Executive Summary

PART A: Introduction and Municipal Class EA Process

1. Introduction

This report documents the planning and design process carried out for the Northeast Vaughan Water and Wastewater Servicing Class Environmental Assessment (Project). The northeast portion of the City of Vaughan (City) is one of the designated "white belt" areas within the Regional Municipality of York (York Region) for accommodating provincially approved population growth. The existing water and wastewater systems are unable to accommodate the projected population growth.

As a result, water and wastewater servicing areas were established to aid in identifying the required water and wastewater infrastructure needed to service anticipated development in northeast Vaughan to 2051 (**Figure E.1**). The northeast Vaughan water service area is generally located from the King-Vaughan town boundary line to Teston Road and from Highway 27 to Dufferin Street. The northeast Vaughan wastewater service area is generally located from the King-Vaughan town boundary line to Langstaff Road, and from Kipling Avenue to Dufferin Street.

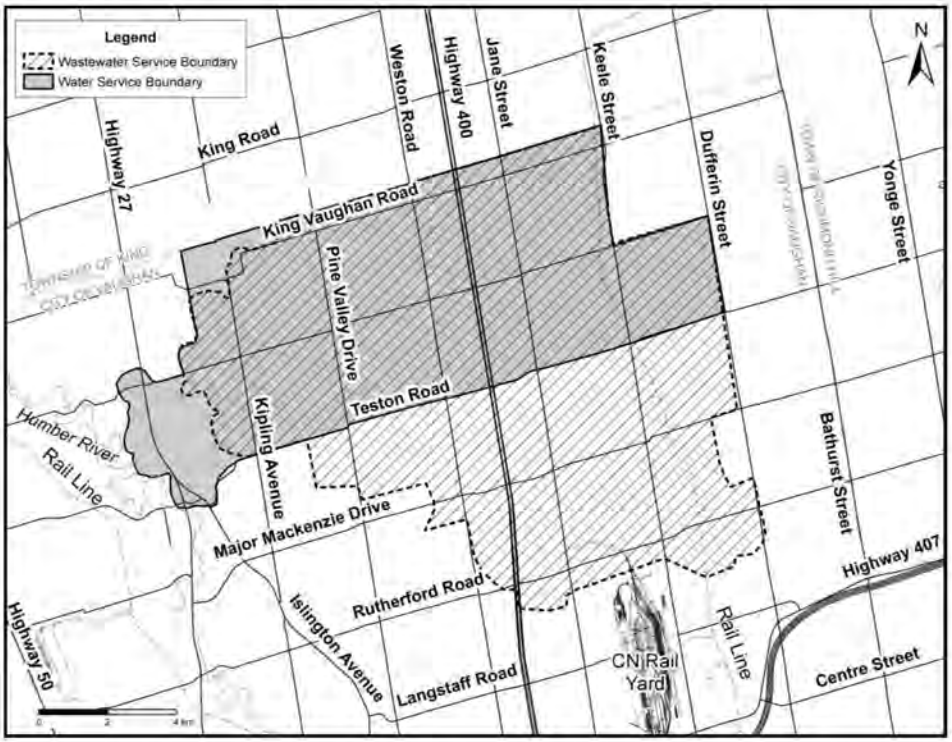


Figure E. 1 Northeast Vaughan Water and Wastewater Service Areas

2. The Municipal Class Environmental Assessment Process

York Region, like all Ontario municipalities, is subject to the *Environmental Assessment Act* (*EA Act*) for approval of municipal infrastructure prior to its implementation. The Project was therefore carried out in accordance with the Municipal Class Environmental Assessment (MCEA)[1] as a Schedule "B" activity. The Schedule "B" process requires that the first two phases of the MCEA be carried out followed by documentation of that process (i.e., Project File) for review purposes (**Figure E.2**).

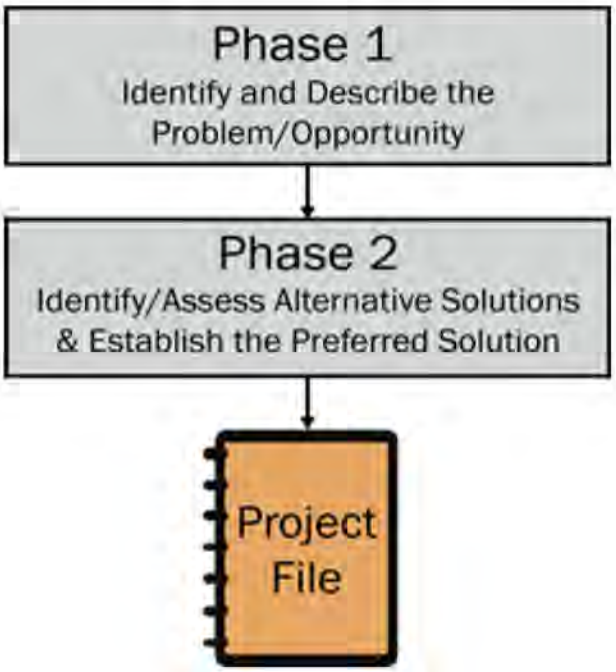


Figure E. 2 Municipal Class EA (Schedule B)

In light of the Schedule B process being followed for the Project, a summary of the specific steps identified in the MCEA that were carried out and where they are documented in this Project File Report is provided below:

- Phase 1–Problem/Opportunity (Section 3.0)
  - Step 1: Identify and describe the problem or opportunity leading to a clear problem/opportunity statement
  - Step 2: Carry out discretionary consultation to aid in formulating the problem/opportunity statement
- Phase 2–Alternative Solutions (Section 4.0)

[1] Municipal Engineers Association, Municipal Class Environmental Assessment, October 2000 (as amended in 2007, 2011 and 2015).

- Step 1: Identify and describe reasonable/feasible alternative solutions to address the problem/opportunity statement
- Step 2: Prepare a general inventory of the environment
- Step 3: Identify the net positive and negative effects of each alternative solution
- Step 4: Evaluate the alternative solutions based on their net effects to identify a recommended solution
- Step 5: Carry out mandatory consultation to solicit comments
- Step 6: Establish a preferred solution taking into account comments received

Although not necessary for fulfilling the requirements of the MCEA Schedule B process, York Region elected to carry out the additional steps associated with Phase 3 of the MCEA process within the context of Phase 2 so that, for all intents and purposes, a MCEA Schedule C process was completed for the Project. Phase 2 of the MCEA process is referred to as Phase 2A within the context of the Project.

The additional steps associated with Phase 3 of the MCEA process are referred to as Phase 2B within the context of the Project. The additional steps are documented in Sections 5.0 and 6.0 (water) and Sections 7.0 and 8.0 (wastewater).

Section 9.0 documents the consultation activities associated with the discretionary and mandatory points of contacts in the MCEA process that were specifically carried out as part of the Project.

Once the MCEA planning and design process is completed, a proponent is required to document the preceding steps in the Project File and make it available for the mandatory thirty (30) calendar day review period. In order to initiate the review period, a proponent must issue a Notice of Study Completion to those consulted as part of the MCEA planning and design process.

PART B: Problem / Opportunity

3. Phase 1 Problem / Opportunity

Both steps associated with Phase 1 of the MCEA were carried out for the Project:

- Step 1: Identification and description of the problem or opportunity (Section 3.1)
- Step 2: Discretionary public consultation (Section 3.2)

3.1 Identification and Description of the Problem/Opportunity

Provincial Growth Plan, Oak Ridges Moraine Conservation Plan, Greenbelt Plan

Provincial legislation including the *Places to Grow Act, 2005*, the *Oak Ridges Moraine Conservation Act, 2001* and the *Greenbelt Act, 2005* contain requirements that inform and influence how much and where growth in York Region will occur.

The "Final Growth Plan for the Greater Golden Horseshoe" (2006 Growth Plan) and its amendments established population forecasts to 2041 for upper and single tier municipalities with a requirement that 40 percent (minimum) of this growth be accommodated through intensification in existing built up areas[2]. The 2041 forecasts for York Region are 1.79 million (population) and 900,000 (employment).

The Oak Ridges Moraine Conservation Plan (under the *Oak Ridges Moraine Conservation Act, 2001)* aims to protect and enhance the hydrological and ecological integrity of the Oak Ridges Moraine, while recognizing existing rural settlements and allowing existing urban settlements to continue to develop within identified boundaries. The Greenbelt Plan (under the *Greenbelt Act, 2005*) protects and controls the use of additional land outside the Oak Ridges Moraine Conservation Plan area designated as Protected Countryside. As a result of the policies of these plans, in combination with existing development, only 6 percent of York Region's land base is available to accommodate the approved growth.

York Region and City of Vaughan Official Plans

Both York Region and the City of Vaughan have planned for accommodating the provincially approved growth through their respective Official Plans. The York Region Official Plan (York Region, 2009a) locates growth to 2041 within the "urban area". One such "urban area" designation is situated in the northern portion of the City of Vaughan on either side of Highway 400. This area is further designated by the City of Vaughan Official Plan (City of Vaughan, 2010) as "community areas," "new community areas," and "employment areas".

Secondary Planning Areas

Development of the planned urban structure is facilitated by Secondary Plans, identified through the City of Vaughan Official Plan. The northern portion of the City of Vaughan on either side of Highway 400 includes the following Secondary Plan areas:

- Highway 400 North Employment Lands

[2] On July 1, 2017 the 2006 Growth Plan was replaced with the Growth Plan for the Greater Golden Horseshoe, 2017, which increases the intensification target to a minimum of 60 percent by 2031. The annual minimum intensification target contained in the applicable upper- or single-tier official plan that is approved and in effect as of July 1, 2017 continues to apply until the next municipal comprehensive review is approved and in effect.

- New Community Area–Block 27
- New Community Area–Block 41

3.2 Northeast Vaughan Water and Wastewater Service Areas

To support the planned development in the northeast Vaughan area, both water and wastewater servicing is required. Preliminary water and wastewater service areas were established by York Region, based on population projections, to determine the limits and sizing of the municipal infrastructure needed to accommodate the provincially approved growth. Servicing areas were then refined through hydraulic modeling using projected population growth and traffic zone data, taking into account input received from stakeholders, such as the City of Vaughan, land owners, and the Region of York itself. The final water service area is generally bounded by the King-Vaughan town boundary line on the north, Teston Road on the south, Highway 27 on the west and Dufferin Street on the east (Figure E.1). The final wastewater service area is generally bounded by the King-Vaughan town boundary on the north, Langstaff Road on the south, Kipling Avenue on the west and Dufferin Street on the east (**Figure E.1**).

3.3 Forecasted Population Growth in Northeast Vaughan and Anticipated Timing

Significant growth is forecasted for York Region over the next several decades, including an approximate residential population increase of 700,000 people and employment growth of approximately 400,000 people by 2051 (Growth Plan for the Greater Golden Horseshoe, 2017; York Region Official Plan, 2009a). The City of Vaughan is anticipated to accommodate more than one quarter of the forecasted growth, approximately half of which will be located within the northeast Vaughan service area, and in particular within what is referred to as the "whitebelt areas"[3].

3.4 Existing Water and Wastewater Servicing Systems in York Region

Water Servicing

To provide its residents and businesses with drinking water, York Region acts as the water "wholesaler" supporting supply, treatment, storage, pumping and transmission mains while the area municipalities distribute water to local customers. The sources for York Region's drinking water include both surface water, namely Lakes Ontario (80 percent) and Simcoe (3 percent), and groundwater from Regional aquifers. The water system is divided into two distinct service areas: (1) the York Water System (YWS), which serves the larger urban communities of York Region; and, (2) the individual systems serving the smaller communities. The YWS consists of a network of large diameter transmission mains,

[3] Whitebelt areas are outside of the Greenbelt and Oak Ridges Moraine and represent the last available lands within York Region with development opportunities.

pumping stations, elevated tanks and reservoirs and this infrastructure supplies the water delivered from York Region's municipal water wells and Lake Ontario provided by the City of Toronto and Regional Municipality of Peel (Region of Peel) through partnership agreements. The City of Toronto and Region of Peel provide potable water treated in their own treatment plants using Lake Ontario raw water. Existing water infrastructure for York Region and the City of Vaughan is situated primarily in the areas south of Teston Road and east of Keele Street.

York Region supplies drinking water in the City of Vaughan through two systems: (1) the YWS and (2) the Kleinburg-Nashville well-based groundwater supply system.

The YWS is divided into a number of hydraulically-independent zones, known as pressure districts (PDs), based on the prevailing ground elevations within the City of Vaughan. The pressure districts associated with the northeast Vaughan water service area include: Pressure District 6 (PD6), Pressure District 7 (PD7), Pressure District 8 (PD8) (divided into two currently hydraulically-independent zones: PD8-West and PD8-East), Pressure District 9 (PD9) and Pressure District KN.

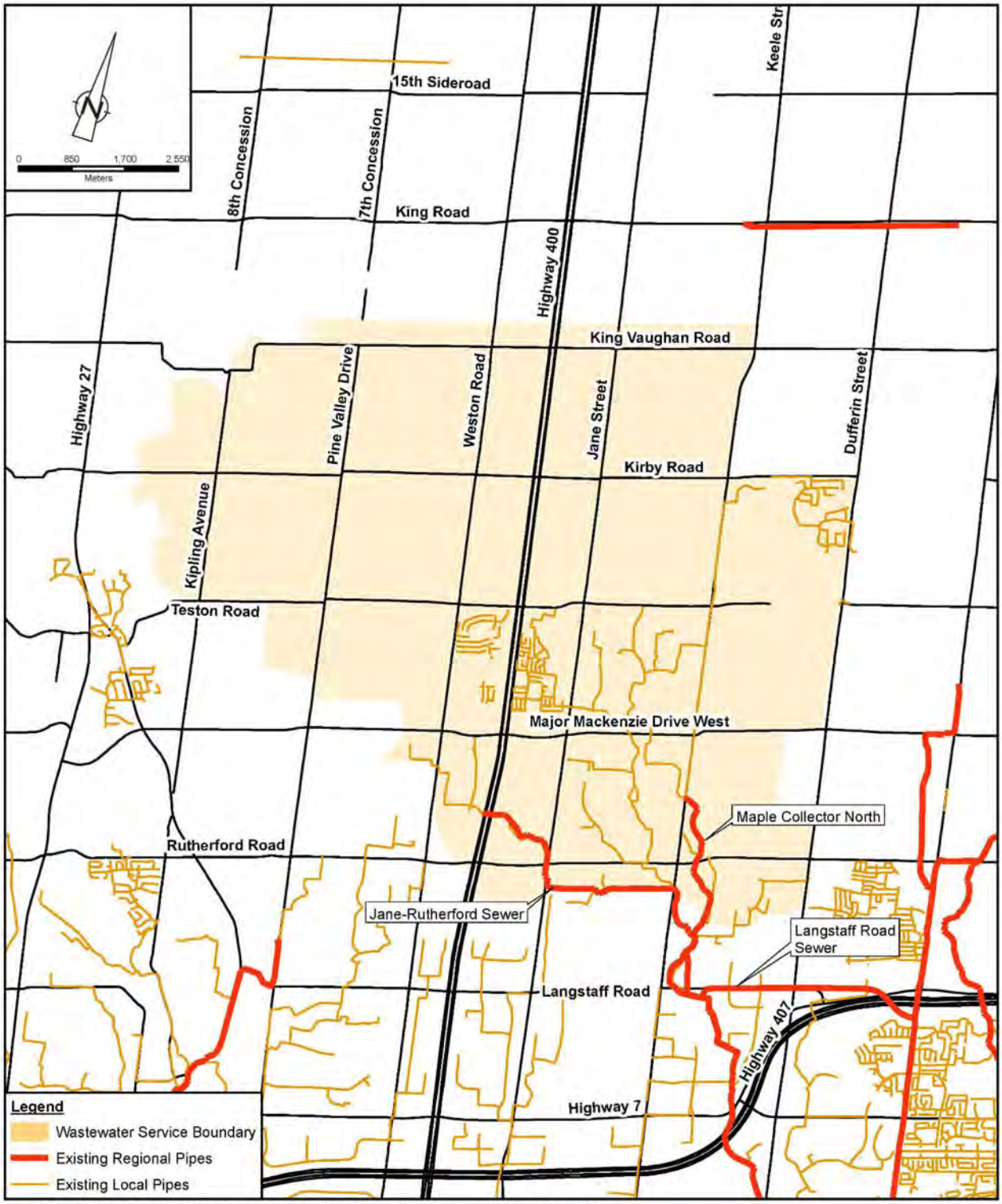
Wastewater Servicing

With respect to wastewater servicing, York Region is responsible for major pumping stations, trunk sewers, and treatment facilities while the area municipalities are responsible for local collection and pumping. In the southern half of York Region, wastewater is primarily treated in facilities discharging directly to Lake Ontario or its tributaries. Urban areas in York Region, including Aurora, King City, Markham, Newmarket, Richmond Hill, Stouffville, and Vaughan, are connected to the York-Durham Sewage System (YDSS). Portions of the YDSS are jointly owned by York and Durham Regions and, depending upon location, operated by both Regions. The YDSS is a technically advanced and environmentally responsible sewage collection and treatment system consisting of a series of gravity trunk sewers, pumping stations, equalization tanks, and forcemains that collect and convey the bulk of the wastewater to the Duffin Creek Water Pollution Control Plant (WPCP)[4] in the City of Pickering for treatment prior to discharge into Lake Ontario. York Region's wastewater system consists of two (2) divisions: (1) the YDSS, which serves York Region's larger urban communities; and, (2) the individual systems serving the smaller communities.

