
- Existing facilities will need to be modified to accommodate intensification processes

Natural Environment
- No impact on vegetation, water resources, and wildlife

Socio-Economic
- No anticipated community impacts

Financial
- Lowest cost alternative

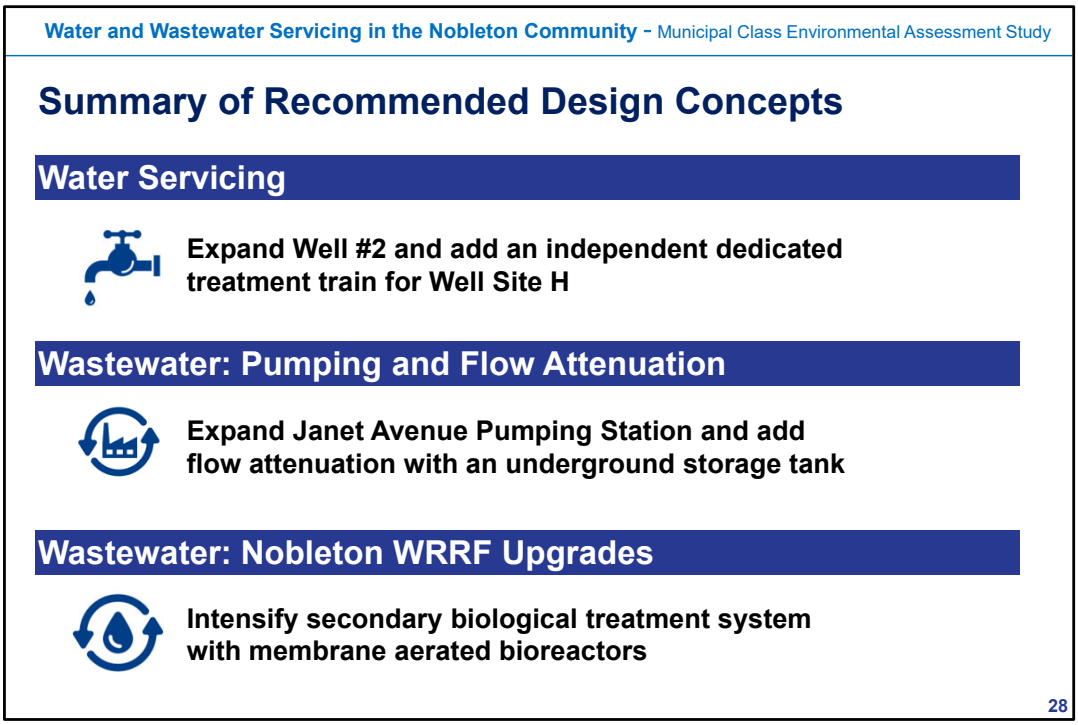
Jurisdictional/Regulatory
- Additional permits required due to lack of full-scale Membrane Aerated Bioreactor (MABR) processes

York Region

27

Design Concept 2: Intensify Secondary Biological System ranked the highest during the evaluation and was chosen as the recommended design concept. A summary of the detailed evaluation of the design concept is provided on this slide.

Along with the intensification of the secondary biological treatment, several other upgrades will be required in the different treatment processes of the water resource recovery facility. All upgrades and expansions will occur in the already existing facility so there will be negligible long-term community or environmental impacts. The only challenge with this design concept, is the additional permits that will be required to approve use of new membrane aerated bioreactors.