Wastewater collection from existing developments within the northeast Vaughan wastewater service area is provided through the Jane-Rutherford (975 millimetre (mm)

[4] The Duffin Creek WPCP has a current approved capacity of 520 megalitres per day (MLD). The plant was expanded to treat 630 MLD to accommodate growth in the northeast Vaughan wastewater service area. However, the approved capacity as stated in the MECP's Environmental Compliance Approval under which the Duffin Creek WPCP operates is still 520 MLD. The schedule C Class Environmental Assessment that was undertaken to increase the approved capacity of Duffin Creek WPCP is still awaiting a decision from the Minister of the Environment, Conservation and Parks.

diameter) and Maple Collector North (675 mm diameter) systems. Flow from these sewers is intercepted by the Langstaff Road Sewer (2,744 mm diameter), which in turn connects to other YDSS sewers for discharge into the Leslie Street Pumping Station. **Figure E.3** illustrates the existing wastewater collection system in northeast Vaughan.



Source: MNRF NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry. © Queen's Printer 2017
Coordinate System: NAD 1983 UTM Zone 17N

REGIONAL MUNICIPALITY OF YORK
NORTHEAST VAUGHAN WATER AND WASTEWATER SERVICING CLASS EA

084419-00
May 3, 2017

EXISTING WASTEWATER SERVICING
IN NORTHEAST VAUGHAN

FIGURE E.3

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Figure E. 3 Existing Wastewater Collection System in Northeast Vaughan

3.5 York Region's Water Efficiency and Conservation Programs / Initiatives

York Region has aggressively pursued water efficiency programs and worked to reduce both the amount of storm water runoff that enters the sanitary sewer system via direct connections such as basement sump pump connections, roof/eavestrough, downspouts, and manhole lid holes, commonly referred to as inflow and groundwater that enters the sanitary sewer system through leaking pipe/structural joints and broken/damaged pipes, known as infiltration. Lessening inflow and infiltration (I/I) of stormwater and groundwater into the YDSS as part of an overall objective of conserving water resources will optimize existing system capacity and protect the natural environment by potentially reducing the amount of sewage water that needs to be treated and reducing the possibility of sewage overflows to the environment due to system capacity issues.

3.6 York Region's Water and Wastewater Sustainability Strategy

The "York Region Sustainability Strategy-Towards a Sustainable Region" (York Region Sustainability Strategy, 2008a) provides a long-term framework for making timely, knowledgeable, and appropriate decisions about growth management and municipal responsibilities that better integrate the community, environment, and economy. Using the York Region Sustainability Strategy as an overall guide, along with well-defined existing Regional policies and programs and knowledge about best practices in other jurisdictions, York Region developed a sustainability strategy for water and wastewater servicing, the principles of which were considered in assessing the identified alternative solutions for the Project.

3.7 York Region's Energy Conservation and Demand Management Plan

Treating and pumping drinking water and wastewater contributes to York Region's greenhouse gas (GHG) emissions. Through the *Green Energy Act*, 2009 and Ontario Regulation 397/11, York Region is required to develop and implement an Energy Conservation and Demand Management Plan with a focus on setting targets and identifying programs to reduce greenhouse gases from municipal operations. York Region submitted a high-level Energy Conservation and Demand Management Plan to the Ministry of Energy in 2014. An Energy Conservation and Demand Management Plan Update (Plan Update) providing more detail and outlining targets and specific program measures to meet the *Green Energy Act*, 2009 and Ontario Regulation 397/11 obligations, was prepared and presented to Council in 2016. The Plan Update presents a 72 percent greenhouse gas emissions reduction target by 2051.

In terms of water and wastewater processes, York Region's current initiatives include water conservation, process optimization, and facility audits and retrofits. Initiatives proposed as part of the Plan Update include continuous facility energy audits and

benchmarking, further process optimization and micro-generation, and heat recovery. Renewable energy projects, such as solar panel installations at Regional facilities are also supported by the Plan Update. A Steering Committee, including a Water and Wastewater Working Group, is planned to oversee implementation of the Plan Update.

3.8 Recommended Infrastructure for Accommodating Approved Growth

Additional infrastructure to accommodate approved growth is recommended through both the York Region and the City of Vaughan water and wastewater master plans.

York Region's Water and Wastewater Master Plan (Master Plan) recommended the following strategies for servicing the northeast Vaughan area to 2041:

Water

- PD7: No additional Regional infrastructure is anticipated to be required because "pumped storage from PD6" will be utilized to service PD7.
- PD8: A new pumping station (30 megalitres per day (MLD)), along with a new storage facility (14 megalitres (ML)) will be needed to service PD8 by 2027. Before 2027, it is anticipated that an increase in fire flow capability for PD8 will be provided by adding an additional pump to the (Vaughan) Maple PD8 Pumping Station.
- PD9: A new pumping station estimated to be 7.5 MLD in capacity that is supplied water from the PD8 storage facility will be required. Fire flows for PD9 will be supplied by a combination of King City (via a back feed main) and the PD9 Pumping Station/PD8 Storage Facility.
- Decommissioning of the existing City of Vaughan owned PD9 Pumping Station.

Wastewater

- New trunk sanitary sewer main that connects to the existing YDSS sometime between 2026 and 2031, at a specified point, likely in the south limits of the northeast Vaughan wastewater service area, near either Rutherford Road or Langstaff Road.

The City of Vaughan's Water and Wastewater Master Plan identified the following water and wastewater projects intended to support growth in the northeast Vaughan service area:

Water

- Teston Road PD8 Watermain
- PD8 East Improvements
- Teston Road PD7 Watermain Twinning
- Block 35 PD8 Watermain

- Weston Road PD7 Watermain
- Block 55 PD-KN Watermains
- Huntington Road Watermain
- PD9 Pumping Station

Wastewater

- Jane Street Sub Trunk Sanitary Sewer
- Block 27 Sub Trunk Sanitary Sewer
- Teston Road Sub Trunk Sanitary Sewer and Pumping Station
- Weston Road Sub Trunk Sanitary Sewer
- Block 55 Sewage Pumping Station and Forcemain
- Carrville Centre Sewer
- Vellore Centre Sewer
- Pine Valley North Sewage Pumping Station and Forcemain
- North East Vaughan Collector
- Block 41 Sewage Pumping Station, Forcemain, and Sanitary Sewer

3.9 Problem / Opportunity Statement

The purpose of the Project is to confirm the recommended Regional water and wastewater infrastructure for servicing anticipated growth in northeast Vaughan to the year 2051 reflecting York Region's Sustainability Strategy and in accordance with applicable environmental statues.

PART C: Alternative Solutions

4. Phase 2A Alternative Solutions

As part of MCEA Phase 2, four (4) alternative solutions for both water and wastewater servicing were identified, assessed, and consulted on, leading to the selection of a combination of alternatives as the preferred servicing solutions. **Figure E.4** illustrates the steps taken to identify preferred water and wastewater servicing solutions, including Stakeholder Advisory Committee (SAC) and Technical Advisory Committee (TAC) meetings and a Public Consultation Centre (PCC).

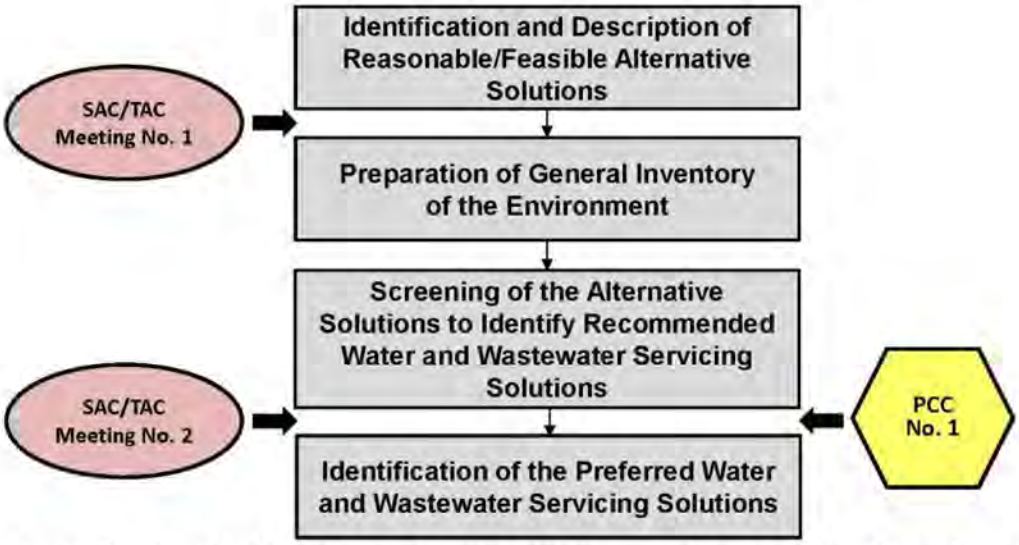


Figure E. 4 Methodology for Identifying and Assessing the Alternative Water and Wastewater Servicing Solutions

4.1 Identification and Description of the Alternative Water and Wastewater Servicing Solutions

Four (4) alternative water and wastewater solutions were identified for consideration:

	Alternative Water Servicing Solutions	Alternative Wastewater Servicing Solutions
	Do Nothing	Do Nothing
	Optimize Existing Water System Performance	Optimize Existing Wastewater System Performance
	Upgrade Existing Water Infrastructure	Upgrade Existing Wastewater Infrastructure
	Construct New Water Infrastructure	Construct New Wastewater Infrastructure

4.2 Description of the Environment Potentially Affected

The water and wastewater service areas to the north of Teston Road are predominantly composed of agricultural land, natural areas, and parks, with much of the area being part of the Greenbelt and Oak Ridges Moraine. However, although relatively rural in nature at this time, the area north of Teston Road in the service area is under transition as urban uses are proposed outside of the Greenbelt Plan and Oak Ridges Moraine Plan designations.

The wastewater service area south of Teston Road is primarily composed of existing urban uses and development within this area is expected to intensify in the future.

4.3 Screening of the Alternative Water and Wastewater Servicing Solutions

The four (4) step methodology followed for assessing the alternative water and wastewater solutions in order to identify preferred water and wastewater solutions for the Project is illustrated in **Figure E.5**.

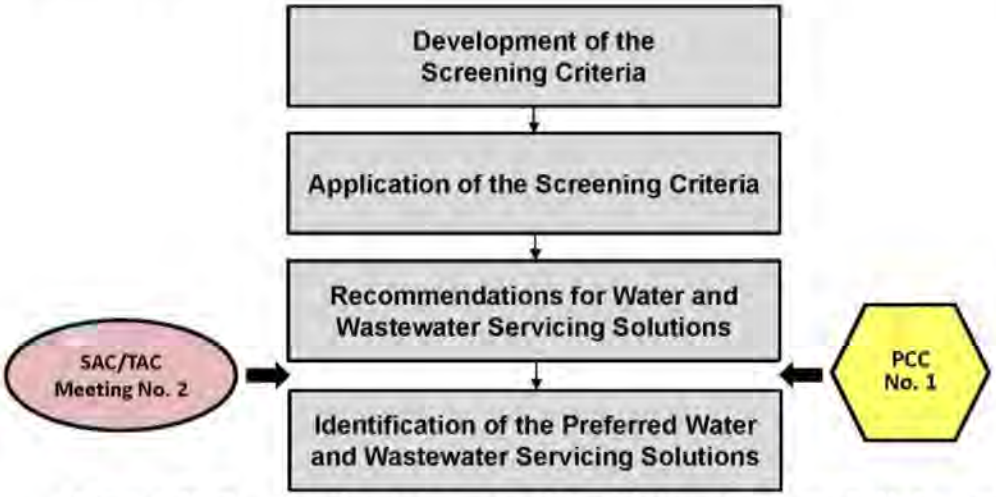


Figure E. 5 Methodology for Identifying Preferred Water and Wastewater Servicing Solutions

4.4 Identification of the Preferred Water and Wastewater Servicing Solutions

In light of the comments received from stakeholders, the recommended water and wastewater servicing solutions were confirmed as the preferred water and wastewater servicing solutions, as described below.

Preferred Water Servicing Solution

The preferred water servicing solution is composed of the following components:

Preferred Solution Component Description	Recommended Year when the Component Needs to be in Service
Alternative Water Solution No. 2 - Optimize Existing Water System Performance	
Adjust operational controls in the system to allow for interim 'borrowing' of water storage from one area of the system to an adjacent area	Already implemented and will be utilized until 2031
Alternative Water Solution No. 3 - Upgrade and/or Expand Existing Water Infrastructure	
Undertake minor facility upgrades and install a new pump at the Maple Pumping Station	Already implemented
Alternative Water Solution No. 4 - Construct New Water Infrastructure	
PD 8 Storage of minimum 17 ML via twin elevated tanks, both identically sized at 8.5 ML	2028
PD8 33.5 MLD Pumping Station	2028
PD9 3.8 MLD Pumping Station	2028
Watermains (connecting the new PD8 and PD9 pumping facilities and PD8 storage facilities to the existing York Water System)	2028

Preferred Wastewater Servicing Solution

The preferred wastewater servicing solution is composed of the following components:

Preferred Solution Component Description	Recommended Year when the Component Needs to be in Service
Alternative Wastewater Solution No. 2: Optimize Existing Wastewater Infrastructure and Alternative Wastewater Solution No. 3: Upgrade Existing Wastewater Infrastructure	
Maximize the use of the existing wastewater system via York Region's existing ongoing programs, such as water conservation efforts and inflow/infiltration reduction.	Already implemented
Work with the City of Vaughan to explore additional opportunities to maximize the use of the local wastewater system.	Already implemented
Alternative Wastewater Solution No. 4: Construct New Wastewater Infrastructure	
Convey sewage flows from Teston Road to the existing York Durham Sewage System (YDSS) via a phased approach. The first phase is required to relieve anticipated system surcharging	2026 – 2051

Preferred Solution Component Description	Recommended Year when the Component Needs to be in Service
in 2026 and be operational in advance of the preferred water servicing solution (construct new water infrastructure component) being in service by 2028. Additional phases would be required by 2041 and 2051.	

PART D1: Alternative Design Concepts for Preferred Water Servicing Solution

5. Phase 2B Identification and Evaluation of the Alternative Water Storage / Pumping Station Sites

With the preferred water servicing solution established, alternative sites for the new elevated tanks and pumping stations were generated, assessed, evaluated and consulted on leading to the identification of three (3) preferred sites and connecting watermains.

The specific locations associated with the new water infrastructure components had not been previously defined. To address this need, the following steps, illustrated in **Figure E.6**, were carried out to identify specific or defined locations for the PD 8 Storage, PD8 and PD9 pumping stations, and watermains.

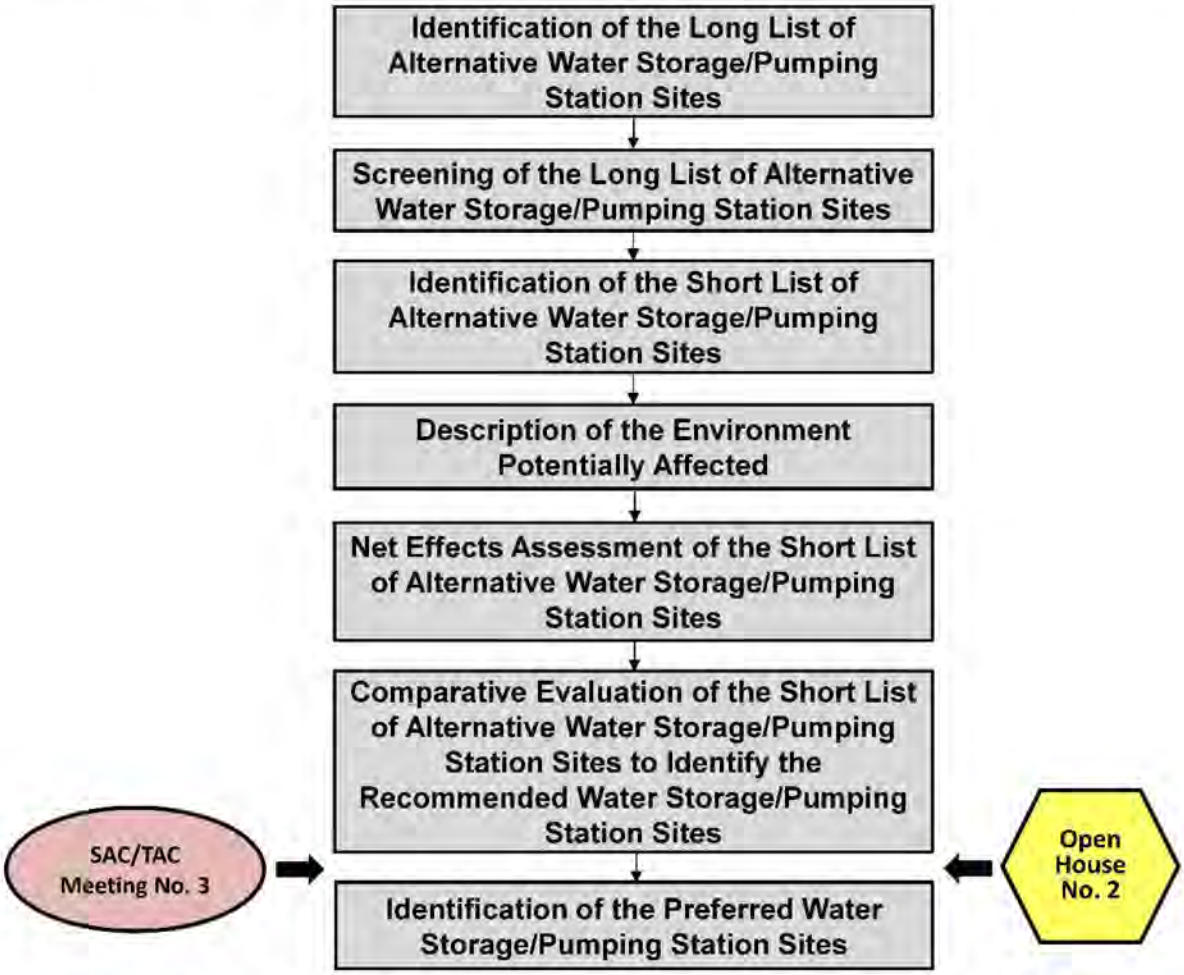


Figure E. 6 Methodology for Identifying and Evaluating the Water Storage/Pumping Station Sites

5.1 Identification and Description of the Alternative Water Storage / Pumping Station Sites

A combined total of eighty-five (85) long list alternative water storage/pumping station sites (thirty-eight (38) for a PD8 water storage facility/ PD8 water storage facility and PD9 pumping station, six (6) for a PD8 pumping station, and forty-one (41) for a PD9 pumping station) were generated through the process illustrated in **Figure E.7**.

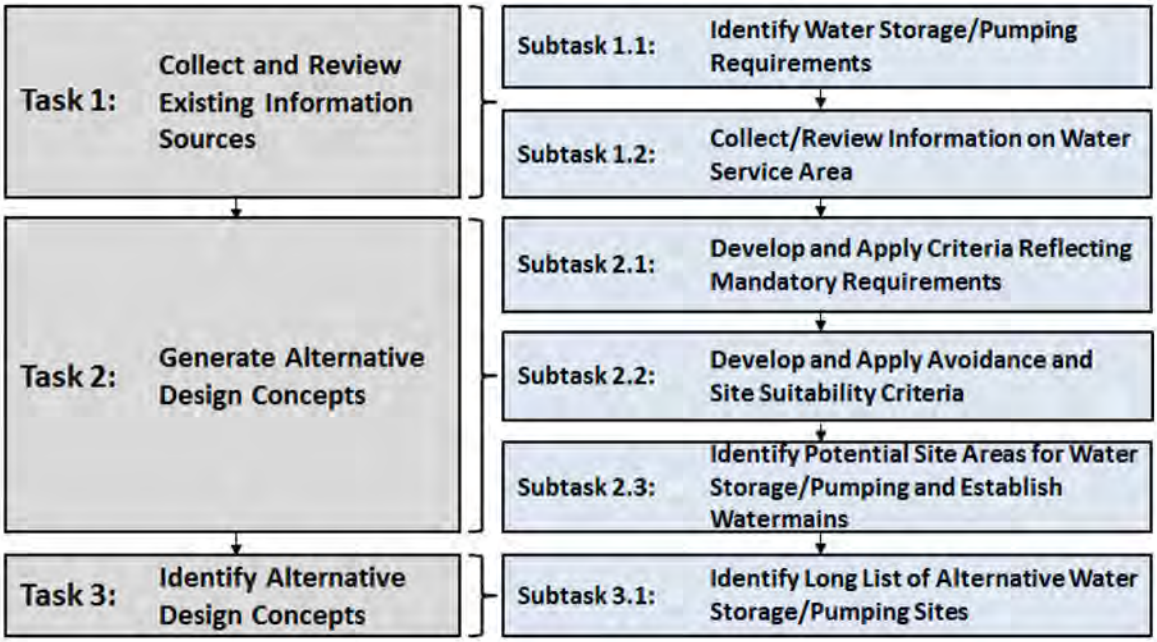


Figure E. 7 Process for Generating and Identifying Alternative Sites

Sites investigated for alternative water storage facilities considered different facility types including: elevated water storage tanks, partially buried in-ground water storage reservoirs and standpipe reservoirs.

No suitable sites for either standpipes or in-ground reservoirs were found through the application of the criteria reflecting mandatory requirements and the avoidance and site suitability criteria (primarily due to insufficient ground elevations). Notwithstanding this, York Region recognizes significant benefits of ground storage facilities over elevated water storage. Consequently, prior to assessing and comparatively evaluating only the elevated tank option for water storage, the original criteria reflecting mandatory requirements were relaxed to possibly generate potential suitable sites for a standpipe or in-ground reservoir to service northeast Vaughan.

5.2 Screening of the Long List Alternative Water Storage / Pumping Station Sites

In order to arrive at a more manageable number of sites (i.e., short list of alternative water storage/pumping station sites) for the purposes of undertaking environmental investigations in support of assessing the alternatives, the long list of alternative water storage/pumping station sites were subjected to a screening process. The screening process to arrive at a short list of alternative water storage/pumping station sites is outlined in **Figure E.8**.

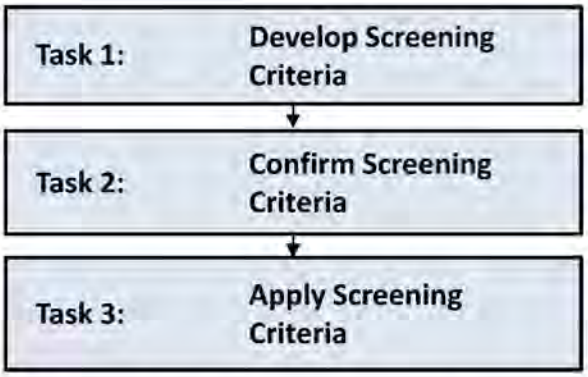


Figure E. 8 Process for Selecting a Short List of Alternative Water Storage/ Pumping Station Sites

Pressure District 8 Water Storage Facility and Pressure District 8 Water Storage Facility and Pressure District 9 Pumping Station

The long list of thirty-eight (38) alternative sites for the PD8 water storage sites and PD8 water storage and PD9 pumping station were reduced to a short list of eighteen (18) sites based on the application of the screening criteria.

Pressure District 8 Pumping Station

The long list of six (6) alternative sites for the PD8 pumping station was reduced to a short list of three (3) sites based on the application of the screening criteria.

Pressure District 9 Pumping Station

The long list of forty-one (41) sites for the PD9 pumping station was reduced to a short list of twenty-five (25) sites based on the application of the screening criteria.

Combined Pressure District 8 Water Storage Facility and Pressure District 9 Pumping Station Sites

Following the establishment of the short lists, a decision was made to locate both the PD8 water storage facility and the PD9 pumping station on the same site, versus on two separate sites. This determination was made based on the following:

- The relatively large number of PD8 water storage sites and PD8 water storage sites and PD9 pumping station sites (eighteen (18)) and PD9 pumping station sites (twenty-five(25)) short-listed and overlapping nature of those sites
- The benefits of maximizing water system efficiencies by combining infrastructure on one site
- The overall reduction in land acquisition, construction, and operational costs associated with a single site

As such, only those PD8 water storage facility and PD9 pumping station sites common to both short lists were carried forward to the comparative evaluation. Twelve (12) overlapping short list sites were identified and brought forward to the final short list of sites for a combined PD8 water storage facility and PD9 pumping station.

5.3 Description of the Short List of Alternative Water Storage / Pumping Station Sites

A total of twelve (12) short list sites for a combined PD8 elevated tank and PD9 pumping station and one (1) site for the combined standpipe/in-ground reservoir and PD9 pumping station were carried forward for assessment and comparative evaluation purposes. The short list sites for a combined PD8 elevated tank and PD9 pumping station were grouped together based on their location for description purposes as follows:

Short List of Combined Sites for PD8 Elevated Tank and PD9 Pumping Station – Group 1

Group 1 Sites (10 and 71) are located just to the west of the Jane Street and King Vaughan Road intersection. The new PD8 watermain would be extended along Jane Street from the PD8 pumping station proposed in the vicinity of the Teston Road and Jane Street intersection to the new PD8 elevated tank (Group 1 Sites). The new PD9 watermain would be extended along King Vaughan Road from the new PD8 elevated tank to Keele Street. At Keele Street the new PD9 watermain would continue south along Keele Street to where it would tie into the existing YWS approximately 300 metres (m) south of Kirby Road.

Short List of Combined Sites for PD8 Elevated Tank and PD9 Pumping Station – Group 2

Group 2 Sites (39, 55, and 57A) are located on the east and west sides of Jane Street north of Kirby Road. The new PD8 watermain would be extended along Jane Street from the PD8 pumping station proposed in the vicinity of the Teston Road and Jane Street intersection to the new PD8 elevated tank (Group 2 Sites). The new PD9 watermain would be extended along Jane Street, continuing east along Kirby Road and then south along Keele Street to where it would tie into the existing YWS approximately 300 m south of Kirby Road.

Short List of Combined Sites for PD8 Elevated Tank and PD9 Pumping Station – Group 3

Group 3 Sites 11, 30, 31B, and 69 are located on the south side of Kirby Road and Group 3 Site 57B is located on the north side of Kirby Road between Jane Street and Keele Street. The new PD8 watermain would be extended from the PD8 pumping station proposed in the vicinity of the Teston Road and Jane Street, along Jane Street. At KirbyRoad the new PD8 watermain would continue east along Kirby to the new PD8 elevated tank (Group 3 Sites). The new PD9 watermain would be extended along Kirby Road from the new PD8 elevated tank to Keele Street. At Keele Street the new PD9 watermain would continue south along Keele Street for approximately 300 m where it would then tie into the existing YWS south of Kirby Road.

Short List of Combined Sites for PD8 Elevated Tank and PD9 Pumping Station – Group 4

Group 4 Sites 81 and 94 are located on the west side of Keele Street north of Teston Road and Group 4 Site 93 is located on the north side of Teston Road west of Keele Street. The new PD8 watermain would be extended along Teston Road from the PD8 pumping station proposed in the vicinity of the Teston Road and Jane Street to the new PD8 elevated tank (Group 4 Sites) on the north side of Teston Road west of Keele Street. The new PD9 watermain would be extended along Keele Street from the new PD8 elevated tank to where it would then tie into the existing YWS.

Combined Site for PD8 Standpipe/In-ground Reservoir and PD9 Pumping Station

The Combined Site is located on the north side of Kirby Road and east side of Keele Street. The new PD8 watermain would be extended from the PD8 pumping station proposed in the vicinity of the Teston Road and Jane Street, along Jane Street. At Kirby Road the new PD8 watermain would continue east along Kirby Road to the new PD8 Standpipe/In-ground Reservoir (combined site) on the east side of Keele Street. The new PD9 watermain would be extended along Kirby Road from the new Standpipe / In-ground Reservoir to Keele Street and would continue south along Keele Street for approximately 300 m where it would then tie into the existing YWS south of Kirby Road. The constructed watermains would all be situated within the identified right of ways (ROWs).

Description of the Short List of Pressure District 8 Pumping Station Sites

Three (3) short list sites for a PD8 pumping station were carried forward. The proposed sites are near the Jane Street and Teston Road intersection (Sites 4, 5, and 16A). A connection would be made from the existing 1800 mm supply main along the north side of the Teston ROW to the new PD8 pumping station. There would be a new PD8 watermain along Teston Road to Jane Street (applicable to Sites 5 and 16A only). The constructed watermain would be situated within the ROW of Teston Road. Since Site 4 is adjacent to Jane Street, no PD8 watermain would be required along Teston Road, but only a short length of connecting main to Jane Street.

5.4 Description of the Environment Potentially Affected

With the short list of sites established, the environment potentially affected by their proposed development is described, as defined in the *EA Act* (Natural Environment, Built Environment, Social Environment, Economic Environment, and Cultural Environment), based on existing information sources and supplemented with data from field visits/investigations, where necessary. In particular, the following investigations were carried out as part of providing a more detailed description and understanding of the environment:

Environment as defined the EA Act	Investigative Study
Natural Environment	Geotechnical & Hydrogeology Report Natural Environment Report
Built, Social, and Economic Environments	Land Use Report Environmental Site Screening Report
Cultural Environment	Stage 1 Archaeological Assessment Cultural Heritage Resource Assessment Memorandum

5.4.1 Natural Environment

The Geotechnical & Hydrogeology investigation identified soil conditions (e.g., type, composition, approximate thickness) and an approximation of water table depth (e.g., shallow, deep) for the short list of sites and watermain routes. It is anticipated that all water sites and watermain routes consist of glacially derived silt and clayey silt soils (greater than 5 m) of the Halton Till and that hydrogeologic conditions consist of shallow water tables within the silt and clayey silt soils of the Halton Till.

The Natural Environment investigation identified the presence and/or absence of natural features on and/or adjacent to the short list of sites and along the watermain routes, including, but not limited to:

- Tributaries of the East Humber River, Purpleville Creek, Don River West Branch;
- Toronto Region Conservation Authority (TRCA) regulated areas;
- Probable headwater drainage feature
- Environmentally Significant Areas (ESA);
- Areas of Natural and Scientific Interest (ANSI);
- Significant Wildlife Habitat;
- Countryside, Natural Core and Natural Linkage areas designated under the Oak Ridges Moraine Conservation Plan (ORMCP);
- Protected Countryside areas designated under the Greenbelt Plan;

- Municipal Designated Natural Environment areas;
- Wetlands (evaluated, not evaluated) and provincially significant wetlands (PSW), including King Vaughan Wetland Complex PSW and East Humber River Wetland Complex PSW;
- Species habitat (e.g., amphibian); and
- Species at risk records/observations.

5.4.2 Built, Social, and Economic Environments

The Land Use investigation identified current and future land use; land use designations and zoning; number of residences, buildings and their approximate distance; driveways/property accesses; farmsteads; businesses; recreational uses; community and religious centres; institutions; industry; pipelines; and soil classification on and/or adjacent to the short list of sites and along the watermain routes. Key land use features include, but are not limited to:

- Highway 400 North Employment Lands
- Highway 400 series Interchange Study Area
- GTA West Transportation Corridor Protection Area
- Block Plan Studies (Block 27, Block 34E)
- Rail corridors
- Proposed GO station (Barrie Line) (Kirby Road west of Keele Street)
- Natural Heritage Network
- Oak Ridges Moraine
- Greenbelt
- Enbridge (natural gas) pipelines (north side of King Vaughan Road)

The Environmental Site Screening identified the presence or absence of Areas of Potential Environmental Impairment (APEIs) on or in proximity to the short list of sites and along the watermain routes. Types of APEIs include:

- Fuel Storage Tanks (FST)
- Ontario Spills (SPL) (Site 55)
- Commercial Fuel Oil Tank (CFOT)
- Maple Dump (Teston Road & Keele Street)

5.4.3 Cultural Environment

The Stage 1 Archaeological Assessment identified the presence or absence of archaeological and ossuary potential on the sites on the short list as follows:

- Sites 4, 10, 16, 31B (northern half), 57A, 57B, 71 have been previously assessed and confirmed to no longer retain archaeological potential
- Sites 5, 11, 30, 39, 55, 69 are located partially within areas of archaeological potential
- Sites 81, 93, 94 and the PD8 Standpipe/In-Ground Reservoir are located partially within areas of archaeological and ossuary potential
- 31B (southern half) retains archaeological potential and would require a Stage 2 Archaeological Assessment prior to construction

The watermains are proposed to be constructed within existing ROWs; therefore, no archaeological resources are anticipated within the previously disturbed lands associated with the ROW.

The Cultural Heritage Resource Assessment identified the presence or absence of built heritage resources and cultural heritage landscapes on the sites on the short list and along the proposed watermain routes. The only identified cultural heritage resource is located on the west side of Keele Street with access off Keele Street adjacent to the Site 81 footprint and the Group 4 PD8 watermain route associated with Site 81.