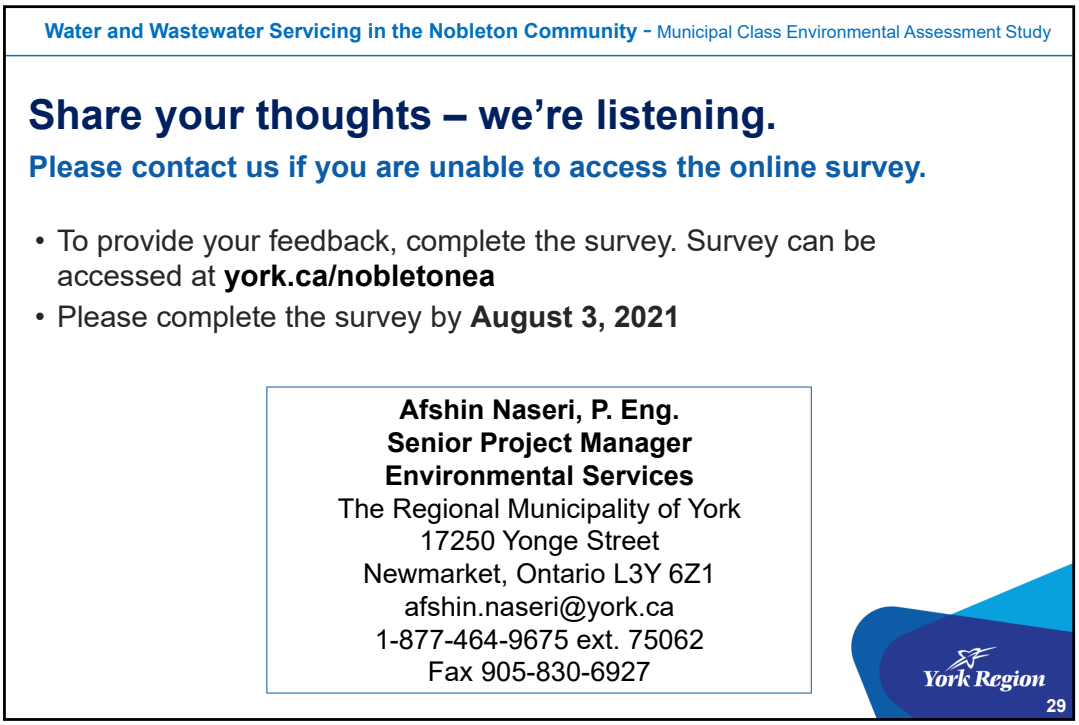


To summarize, this slide lists the recommended water and wastewater servicing design concepts.

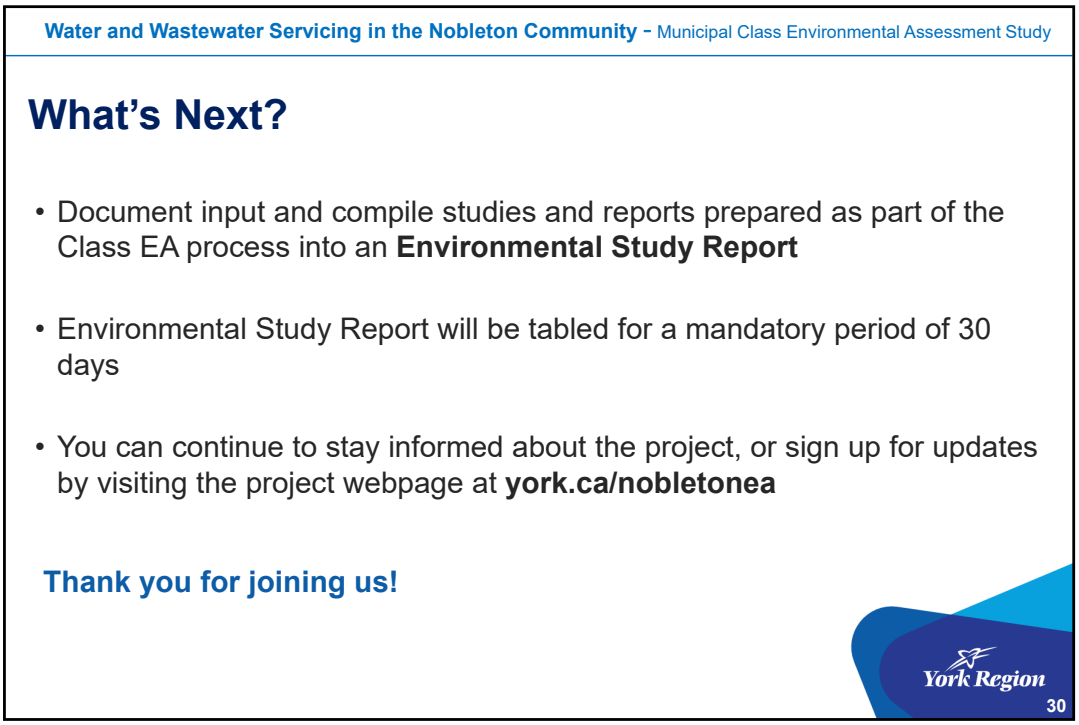
The recommended water servicing design concept involves expanding the existing Well #2 capacity and adding a new well at Site H with a second treatment train. The increase in water supply will meet the needs of our growing community.

The recommended wastewater design concept involves expanding Janet Avenue Pumping Station and adding a storage tank for flow attenuation. Flow attenuation will help reduce high peak flows into the wastewater pumping system and eliminate the need to upgrade the forcemain and outfall. The expansion of the pumping station and the new storage tank will increase the capacity of the wastewater pumping system to accommodate projected growth in Nobleton.

The recommended Nobleton Water Resource Recovery Facility upgrade design concept involves intensifying the Secondary Biological System and upgrades in other treatment processes. These upgrades will increase the treatment capacity of the water resource recovery facility for Nobleton’s future.



We want to hear from you! To provide your feedback, please complete the survey online by **Tuesday, August 3, 2021**. The survey can be accessed at york.ca/nobletonea. If you cannot access the online survey or have any other questions or comments, please let us know by contacting the Region's Project Manager.



The next steps for the Class Environmental Assessment study are to document public and stakeholder input and compile all the studies and reports prepared into an Environmental Study Report, which will be tabled for public review and comment for a mandatory period of 30 days.

You can continue to stay informed about the project or sign up for updates by visiting the project webpage at york.ca/nobletonea.

Thank you for your joining us, for your input and for your interest in this project.

THANK YOU!