5.5 Assessment of the Short List of Alternative Water Storage / Pumping Station Sites and Associated Watermains

The short list of alternative water storage/pumping station sites were assessed prior to comparatively evaluating them in order to identify a recommended water storage/pumping station site. The assessment was based on a net effects analysis. A net effects analysis is composed of the following activities, reflecting the process specified in the MCEA:

1. Identify potential effects on the environment (both positive and negative)
2. Develop appropriate impact management measures
3. Apply the impact management measures to the identified potential environmental effects to identify net effects on the environment (both positive and negative)

5.6 Comparative Evaluation of the Short List of Alternative Water Storage / Pumping Station Sties and Associated Watermains

The short list of alternative water storage/pumping station sites (including associated watermain) were comparatively evaluated using the Reasoned Argument or "Trade-off" approach based on the results of the net effects analysis. Based on the comparative

evaluation, and taking into account the feedback received via PCC Round No. 1, the recommended water infrastructure was identified.

Site 31B was identified as the recommended site for the Combined PD8 Elevated Tank and PD9 Pumping Station Site and Associated Watermains. The primary reason for this recommendation included the fact that there are no adjacent residences/homesteads to the recommended site.

Site 4 was identified as the recommended site for the proposed PD8 pumping station based on the results of the comparative evaluation. Site 4 was ranked as "most preferred" in all seven (7) categories compared to Site 5 and Site 16A. Furthermore, constructing the connection to the existing 1800 mm supply main from the proposed PD8 pumping station at Site 4 would be relatively simple or straightforward from a technical perspective, without the need for crossing any watercourses or existing York Region watermains.

5.7 Identification of the Preferred Water Storage / Pumping Station Sites and Associated Watermains

Following the identification of recommended sites Site 31B and Site 4, they were presented to the City of Vaughan as the host local municipality in February 2017 for their comments before announcing them to other stakeholders. At this meeting, the City of Vaughan mentioned their preference that the footprint location of the PD8 pumping station be moved away from the northwest corner of the Teston Road and Jane Street intersection because the intersection is going to be a major feature from an urban design perspective.

In addition, the City of Vaughan stated that the proposed PD8 pumping station will have to meet its urban design guidelines and any Block 34E specific design guidelines as part of site development. York Region responded that they are willing to relocate the facility away from the intersection and consider the City's urban design guidelines in developing Site 4.

In addition, and more importantly, the City of Vaughan stated that the location of Site 31B within the Block 27 Draft Block Plan Study is identified as a future Community Hub and felt that the proposed facility would be incompatible with this intended land use. The City of Vaughan preferred that the combined PD8 elevated tank and PD9 pumping station be sited entirely outside of the Block 27 new community area (i.e., lands bounded by Kirby Road to the north, Keele Street to the east, Teston Road to the south, and Jane Street to the west).

Locating the combined PD8 elevated tank and PD9 pumping station outside of Block 27 would eliminate three (3) of the remaining four (4) Group 3 sites (i.e., Sites 11, 30, and 69) and all of the Group 4 sites (i.e., Sites 81, 93 and 94) from consideration as a preferred site. York Region decided to accommodate the City of Vaughan's request and selected the next highest ranked alternative site (Site 57B). Site 57B is located on the north side of Kirby Road within Block 28. This recommendation was supported by of the City of Vaughan at the meeting.

Although Site 57B was outside of Block 27, York Region recognized that the combined PD8 elevated tank and PD9 pumping station was just across from the new community area and, in order to minimize potential aesthetics/visual concerns from new residents, they decided that the two elevated tanks should be separated from each other and located on two individual sites, situated as far away from each other as possible. With Site 57B being one site for an elevated tank, the remaining available alternative sites outside of Block 27 were considered for the second elevated tank.

As a result, a comparative evaluation of Sites 10 and 71 (Group 1) and Sites 39 and 55 (Group 2) was carried out. This included the consideration of the effect of the second elevated tank on future views assuming the presence of the combined PD8 elevated tank and PD9 pumping station on Site 57B.

Although Site 71 has a higher 50-year Net Present Worth Cost compared to Sites 39 and 55, it was identified as the recommended site for the proposed second PD8 elevated. Site 71 was identified for a number of reasons, including the fact that the proposed second elevated tank would be situated on a site that offers minimal views, and would be increasingly obscured over time at both the ground level and along the sight lines of Jane Street as planted vegetation matures and development occurs.

In addition, the closest residence/ homestead to Site 71 is approximately 120 m away compared to Site 10 (90 m away). As a result, although minimized through the application of standard impact management measures, the temporary adverse effects of constructing the proposed second PD8 elevated tank (i.e., increase in noise levels, increase in perceptible levels of vibration, and generation of dust) would be lessened by utilizing Site 71 versus Site 10.

The recommended water infrastructure (i.e., PD8 pumping station at Site 4, PD8 elevated tank and PD9 pumping station at Site 57B, and second PD8 elevated tank at Site 71) were presented to the public, property owners and review agencies via individual meetings (e.g., City of Vaughan, TRCA), at TAC and SAC Meetings No. 3, and at Public Open House No. 2.

The City of Vaughan reiterated their February 2017 meeting comments associated with the PD8 pumping station at Site 4 at the May 2017 individual meeting. In particular, they mentioned that the building may be subject to architectural controls. They also again asked about the flexibility to locate the facility elsewhere within Site 4 to suit their interests (e.g., heritage/gateway treatment at the Teston Road/Jane Street intersection), which York Region was open to.

Regarding the PD8 elevated tank and PD9 pumping station at Site 57B, the City asked at the May 2017 meeting if York Region would consider moving the facilities further north within the site away from Kirby Road and Block 27. York Region responded that they were open to considering this, recognizing that moving the facilities further north would mean that the PD8 elevated tank would be slightly closer to the second PD8 elevated tank at Site 71. The City acknowledged this and did not raise a concern. Also, the City asked a

number of questions associated with the elevated tank (e.g., layout flexibility, proposed heights, views/aesthetics, materials utilized, etc.) that were responded to by York Region.

York Region also held individual meetings with the landowners of Sites 4, 57B, and Site 71 following Public Open House No. 2 to obtain their comments and attempt to resolve any potential issues they may have with the recommended water infrastructure on their properties. With this in mind, the landowner of Sites 4 and 57B met with York Region on a number of occasions regarding relocating the PD8 pumping station and the PD8 elevated tank and PD9 pumping station off of their respective properties, if possible. In response, York Region made the following accommodations:

- Site 4 – agreed to relocate the PD8 pumping station from being adjacent to the Teston Road/Jane Street intersection to the northwest corner of the site. Although the landowner was agreeable to this relocation, they still preferred that the PD8 pumping station be relocated off of the site further to the northwest in a location they are proposing subject to on-going discussions with the TRCA and the Ministry of Natural Resources and Forestry (MRNF).
- In light of this, York Region and the landowner had further discussions resulting in an agreement between them that the preferred location for the PD8 pumping station would remain in the northwest corner of Site 4 with the potential to relocate it to the landowner's preferred off-site location in the future. The potential relocation to the landowner's preferred off-site location would be subject to the acceptance by TRCA and others, as appropriate, *Environmental Assessment Act* approval via an addendum to this Project File Report, and obtaining any required site specific post EA permits and approvals.
- Site 57B – agreed to relocate the PD8 elevated tank and PD9 pumping station from being on the north side of Kirby Road to the northwest corner of the site (adjacent to Jane Street). The landowner was agreeable to this relocation (now referred to as Site 57).

With regards to the second PD8 elevated tank at Site 71, York Region met with the landowner on several occasions about the specific location of the facility footprint and the layout/orientation of the facilities themselves. York Region agreed to move the location of the facility footprint to the very northwest corner of Site 71 and relocate the dry pond to the west of the elevated tank. Notwithstanding this, York Region further agreed to finalize the facility layout/orientation with the landowner as part of detailed design. Following these consultation activities and in consideration of comments received from stakeholders resulting from these consultation events, the recommended water infrastructure was confirmed as the preferred water infrastructure for the Project (**Figure E.9**).

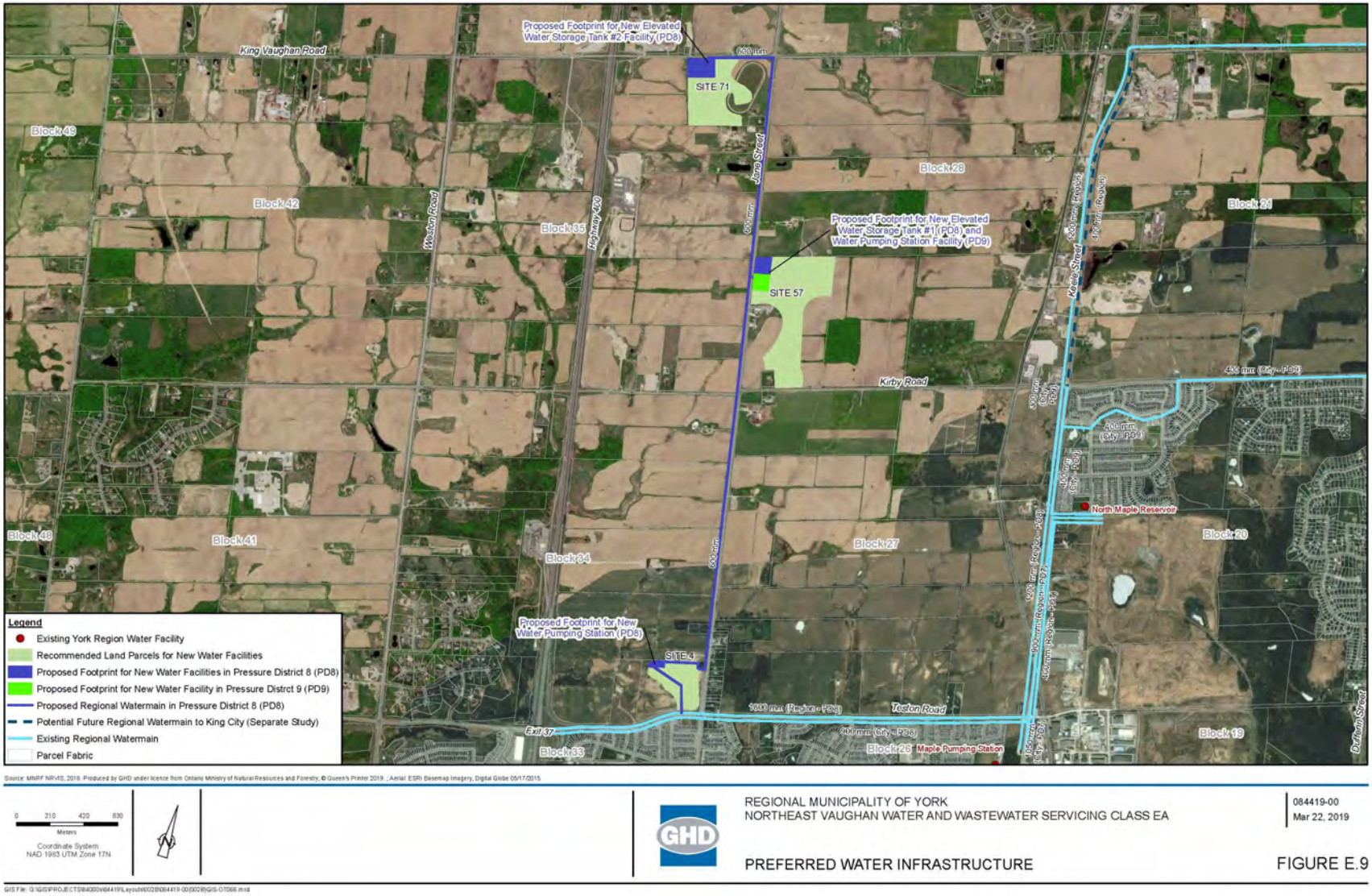


Figure E. 9 Preferred Water Infrastructure

6. Description and Implementation of the Preferred Water Servicing Solution

The preferred water infrastructure for servicing the anticipated development in northeast Vaughan to 2051 was confirmed through consultation with the City of Vaughan, TRCA and landowners. The preferred water infrastructure includes the following facilities (**Figure E.9**):

- A PD8 Pumping Station at Site 4
- A PD8 Water Storage Facility (Elevated Tank) and PD9 Pumping Station at Site 57
- A Second PD8 Water Storage Facility (Elevated Tank) at Site 71

Watermains along Jane Street and King Vaughan Road will connect the new facilities to the existing YWS.

6.1 Detailed Description of the Preferred Water Servicing Solution

With confirmation of preferred water storage/pumping station sites, Step 7 (preliminary finalization of the preferred design) of the MCEA was carried out beginning with a more detailed description of the proposed location and layout of each site and the design of the pumping stations, watermains and elevated tanks.

Pressure District 8 Pumping Station

The PD8 Pumping Station is proposed to be constructed in the northwest portion of Site 4 in response to comments received from the City of Vaughan and the landowner (**Figure E.9**). However, a potential off-site location of the PD8 Pumping Station preferred by the landowner of Site 4 has been identified. The potential relocation of the PD8 Pumping Station from Site 4 to the landowner's preferred off-site location would be subject to acceptance by TRCA and others, as appropriate, *Environmental Assessment Act* approval via an addendum to this Project File Report, and obtaining any required site specific post EA permits and approvals.

The proposed size of the facility footprint is 0.45 hectares (ha) (**Figure E.10**). The size of the facility footprint will be confirmed as part of detailed design along with the exact facility location on Site 4. The new pumping station building would be approximately 2.5 m below grade and one (1) storey in height.

A 900 mm diameter connection would be made from the existing 1800 mm supply main along the north side of the Teston Road ROW to the new PD8 pumping station. The new PD8 watermain would extend from the new pumping station to Jane Street within the proposed access driveway.

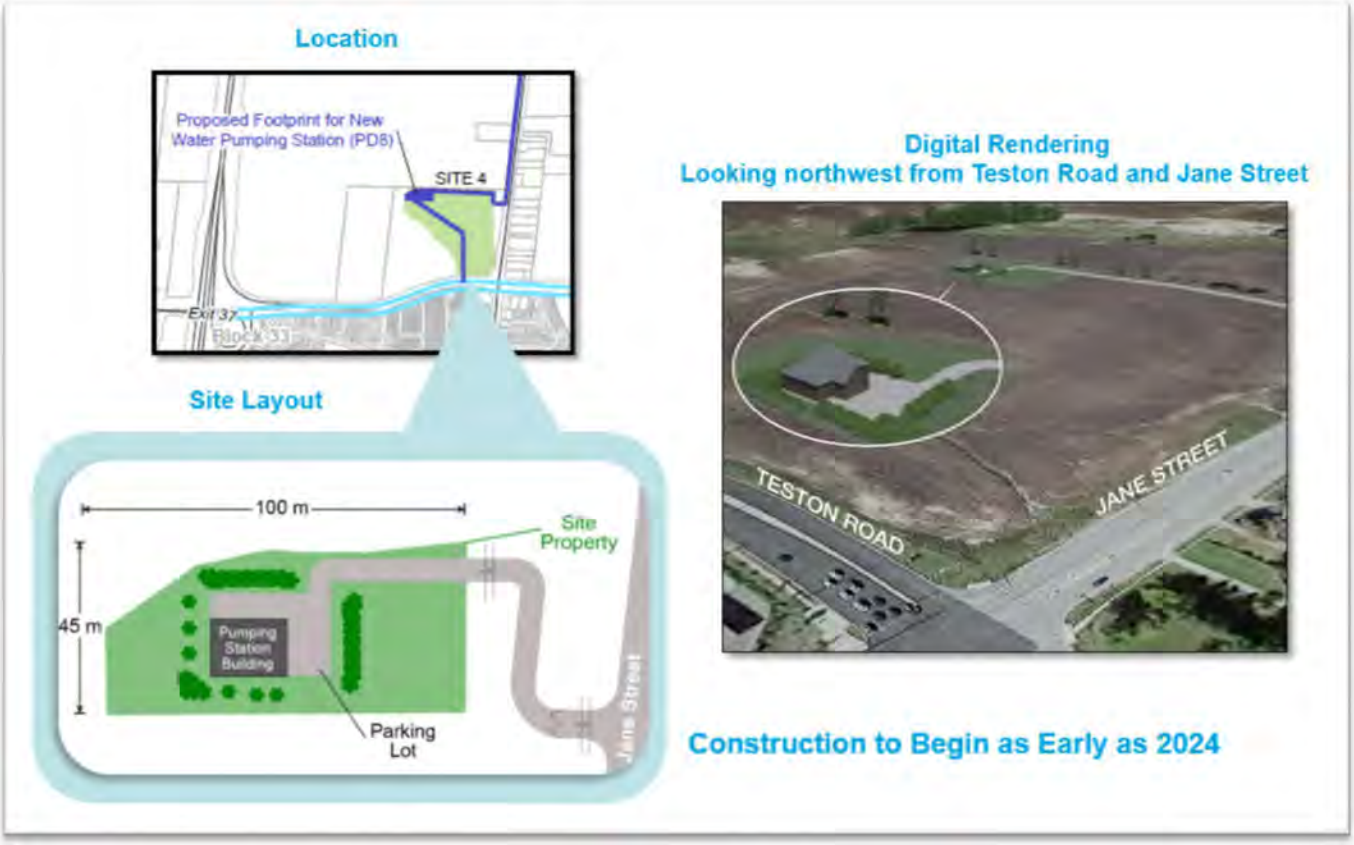


Figure E. 10 Proposed Footprint, Site Layout and Rendering of the Pressure District 8 Pumping Station at Site 4

New Watermains

Once on Jane Street, the new PD8 watermain would extend northwards along Jane Street supplying water to the PD8 Elevated Tank on the east side of Jane Street (Site 57) and to the second PD8 Elevated Tank on the south side of King Vaughan Road (Site 71).

The route alignment, proposed sizes, and approximate lengths of the new PD8 watermains are summarized as follows:

New PD 8 Watermain Route Alignment	Size (diameter)	Approximate Length	Water Crossing Location
From the New PD8 Pumping Station at Site 4 northwards along the west side of Jane Street to the new PD8 Elevated Tank at Site 57	600 mm	2,770 m	Crossing of two (2) tributaries of the Purpleville Creek (770 m north of Teston Road; 455 m south of Kirby Road) and one (1) unevaluated wetland (643 m north of Teston Road)
From the new PD8 Elevated Tank at Site 57 northwards along the west side of Jane Street to the Jane Street/King Vaughan Road intersection and then westwards along the south side of King Vaughan Road to the second PD8 Elevated Tank at Site 71	600 mm	1840 m	Crossing of two (2) tributaries of the Purpleville Creek (273 m north of Kirby Road; 673 m south of King Vaughan Road)

Combined Pressure District 8 Elevated Tank and Pressure District 9 Pumping Station

The combined PD8 Elevated Tank and PD9 Pumping Station are proposed to be constructed at Site 57 on the northwest corner of the site on the east side of Jane Street between Kirby Road and King Vaughan Road. The elevated tank and pumping station are presently proposed to be situated approximately 26 m east of Jane Street (**Figure E.11**).

The size of the facility footprint is 2.0 ha to accommodate the shadow arc from the elevated tank and allow for potential future expansion(s) of the facilities (e.g., offices, maintenance facility/yard, increased parking, etc.). The size of the facility footprint will be confirmed as part of detailed design along with the exact locations of the facilities. Similar to the PD8 Pumping Station, the PD9 Pumping Station would be approximately 2.5 m below grade and one storey in height.

The volume of the new elevated tank on Site 57 previously shown at Open House No. 2 has been expanded from 7.0 ML to 8.5 ML to accommodate an increase in future water storage requirements. As a result, the diameter of the tank has increased. Access to the site would be via a driveway off Jane Street.

Figure E. 11 Proposed Footprint Location, Site Layout and Rendering of the Combined Pressure District 8 Elevated Tank and Pressure District 9 Pumping Station at Site 57

Pressure District 8 Second Elevated Tank

The second PD8 Elevated Tank is proposed to be constructed at Site 71 on the south side of King Vaughan Road between Jane Street and Highway 400. The actual elevated tank is presently proposed to be situated approximately 75 m south of King Vaughan Road (**Figure E.12**). The proposed location takes into account the possibility of a future Highway 400 and King Vaughan Road interchange while at the same time attempting to maximize the distance between the two elevated tanks at Sites 71 and 57.

The size of the facility footprint is 2.30 ha to accommodate the shadow arc from the elevated tank. The size of the facility footprint on Site 71will be confirmed as part of detailed design along with the exact facility layout/orientation through discussions between York Region and the property owner.

The volume of the new elevated water tank on Site 71 previously shown at Open House No. 2 has been expanded from 7.0 ML to 8.5 ML to accommodate an increase in future water storage requirements. As a result, the diameter of the tank has increased.

The height of the elevated tank is now proposed to be approximately 43 m high above existing grade. Access to the site would be via a driveway off King Vaughan Road.

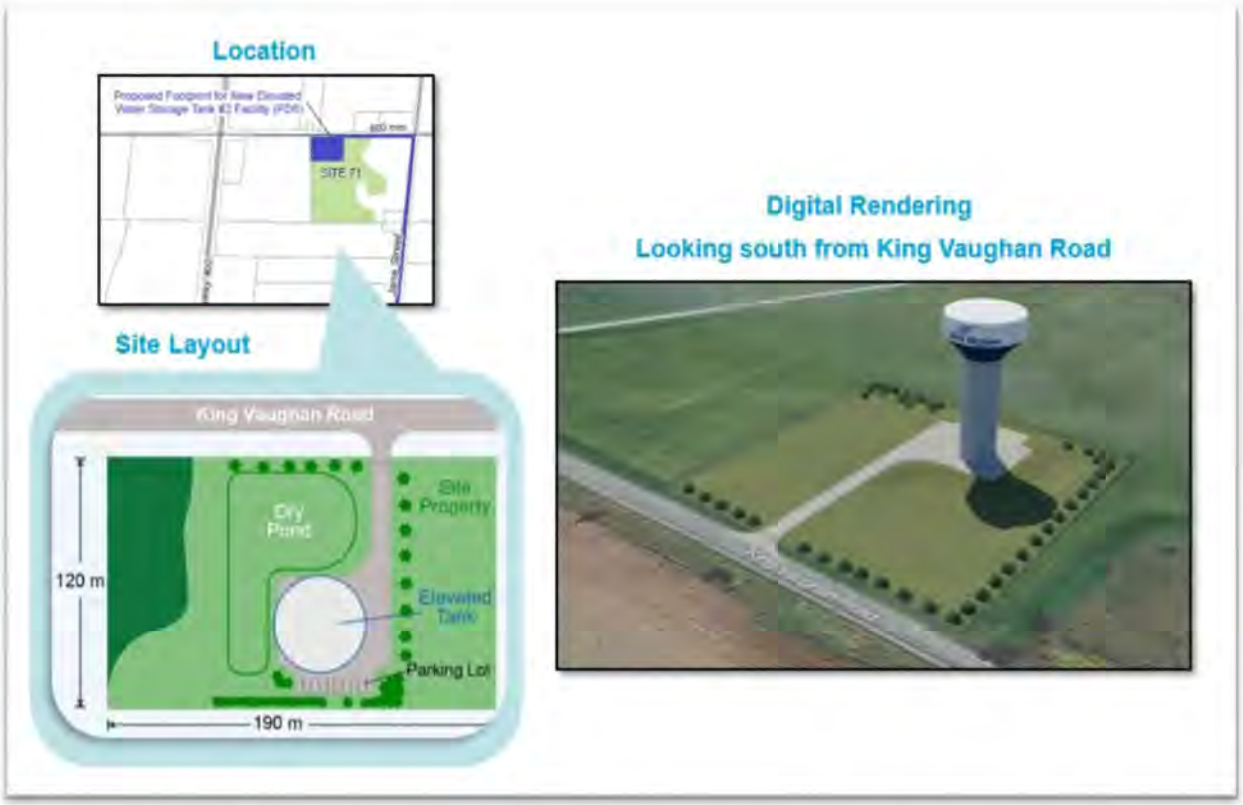


Figure E. 12 Proposed Location, Site Layout and Rendering of the Pressure District 8 Second Elevated Tank at Site 71

6.2 Confirmation of Net Environmental Effects and Monitoring for the Preferred Water Servicing Solution

The siting of the new elevated tanks and pumping stations on rural undeveloped properties and routing of the connecting watermains within Regional ROWs avoided significant environmental features and sensitive lands uses. As a result, the potential for adverse effects on the environment from constructing and operating the new water infrastructure are relatively minor and responsive to standard impact management measures.

This section also describes the potential impacts of the construction of the preferred water infrastructure on climate change as well as the impacts of climate change on the preferred water infrastructure.

6.3 Commitments for the Preferred Water Servicing Solution

York Region has made a number of commitments to review agencies like the TRCA and City of Vaughan that will be carried out as part of detailed design (**Table E.1**).

Table E.1 Municipal Class EA Commitments and Compliance Monitoring for Preferred Water Servicing Solution

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
General	1.	Required permits and approvals will be obtained for the Preferred Water Servicing Solution. Additional investigations to determine the need and/or support applications for PTTW or EASR will be carried out.	Section 6 and Section 9	Pre-Construction, Construction
	2.	Any unforeseen change to the Preferred Water Servicing Solution will be reviewed by York Region to determine if it should follow the MCEA addendum process	Not specified	Pre-Construction, Construction
	3.	The impact management measures and proposed monitoring programs associated with the Preferred Water Servicing Solution will be implemented unless they are determined to be no longer applicable or required.	Section 6	Pre-Construction, Construction
Natural Environment	4.	Consult with appropriate agencies (including but not limited to TRCA, the Ministry of Environment, Conservation and Parks (MECP) Central Region) as part of detailed design to confirm any approval requirements for water takings requiring a Permit to Take Water (PTTW) during construction or operation, along with associated discharge water quality and quantity monitoring and mitigation programs.	Section 6	Pre-Construction, Construction
	5.	If any private domestic wells are discovered, affected well owners will be engaged and continue to have water of appropriate quality and in adequate quantities supplied for the duration of construction. Any work done on affected wells or any replacement wells will be completed pursuant to Wells Regulation (R.R.O. 1990, Regulation 903 (Wells) as amended under the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40).	Section 6	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
	6.	All wells constructed (and subsequently decommissioned) for future investigations will be done in accordance with the Wells Regulation (R.R.O. 1990, Regulation 903 (Wells) as amended under the Ontario Water Resources Act, R.S.O. 1990, c. O. 40).	Section 9	Pre-Construction, Construction
	7.	Develop and implement a Low Impact Development Stormwater Management Plan (consistent with *the MECP Stormwater Management Planning and Design Manual (2003*) and the TRCA Stormwater Management Criteria document (Version 1.0), dated August 2012 and the Living City Policies), including erosion and sediment control measures.	Section 6	Pre-Construction, Construction
	8.	A headwater drainage feature (HDF) assessment will be completed at the Detailed Design stage as per TRCA's guideline.	Section 9	Pre-Construction, Construction
	9.	Prepare an Erosion and Sediment Control (ESC) plan (Grading Plan, Stabilization Plan, Dewatering Plan, etc.) in agreeance with the ESC Guideline for Urban Construction (December 2006) during the Detailed Design stage.	Section 9	Pre-Construction, Construction
	10.	The environmental monitoring and mitigation strategy will include known groundwater discharge areas and potential issues related to dewatering effluent systems.	Section 9	Pre-Construction, Construction
	11.	York Region will conduct a comprehensive geotechnical investigation for the proposed pumping stations. The geotechnical report will include foundation recommendations for the pumping station building, elevated tank, parking lot, sewer etc. The stamped geotechnical report will be submitted to the TRCA.	Section 9	Pre-Construction, Construction
	12.	Based on soil and groundwater conditions identified through field investigations completed during the Detailed Design stage, the need	Section 9	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
		for trench plugs will be assessed to prevent long-term drainage of groundwater via the servicing trenches.		
	13.	Prepare a Tree Preservation Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	14.	Prepare a Post-Construction Restoration Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	15.	Complete compensation calculations and prepare a Compensation Planting Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	16.	Possible climate change mitigation and adaptation measures will be examined and confirmed.	Section 6	Pre-Construction, Construction
Built Environment	17.	Pre-construction surveys and video records of the identified buildings within 30 m of the proposed infrastructure.	Section 6	Pre-Construction
	18.	Develop and implement a Vibration Management Program if required.	Section 6	Pre-Construction, Construction
	19.	Develop a Soil Management Plan (consistent with the MECP *Management of Excess Soil – A Guide for Best Management Practices* (2014) and with Part XV.1 of the *Environmental Protection Act* and Ontario Regulation 153/04, Records of Site Condition) to govern how any excess soil or contaminated soil/water encountered will be handled and disposed of.	Section 6	Pre-Construction, Construction
	20.	Provide the Ministry of Transportation with a Traffic Control Plan for Site 4.	Section 9	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
Social Environment	21.	A complaint protocol will be developed prior to construction and implemented during construction of the proposed project for responding to potential dust, noise and vibration related complaints from area residents if warranted.	Section 6	Pre-Construction, Construction
	22.	Develop and implement a Traffic Management Plan, including measures to manage impacts to sidewalks, the multi-use Trails and bus shelters through consultation with the City of Vaughan.	Section 6	Pre-Construction, Construction
	23.	Develop and implement a Vibration Management Program if warranted.	Section 6	Pre-Construction, Construction
	24.	Complete a more detailed Visual Impact Assessment of the Preferred Water Servicing Solution in order to confirm final placement of the two elevated tanks (architectural elements and landscaping details aimed at minimizing impacts, etc.).	Section 6	Pre-Construction
	25.	Work with the City of Vaughan's Urban Design Department on developing and implementing urban design/architectural/site design guidelines for the water facilities.	Section 6	Pre-Construction
Cultural Environment	26.	Update the Cultural Heritage Memorandum to confirm the potential adverse effects, proposed impact management measures and monitoring programs associated with the Preferred Water Servicing Solution.	Section 6	Pre-Construction
Consultation	27.	Affected residents and business owners immediately adjacent to construction will be notified of construction activities (i.e. road/lane closures, municipal service/utility disruptions, temporary driveway access alterations) a minimum of 24 hours prior to construction in their immediate area.	Section 6	Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
	28.	Review agencies (e.g. provincial ministries, agencies, City of Vaughan, utilities, etc.) and developers will be consulted through meetings and correspondence on an as-needed basis during design and construction to coordinate the construction of their infrastructure/development projects with the Preferred Water Servicing Solution.	Section 9	Pre-Construction, Construction
	29.	All property requirements will be confirmed and agreements obtained with the affected property owners prior to construction. As part of this confirmation and agreement process, York Region may request additional due diligence for properties where they will acquire a permanent easement or acquire real property.	Section 6	Pre-Construction
	30.	York Region will notify Indigenous communities, previously contacted during the Project, prior to completing any Stage 2 Archaeological Assessments and will invite them to provide an archaeological monitor if interested.	Section 9	Pre-construction and Construction
	31.	York Region will finalize the facility location of the proposed PD8 Pumping Station with the landowner of Site 4 together with the TRCA and others as appropriate recognizing the ongoing and evolving nature of the development of the Block 34E – Phase 1 Lands as part of detailed design. This will be done in accordance with the Municipal Class Environmental Assessment (October 2000 (as amended in 2007, 2011 and 2015))	Section 6	Pre-construction and Construction
	32.	York Region will finalize the facility layout/orientation of the proposed Second Elevated Tank and dry pond with the landowner of Site 71 as part of detailed design.	Section 6	Pre-construction and Construction

6.4 Approvals Required for the Preferred Water Servicing Solution

In addition to requiring *EA Act* approval, **Table E.2** lists the anticipated post-EA permits and approvals for the Preferred Water Servicing Solution by approval authority: municipal and regional approvals, provincial approvals, and federal approvals.

Table E.2 Anticipated Permits & Approvals Required for Preferred Water Servicing Solutions

Approval Authority	Anticipated Post-EA Permits and Approvals Required	Legislation or By-Law Reference
Municipal and Regional		
City of Vaughan	Road Cut (Road Occupancy) Permits	By-Law #294-94
	Noise Control By-Law	By-Law #96-2006
	Dewatering Discharge Permit	By-Law #087-2016
	Development Planning Site Plan Approval	By-Law #123-2013
York Region	Road Occupancy Permits	Not subject to legislation/by-law
	Dewatering Activity Discharge Approval	By-Law # 2011-56 and 2012-70
Utility Authorities	Consent from utility authorities: • Hydro One Networks Inc. • Bell Canada • Rogers • PowerStream • Cogeco • Telus • Allstream Inc. • TransCanada Pipe Lines Limited	Not subject to legislation or by-law
Toronto Region Conservation Authority (TRCA)	Permit for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses	Ontario Regulation 166/06 under the *Conservation Authorities Act*
	Erosion and Sediment Control Plan and Surface Water Management Plan	*Conservation Authorities Act*
Provincial		
	PTTW or Environmental Activity and Sector Registry(EASR)	*Ontario Water Resources Act*

Approval Authority	Anticipated Post-EA Permits and Approvals Required	Legislation or By-Law Reference
Ministry of the Environment, Conservation and Parks	Drinking Water Works Permit (DWWP)	*Environmental Protection Act*
	WHPA Q1/Q2 policy area, and Significant Groundwater Recharge Area	*Clean Water Act*
	Permit or Registry	*Endangered Species Act*
	Environmental Compliance Approval	*Environmental Protection Act*
Ministry of Tourism, Culture and Sport	Compliance letter	*Ontario Heritage Act*
Federal		
Fisheries and Oceans Canada	Self-Assessment/Letter of Advice or Authorization	*Fisheries Act* *Species at Risk Act*
Property Agreements		
Property Owners	Permanent and temporary easements from affected property owners	Not subject to legislation or by-law

6.5 Implementation of the Preferred Water Servicing Solution

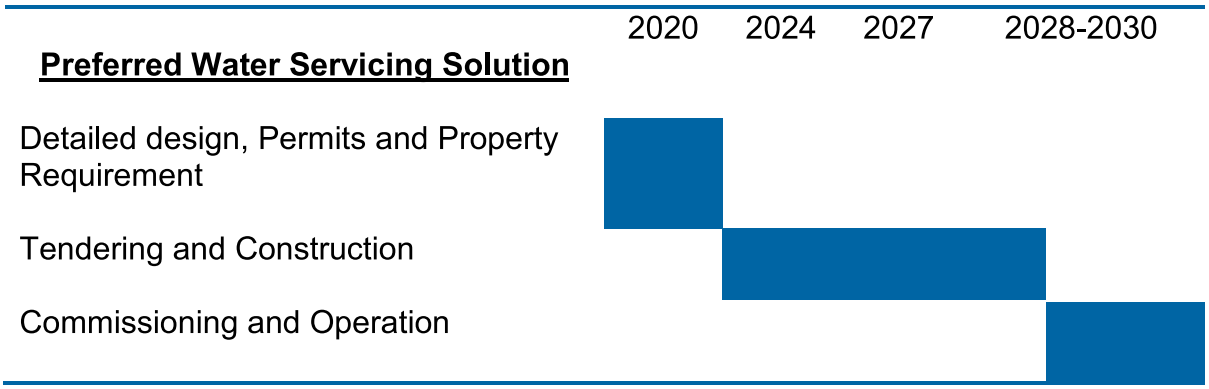
Following confirmation of the preferred alternative being classified as a Schedule B activity, York Region, as the proponent, is required to prepare a Project File documenting the MCEA process followed and conclusions reached and make it available for a thirty (30) calendar day review period.

During the thirty (30) calendar day review period, if there are any unresolved issues or concerns, then a Part II Order request may be sent to the Minister of the Environment, Conservation and Parks (Minister). If no Part II Order requests are received during the thirty (30) calendar day review period or those that are received are satisfactorily resolved, then a proponent is able to proceed to Phase 5 of the MCEA process and implement the preferred alternative according to their schedule. Specifically, this entails essentially three steps:

1. Complete the detailed design, embodying the preferred alternative and associated pre-construction environmental provisions and commitments as specified in the Project File Report, including acquiring all necessary post-EA permits, approvals and property.
2. Proceed to tendering and construction of the preferred alternative, monitoring to ensure fulfilment of construction-related environmental provisions and commitments as specified in the Project File Report.

3. Commission the preferred alternative, monitoring to ensure fulfilment of infrastructure operations-related environmental provisions and commitments as specified in the Project File Report.

York Region's current anticipated implementation timeline for the preferred Water Servicing Solution is shown below, with a view to having the new water infrastructure in service by 2028.



The anticipated implementation timeline is based on information known at this time and is subject to change.

PART D2: Evaluation of Alternative Design Concepts for Preferred Wastewater Servicing Solution

7. Phase 2B Identification and Evaluation of the Alternative Sewer Routes

With the preferred wastewater servicing solutions established, alternative routes for the proposed trunk sewer were generated, assessed, evaluated and consulted upon leading to the identification of a preferred trunk sewer route (**Figure E.13**).

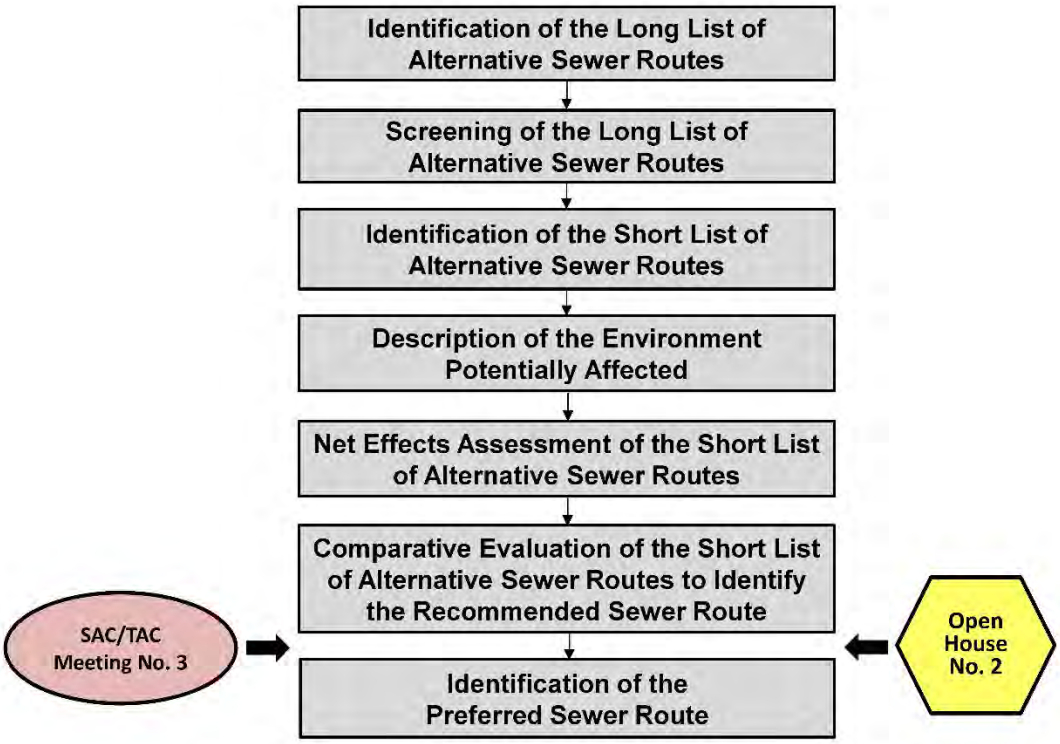


Figure E. 13 Methodology for Identifying a Preferred Sewer Route

7.1 Identification and Description of the Alternative Sewer Routes

Figure E.14 outlines the process specifically followed for identifying the long list of twenty-one (21) alternative sewer routes (alternative design concepts) for the proposed sewage conveyance from Teston Road to the YDSS.

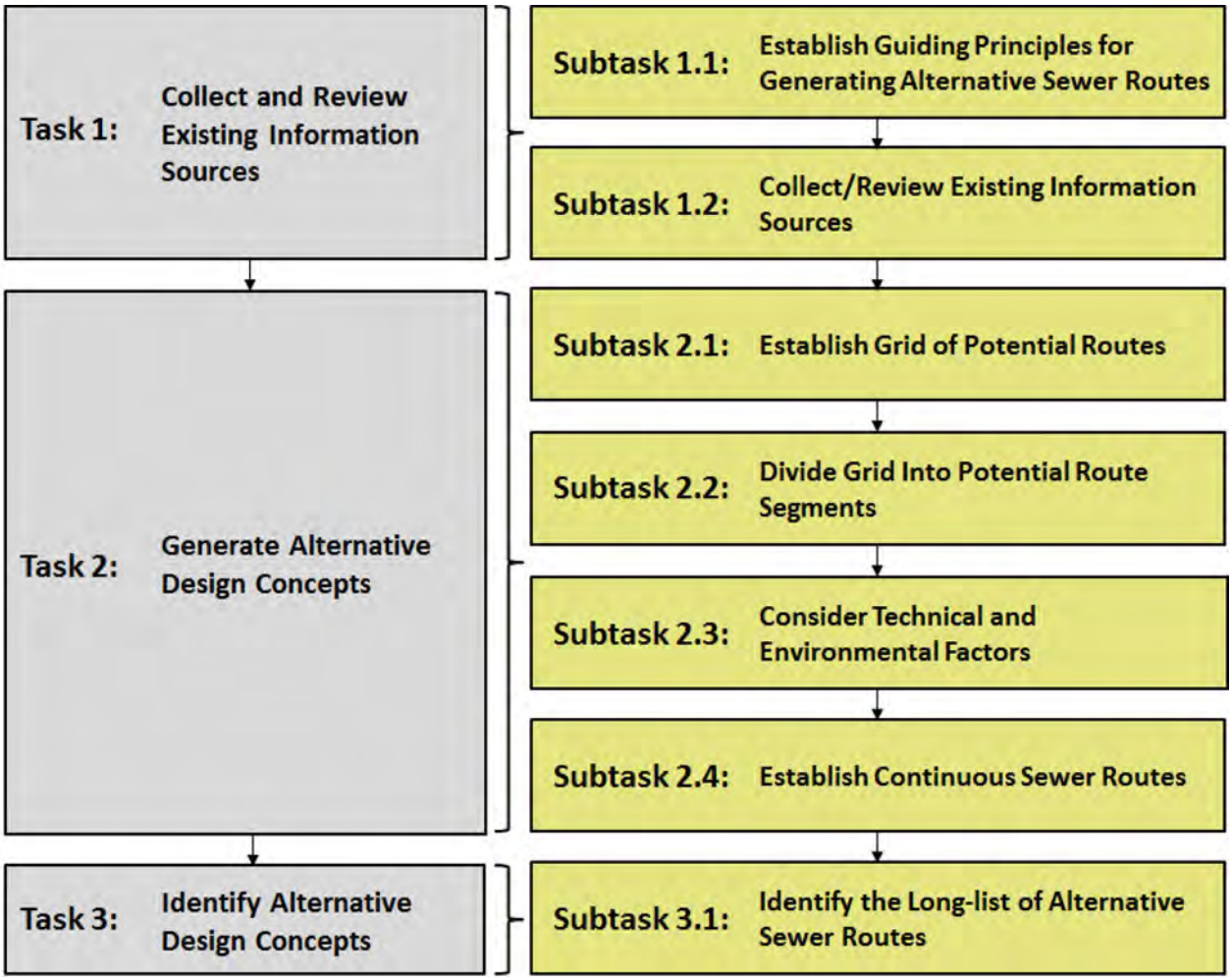


Figure E. 14 Process for Identifying the Long List of Alternative Sewer Routes

7.2 Screening of Long List of Alternative Sewer Routes

In order to arrive at a smaller number of sewer routes (i.e., short list of alternative sewer routes) for the purposes of undertaking environmental investigations in support of assessing the alternatives, the long list of twenty-one (21) alternative sewer routes were subjected to a screening process (**Figure E.15**).

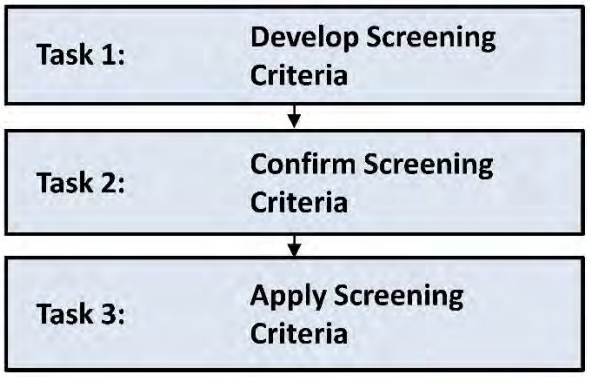


Figure E. 15 Process for Selecting a Short List of Alternative Sewer Routes

Five (5) sewer routes were selected as the short list of alternative sewer routes based on the application of the screening criteria to the long list of alternative sewer routes. Following the selection of the five (5) sewer routes, a further investigation was made to use existing Regional infrastructure to service approved growth as much as possible over building new infrastructure. As such, a “relief sewer” (or “R”) option was considered instead of a full twinning of the existing 2 kilometre (km) YDSS within the YDSS sanitary sewer easement south of Rutherford Road from Jane Street to Connection Point No. 2 (CP2) on Keele Street (route segment 11).

As previously mentioned, route segment 11 was determined not to be viable for accommodating the new trunk sewer due to a number of confirmed constraints that came to light after its initial inclusion and was eliminated from further consideration.

This investigation resulted in the proposal of a 975 mm diameter relief sewer segment of approximately 150 m paralleling the surcharging sections of the existing YDSS within the YDSS sanitary sewer easement south of Rutherford Road. As a result, three (3) proposed trunk sewer routes were added to the existing short list of five (5) alternative sewer routes (denoted as 3R, 13R, and 21R) reflecting the option of utilizing the proposed relief sewer for conveying wastewater flows from Connection Point No. 1 (CP1) to CP2 versus using just the route segment along Rutherford Road between Jane Street and Keele Street.

7.3 Description of Short List of Alternative Sewer Routes

Table E.3 provides a description of each of the eight (8) alternative sewer routes carried forward to the short list.

Table E.3 Description of Short List Sewer Routes

Alternative Sewer Route	Route Description
3	The route is approximately 10.4 km long, beginning at the intersection of Teston Road and Weston Road and extends south along Weston Road to the intersection at Major Mackenzie Drive and Weston Road. It continues east along Major Mackenzie Drive to the intersection of Major Mackenzie Drive and Keele Street. The route continues south on Keele Street to Langstaff Road. The route follows Langstaff Road until its intersection with the existing Maple Collector Relief Sewer at which point it twins the existing Maple Collector Relief Sewer southward. The route connects to the existing Maple Collector Relief Sewer (which connects to the existing YDSS further downstream) just south of Langstaff Road, before it twins with the existing Maple Collector.
8	The route is approximately 10.4 km long, beginning at the intersection of Teston Road and Weston Road and extends south along Weston Road to the intersection at Major Mackenzie Drive and Weston Road. It continues east along Major Mackenzie Drive to the intersection of Major Mackenzie Drive and Jane Street. The route then extends south along Jane Street to the intersection of Rutherford Road and Jane Street. It continues east along Rutherford Road to the intersection of Rutherford Road and Keele Street. The route continues south on Keele Street to Langstaff Road. The route follows Langstaff Road until its intersection with the existing Maple Collector Relief Sewer at which point it twins the existing Maple Collector Relief Sewer southward. The route connects to the existing Maple Collector Relief Sewer (which connects to the existing YDSS further downstream) just south of Langstaff Road, before it twins with the existing Maple Collector.
8R	Route 8R is the same as Alternative Sewer Route 8, but instead of constructing the new trunk sewer along Rutherford Road between Jane Street and Keele Street, only a short relief sewer (approximately 150 m) would be constructed along the existing YDSS easement south of Rutherford Road between Jane Street and Keele Street. Resulting in approximately sewer length of 8.2 km. In other words, Route 8R would use the majority of the existing YDSS sewer situated between Jane Street and Keele Street for conveying sewage flows to CP2.
13	The route is approximately 10.4 km long, beginning at the intersection of Teston Road and Weston Road and extends south along Weston Road to the intersection of Rutherford Road and Weston Road. It

Table E.3 Description of Short List Sewer Routes

Alternative Sewer Route	Route Description
	continues east along Rutherford Road to the intersection of Rutherford Road and Keele Street. The route continues south on Keele Street to the intersection of Langstaff Road and Keele Street. The route follows Langstaff Road until its intersection with the existing Maple Collector Relief Sewer at which point it twins the existing Maple Collector Relief Sewer southward. The route connects to the existing Maple Collector Relief Sewer (which connects to the existing YDSS further downstream) just south of Langstaff Road, before it twins with the existing Maple Collector.
13R	Route 13R is the same as Alternative Sewer Route 13, but instead of constructing the new trunk sewer along Rutherford Road between Jane Street and Keele Street, only a short relief sewer (approximately 150 m) would be constructed along the existing YDSS easement south of Rutherford Road between Jane Street and Keele Street. Resulting in approximately sewer length of 8.2 km. In other words, Route 13R would use the majority of the existing YDSS sewer situated between Jane Street and Keele Street for conveying sewage flows to CP2.
16	The route is approximately 8.4 km long, beginning at the intersection of Teston Road and Jane Street and extends south along Jane Street to the intersection of Major Mackenzie Drive and Jane Street. It continues east along Major Mackenzie Drive to the intersection of Major Mackenzie Drive and Keele Street. The route continues south on Keele Street to Langstaff Road. The route follows Langstaff Road until its intersection with the existing Maple Collector Relief Sewer at which point it twins the existing Maple Collector Relief Sewer southward. The route connects to the existing Maple Collector Relief Sewer (which connects to the existing YDSS further downstream) just south of Langstaff Road, before it twins with the existing Maple Collector.
21	The route is approximately 8.4 km long, beginning at the intersection of Teston Road and Jane Street and extends south along Jane Street to the intersection of Rutherford Road and Jane Street. It continues east along Rutherford Road to the intersection of Rutherford Road and Keele Street. The route continues south on Keele Street to the intersection of Langstaff Road and Keele Street. The route follows Langstaff Road until its intersection with the existing Maple Collector Relief Sewer at which point it twins the existing Maple Collector Relief Sewer southward. The route connects to the existing Maple Collector

Table E.3 Description of Short List Sewer Routes

Alternative Sewer Route	Route Description
	Relief Sewer (which connects to the existing YDSS further downstream) just south of Langstaff Road, before it twins with the existing Maple Collector.
21R	Route 21R is the same as Alternative Sewer Route 21, but instead of constructing the new trunk sewer along Rutherford Road between Jane Street and Keele Street, only a short relief sewer (approximately 150 m) would be constructed along the existing YDSS easement south of Rutherford Road between Jane Street and Keele Street. Resulting in approximately sewer length of 6.6 km. In other words, Route 21R would use the majority of the existing YDSS sewer situated between Jane Street and Keele Street for conveying sewage flows to CP2.

7.4 Description of Environment Potentially Affected

With the short list of sewer routes established, the environment potentially affected by their proposed development was described as defined in the *Environmental Assessment Act* (Natural Environment, Built Environment, Social Environment, Economic Environment, and Cultural Environment) based on existing information sources and supplemented with data from field visits/investigations, where necessary. In particular, the following investigations were carried out as part of providing a more detailed description and understanding of the environment for the short list of sewer routes:

Environment as defined the *EA Act*	Investigative Study
Natural Environment	Geotechnical & Hydrogeology Report. GHD, 2017. Natural Environment Report. GHD, 2017.
Built, Social, and Economic Environments	Land Use Report. GHD, 2017. Environmental Site Screening Report. GHD, 2017.
Cultural Environment	Stage 1 Archaeological Assessment. Cultural Heritage Resource Assessment Memorandum

7.4.1 Natural Environment

The Geotechnical & Hydrogeology investigation identified soil conditions (e.g., type, composition, approximate thickness) and an approximation of water table depth (e.g., shallow, deep) for short list of sewer routes. The envelopes associated with the short list of sewer routes are largely within the Oak Ridges Aquifer Complex (ORAC)

sand soils and Halton Till, with high piezometric pressures above the potential tunnel vertical alignment, due to the shallow depth of the alignment and the presence of Halton Till.

The Natural Environment investigation identified the presence and/or absence of natural features that are nearby, adjacent or that intersect the short list of sewer routes. The main/significant natural features identified include but are not limited to:

- Purpleville Creek and tributaries of the Don River West Branch;
- East Humber River Wetland Complex Provincially Significant Wetland (PSW);
- Occupied or Recovery Reaches for Redside Dace;
- Woodland and Conservation Areas and Regional Forest under the York Region Official Plan (OP);
- Core Features under the City of Vaughan OP;
- Significant Wildlife Habitat is shown to be present as both amphibian breeding woodland and special concern woodland breeding bird habitat; and
- Species at risk records/observations; including but not limited to Kentucky Coffee Tree (provincially threatened), and Honey Locust (provincially rare), Barn Swallow (provincially threatened) and Bank Swallow (provincially threatened).

7.4.2 Built, Social, and Economic Environments

The Land Use investigation identified current and future land use; land use designations and zoning; number of residences, buildings and their approximate distance; driveways/property accesses; farmsteads; businesses; recreational uses; community and religious centres; institutions; industry; pipelines; and soil classification on and/or adjacent to the short list of sewer routes.

The short list of alternative sewer routes are largely within areas that are developed already with various urban uses (e.g., residential, institutional, employment, etc.) and are undergoing intensification efforts as the City looks to accommodate some of its planned growth within its existing communities including Maple (east of Highway 400) and Vellore (west of Highway 400).

The majority of the proposed developments adjacent the short list of alternative sewer routes are residential in nature including apartments, condominiums, townhomes, or condominium townhomes. In addition, the new Mackenzie Vaughan Hospital is currently being built on a 25 ha property at the northwest corner of Jane Street and Major Mackenzie Drive West.

The Environmental Site Screening identified the presence or absence of Areas of Potential Environmental Impairment (APEIs) on or in proximity to the short list of sewer

routes. The main APEIs identified were current and former gasoline service stations. Other APEIs identified include:

- Dry cleaners, identified as a Halogenated Solvent generator (HSL)
- Fuel oil storage tank(s) (CFOT)
- An asphalt plant that was identified as a generator of halogenated solvents, suggesting that trichloroethylene based asphalt testing may be completed at the property
- An EXP at a propane company
- Halogenated solvent waste generation
- A glass company, which was identified as a halogenated solvent waste generator and an expired fuel storage facility
- A spill of 400 litres of diesel fuel at a property on the south side of Rutherford Road near the intersection of Rutherford Road and Jane Street

7.4.3 Cultural Environment

All of the sewer routes on the short list were identified to be adjacent to areas of archaeological and ossuary potential.

The Cultural Heritage Resource Assessment identified the presence or absence of built heritage resources and cultural heritage landscapes along the short list of sewer routes. Cultural heritage features identified, include:

- Teston Historical Settlement Area
- 10811 Jane Street
- Baitul-Islam Mosque at 10610 Jane Street
- Jacob Rupert House at 2600 Major Mackenzie Drive (City of Vaughan's Listing of Buildings of Architectural and Historical Value (Approved by Council in 2005) and designated under Part IV of the OHA)
- 10800 Weston Road
- Vellore Schoolhouse and Township Hall at 9541 Weston Road (City of Vaughan's Listing of Buildings of Architectural and Historical Value (Approved by Council in 2005) and designated under Part IV of the Ontario Heritage Act (OHA))
- 9465 Weston Road
- Jacob Rupert House at 2600 Major Mackenzie Drive (City of Vaughan's Listing of Buildings of Architectural and Historical Value (Approved by Council in 2005) and designated under Part IV of the OHA)

- Zion Evangelical Lutheran Church Parsonage at 8733 Keele Street
- Zion Evangelical Lutheran Church at 8795 Keele Street
- St. Stephen's Anglican Cemetery
- Maple Heritage Conservation District (Buildings and structures within the Village of Maple Heritage Conservation District are designated under Part V of the OHA)

7.5 Assessment of the Short List of Alternative Sewer Routes

The short list of alternative sewer routes was assessed prior to comparatively evaluating them in order to identify a recommended sewer route. The assessment was based on a net effects analysis similar to that used for the short list of alternative water storage/pumping station sites. As mentioned, a net effects analysis is composed of the following activities reflecting the process specified in the MCEA:

1. Identify potential effects on the environment (both positive and negative).
2. Develop appropriate impact management measures.
3. Apply the impact management measures to the identified potential environmental effects to identify net effects on the environment (both positive and negative).

7.6 Comparative Evaluation of the Short List of Alternative Sewer Routes

The short list of alternative sewer routes were comparatively evaluated using the Reasoned Argument or *"Trade-off"* approach based on the results of the net effects analysis. Based on the comparative evaluation approach, **Route 21R** was identified as the **recommended route** for the construction and operation of the proposed trunk sewer based on the results of the comparative evaluation taking into account the feedback received via PCC Round No. 1.

7.7 Identification of the Preferred Sewer Route

Through consultation with the public, property owners and review agencies via individual meetings (e.g., City of Vaughan, TRCA), **Route 21R** was confirmed as the **preferred route** for the construction and operation of the proposed trunk sewer proposed as part of the Project (**Figure E.16**).

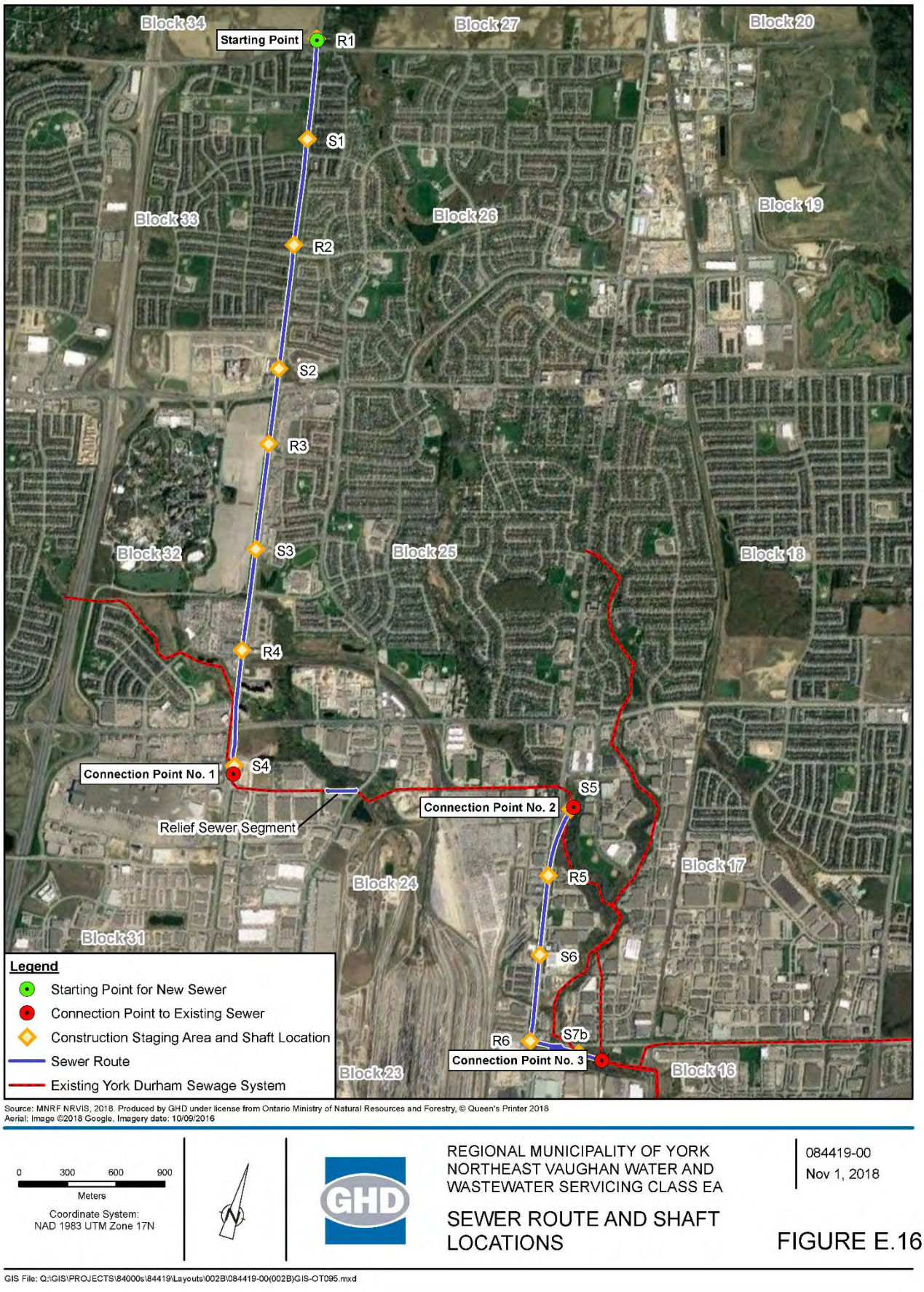


Figure E. 16 Sewer Route and Shaft Locations

8. Description and Implementation of Preferred Wastewater Servicing Solution

8.1 Detailed Description of Preferred Wastewater Servicing Solution

With confirmation of Route 21R as the preferred route, Step 7 (preliminary finalization of the preferred design) of the MCEA was carried out beginning with a more detailed description of the new trunk sewer. The proposed trunk sewer would begin at Teston Road and connect at three specific points to the existing YDSS (**Figure E.16**). The proposed trunk sewer would be constructed as three (3) distinct sections:

- A section of approximately 4.49 km along Jane Street from Teston Road to just south of Rutherford Road.
- A relatively short section of 180 m within the existing York Region easement located south of Rutherford Road between Jane Street and Keele Street (referred to as the relief sewer segment).
- A section of approximately 1.93 km on Keele Street from south of Rutherford Road and then east crossing Langstaff Road to just south of it.

The three (3) sections of the new trunk sewer when combined have a total length of approximately 6.6 km. Once constructed and operational, sewage would flow within the proposed trunk sewer primarily in a southeast direction.

The new trunk sewer would be predominately constructed on the west side of both Jane Street and Keele Street to avoid as many potential utility and infrastructure conflicts as possible. The alignment also allows for the use of the boulevard or temporary easements for construction compounds reducing potential short term construction related effects to traffic.

The new trunk sewer would be built using proven construction methods and practices. In particular, the new trunk sewer would be constructed using primarily trenchless construction methodologies (approximately 95 percent of proposed trunk sewer length) and with open cut methodologies (approximately 5 percent of proposed trunk sewer length) used as required to make connections to the YDSS.

8.2 Confirmation of Net Environmental Effects

The routing of the new trunk sewer is situated primarily within Regional ROWs and avoids significant environmental features and sensitive land uses. In addition, the new trunk sewer would be built using proven construction methods and practices familiar to York Region. In particular, the new trunk sewer would be constructed using primarily trenchless construction methodologies (approximately 95 percent of proposed trunk sewer length) with smaller sections requiring open cut methodologies.

As a result, the potential for adverse effects on the environment from constructing and operating the new trunk sewer are relatively minor and responsive to standard impact management measures.

This section also describes the potential impacts of the construction of the preferred wastewater infrastructure on climate change as well as the impacts of climate change on the preferred wastewater infrastructure.

8.3 Commitments and Monitoring for the Preferred Wastewater Servicing Solution

York Region has made a number of commitments to review agencies like the TRCA and City of Vaughan that will be carried out as part of detailed design (**Table E.4**).

Table E.4 Municipal Class EA Commitments and Compliance Monitoring for Wastewater Servicing Solution

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
General	1.	Required permits and approvals will be obtained for the Preferred Wastewater Servicing Solution. Additional investigations to determine the need and/or support applications for PTTW or EASR will be carried out.	Section 8 and 9	Pre-Construction, Construction
	2.	Any unforeseen change to the Preferred Wastewater Servicing Solution will be reviewed by York Region to determine if it should follow the MCEA addendum process.	Not specified	Pre-Construction, Construction
	3.	The impact management measures and proposed monitoring programs associated with the Preferred Wastewater Servicing Solution will be implemented unless they are determined to be no longer applicable or required.	Section 8	Pre-Construction, Construction
Natural Environment	4.	Develop and implement a groundwater monitoring and impact management program.	Section 8	Pre-Construction, Construction
	5.	Consult with the MECP Central Region as part of detailed design to confirm any approval requirements for water takings (e.g. a PTTW) during construction or operation, along with associated discharge water quality and quantity monitoring and mitigation programs.	Section 8	Pre-Construction, Construction
	6.	If any private domestic wells are discovered, affected well owners will be engaged and continue to have water of appropriate quality and in adequate quantities supplied for the duration of construction. Any work done on affected wells or any replacement wells will be completed pursuant to the Wells Regulation (R.R.O. 1990, Regulation 903 (Wells) as amended under the Ontario Water Resources Act, R.S.O. 1990, c. O. 40)..	Section 8	Pre-Construction, Construction
	7.	All wells constructed (and subsequently decommissioned) for future investigations will be done so in accordance with the Wells	Section 9	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
		Regulation (R.R.O. 1990, Regulation 903 (Wells) as amended under the Ontario Water Resources Act, R.S.O. 1990, c. O. 40).		
	8.	Prepare an Erosion and Sediment Control (ESC) plan (Grading Plan, Stabilization Plan, Dewatering Plan etc.) in agreeance with the ESC Guideline for Urban Construction (December 2006) during the Detailed Design stage. A contingency plan will also be submitted for TRCA's review during Detailed Design for the proposed works at CP2 that are within the floodplain.	Section 9	Pre-Construction, Construction
	9.	The environmental monitoring and mitigation strategy will include known groundwater discharge areas and potential issues related to dewatering effluent systems.	Section 9	Pre-Construction, Construction
	10.	York Region will conduct a comprehensive geotechnical investigation for the sewer route. The stamped geotechnical report will be submitted to the TRCA.	Section 9	Pre-Construction, Construction
	11.	Prepare a Tree Preservation Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	12.	Prepare a Post-Construction Restoration Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	13.	Complete compensation calculations and prepare a Compensation Planting Plan as per the current TRCA policy and guidelines.	Section 9	Pre-Construction, Construction
	14.	Possible climate change mitigation and adaptation measures will be examined and confirmed.	Section 8	Pre-Construction, Construction
Built Environment	15.	Develop and implement a Vibration Management Program if required.	Section 8	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
	16.	Develop a Soil Management Plan (consistent with the MECP *Management of Excess Soil – A Guide for Best Management Practices* (2014) and with Part XV.1 of the *Environmental Protection Act* and Ontario Regulation 153/04, Records of Site Condition) to govern how any excess soil or contaminated soil/water encountered will be handled and disposed of.	Section 8	Pre-Construction, Construction
Social Environment	17.	A complaint protocol will be developed prior to construction and implemented during construction of the proposed project for responding to potential dust, noise and vibration related complaints from area residents.	Section 8	Pre-Construction, Construction
	18.	Develop and implement a Traffic Management Plan, including measures to manage impacts to sidewalks, the multi-use Trails and bus shelters through consultation with the City of Vaughan.	Section 8	Pre-Construction, Construction
	19.	York Region will work with the City of Vaughan during Detailed Design, where possible to identify any potential opportunities to accommodate the development of future trails along any disturbed corridors/lands.	Section 9	Pre-Construction
	20.	York Region with input from the City of Vaughan will identify an interim trail connection for the Bartley Smith Greenway Trail during construction of shaft S7b to avoid the staging area in order to maintain safe and accessible access for trail users. York Region will also develop a restoration strategy for the section of the Bartley Smith Greenway Trail that would be impacted by the construction of Shaft S7b. The restoration would reinstate the trail to its original condition or better taking into consideration contextual changes at the time of the works.	Section 9	Pre-Construction, Construction
	21.	Develop and implement a Vibration Management Program if required.	Section 8	Pre-Construction, Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
Cultural Environment	22.	Complete Stage 2 Archaeological Assessment Test pitting to confirm the presence of any archaeological resources in areas that retain archaeological potential If warranted, undertake Stage 3 Archaeological Assessment for any archaeological resources discovered during the Stage 2 Archaeological Assessment. If required, then undertake a Stage 4 Archaeological Assessment (i.e., avoidance or salvage excavation) following the Stage 3 Archaeological Assessment.	Section 8	Pre-Construction, Construction
	23.	Update the Cultural Heritage Memorandum to confirm the potential adverse effects, proposed impact management measures and monitoring programs associated with the Preferred Wastewater Servicing Solution.	Section 8	Pre-Construction
Consultation	24.	Affected residents and business owners immediately adjacent to construction will be notified of construction activities (i.e. road/lane closures, municipal service/utility disruptions, temporary driveway access alterations) a minimum of 24 hours prior to construction in their immediate area.	Section 8	Construction
	25.	Review agencies (e.g. provincial ministries, agencies, City of Vaughan, utilities, etc.) and developers will be consulted through meetings and correspondence on an as-needed basis during design and construction to coordinate the construction of their infrastructure/development projects with the Preferred Alternative.	Section 9	Pre-Construction, Construction
	26.	All property easement requirements will be confirmed and agreements obtained with the affected property owners prior to construction. As part of this confirmation and agreement process, York Region may request additional due diligence for properties where they will acquire a permanent easement or acquire real property.	Section 8	Pre-Construction

Category	ID #	Commitment Description	Project File Report Section(s) and/or Supporting Document	Commitment Timing
	27.	York Region will notify Indigenous communities, previously contacted during the Project, prior to completing any Stage 2 Archaeological Assessments and will invite them to provide an archaeological monitor if interested.	Section 9	Pre-Construction

8.4 Approvals Required for the Preferred Wastewater Servicing Solution

In addition to requiring EA Act approval, **Table E.5** lists the anticipated post-EA permits and approvals for the Preferred Wastewater Servicing Solution by approval authority: municipal and regional approvals, provincial approvals, and federal approvals.

Table E.5 Anticipated Permits and Approvals Required for Preferred Wastewater Servicing Solution

Approval Authority	Anticipated Post-EA Permits and Approvals Required	Legislation or By-Law Reference
Municipal and Regional		
City of Vaughan	Road Cut (Road Occupancy) Permits	By-Law #294-94
	Noise Control By-Law	By-Law 96-2006
	Dewatering Discharge Permit	By-Law #087-2016
York Region	Road Occupancy Permit	Not subject to legislation or by-law
	Dewatering Activity Discharge Approval	By-Law # 2011-56 and 2012-70
Utility Authorities	Consent from utility authorities: Enbridge Inc. Hydro One Networks Inc. Bell Canada Rogers PowerStream Cogeco Telus Allstream Inc. TransCanadaPipeLines Limited	Not subject to legislation or by-law
Toronto Region Conservation Authority (TRCA)	Permit for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses	Ontario Regulation 166/06 under the *Conservation Authorities Act*
	Erosion and Sediment Control Plan and Surface Water Management Plan	*Conservation Authorities Act*
Provincial		
Ministry of the Environment,	PTTW or EASR	*Ontario Water Resources Act*

Approval Authority	Anticipated Post-EA Permits and Approvals Required	Legislation or By-Law Reference
Conservation and Parks	Environmental Compliance Approval	*Environmental Protection Act*
Ministry of Tourism, Culture and Sport	Compliance letter	*Ontario Heritage Act*
Federal		
Fisheries and Oceans Canada	Letter of Advice or Authorization	*Fisheries Act*
Property Agreements		
	Permanent and temporary easements from affected property owners.	Not subject to legislation or by-law

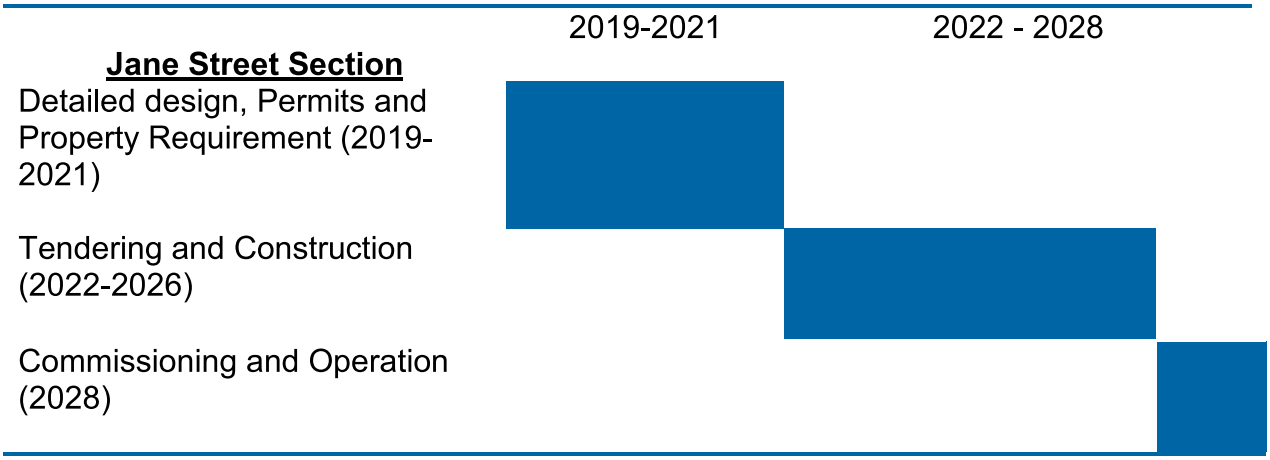
8.5 Implementation of the Preferred Wastewater Servicing Solution

Following confirmation of the preferred alternative being classified as a Schedule B activity, York Region, as the proponent, is required to prepare a Project File documenting the MCEA process followed and conclusions reached and make it available for a thirty (30) calendar day review period.

During the thirty (30) calendar day review period, if there are any unresolved issues or concerns, then a Part II Order request may be sent to the Minister. If no Part II Order requests are received during the thirty (30) calendar day review period or those that are received are satisfactorily resolved, then a proponent is able to proceed to Phase 5 of the MCEA process and implement the preferred alternative according to their schedule. Specifically, this entails essentially three steps:

1. Complete the detailed design, embodying the preferred alternative and associated pre-construction environmental provisions and commitments as specified in the Project File Report, including acquiring all necessary post-EA permits, approvals and property.
2. Proceed to tendering and construction of the preferred alternative, monitoring to ensure fulfilment of construction-related environmental provisions and commitments as specified in the Project File Report.
3. Commission the preferred alternative, monitoring to ensure fulfilment of infrastructure operations-related environmental provisions and commitments as specified in the Project File Report.

Unlike the proposed water facilities that are planned to be in service by 2028, the preferred Wastewater Servicing Solution is presently proposed to be constructed over a longer period starting with Section 1 along Jane Street from Teston Road to just south of Rutherford Road. The anticipated schedule for implementing Section 1 is illustrated as follows with an in service date of 2028.



The Keele Street/Langstaff Road section is anticipated to be implemented by 2041 and the relief sewer by 2051.

The anticipated implementation timelines reflect information known at this time and are subject to change.

PART E: Consultation Summary

9. Overview of the Consultation Process Carried Out

9.1 Key Decision Making Milestones When Consultation Occurred

Since the Project was classified as a Schedule “B” activity as per the MCEA, there are two (2) mandatory points of consultation with stakeholders that must be fulfilled:

- Towards the end of Phase 2 of the MCEA process
- At the end of the MCEA process, following preparation of the Project File

Notwithstanding these mandatory contact points, York Region elected to undertake consultation with stakeholders during Phase 1 of the MCEA process (discretionary). Also, York Region decided to carry out the additional steps associated with Phase 3 of the MCEA process within the context of Phase 2 so that, for all intents and purposes, a MCEA Schedule “C” process was completed for the Project.

Input was sought and obtained from the involved participants beyond the mandatory key decision making points in the MCEA associated with Schedule “B” classified projects before moving forward with those decisions in the Project in accordance with the Project’s Communications and Consultation Plan:

Key MCEA Decision Making Point	Consultation Activity Provided	MCEA Consultation Requirement for Schedule “B” Projects
Confirmation of the problem/opportunity statement (Phase 1 of the MCEA)	Notice of Study Commencement	Discretionary
Confirmation of the preferred solution (Phase 2 of the MCEA)	Public Consultation Centre (PCC) No. 1	Mandatory
Confirmation of the preferred water facilities and related sites/routes and trunk sewer route for implementing the preferred solution (Phase 3 of the MCEA)	Public Open House (POH) No. 2	Discretionary
Confirmation that the MCEA process was appropriately carried out in a traceable manner (Phase 4 of the MCEA)	Interested agency review of the Draft Project File Report	Discretionary
Opportunity for unresolved issues or concerns to be raised (Phase 2 or 4 of the MCEA)	Notice of Study Completion - Filing of the Project File Report for review	Mandatory

9.2 Interested Participants and How Input Was Obtained

Review Agencies

Review agency input on the Project was obtained through meetings with the Technical Advisory Committee (TAC) as well as individual and group meetings, telephone conversations, and written and email correspondence.

Review agencies included federal agencies and departments, provincial ministries and agencies, local agencies, such as the TRCA and transit authorities, York Region agencies, the City of Vaughan, the Township of King, and utilities. In total, thirty-four (34) Review Agencies were consulted during the Project.

Indigenous Communities

Indigenous communities were consulted through separate, but parallel processes to the Review Agencies and the public throughout the Project. A *Protocol for First Nations Consultation* was established at the beginning of the Project to guide consultation with First Nations. Consultation with Métis organizations was performed in accordance with the framework set out in the *Métis Consultation and Accommodation: A Guide for Government and Industry on Engaging Métis in Ontario* (2004).

Consultation activities associated with Indigenous communities included notifications in the form of a letter, email and follow-up telephone call. The notifications corresponded with those provided to Review Agencies and the public to ensure continuity in contact between Indigenous communities and other participants throughout the Project.

Public

Input from members of the public on the Project was obtained through meetings with the Stakeholder Advisory Committee (SAC) as well as individual and group meetings, PCCs and POH, telephone conversations, and written and email correspondence.

Public participants included City of Vaughan Councillors, developers, local residents, property owners, businesses, Vaughan Chamber of Commerce, resident associations, and environmental organizations.

9.3 Consultation Activities Carried Out

A range of consultation activities were carried out during the MCEA with the objective of identifying issues and opportunities, enhancing public access to project information, building community awareness, receiving stakeholder input on suggested alternatives, and providing multiple avenues of engagement (**Figure E.17**).The consultation activities carried out during the Project were tailored to each participant group.

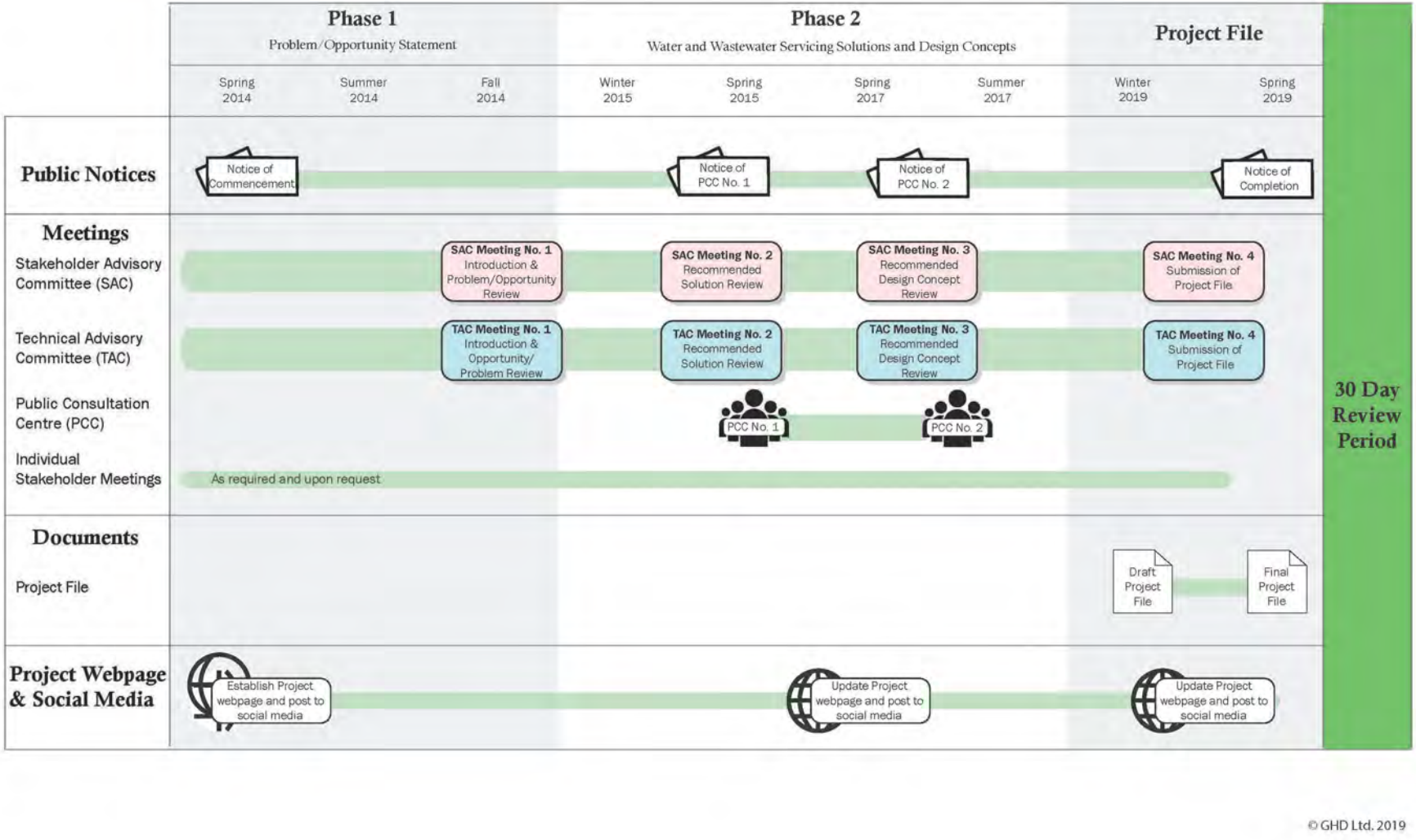


Figure E. 17 Consultation Activities

9.4 Consideration of Comments Received and Issues Raised

Through the preceding consultation activities, approximately seventy (70) Review Agencies, utilities, First Nations and Métis organizations, developers, and public participants provided comments and/or requests for more information to York Region during the Project. These were recorded in the Project's communications record database and summarized in the Project File Report.

9.5 Review of the Draft Project File

Prior to filing the Project File Report and making it available for the mandatory review period, a draft copy of it was provided to the MECP, TRCA, MNRF and the City of Vaughan with the opportunity to provide comments. This was done as a good practice in accordance with the MCEA and in response to requests received during the Project.

9.6 Filing of the Final Project File

As part of the process of making the Project File available for review, York Region issued a formal 'Notice of Completion' for the Project on **April 11, 2019.**

30 Day Review Period

York Region established the thirty (30) calendar day review period starting on **April 11, 2019** and ending on **May 13, 2019** whereby any interested person can inspect the Project File and provide comments. The comments, including any issues or concerns, should be sent first to the York Region for potential resolution before they are escalated to the Minister of Environment, Conservation and Parks as a Part II Order request.

9.7 Proposed On-Going Consultation Plan

Subject to receiving *EA Act* approval for the Project via the MCEA, York Region is proposing an on-going consultation plan during construction and operation of the proposed new water and sewer infrastructure. In particular, the following activities are proposed:

Review Agencies

- York Region will consult with Review Agencies through meetings and correspondence on an as-needed basis during design and construction to discuss issues related to their agency's mandate (e.g., permits and approvals required prior to construction or operation).
- York Region will develop and implement monitoring programs in consultation with the applicable agencies.
- York Region will provide annual monitoring reports to the applicable agencies.

- York Region will consult with the City and internal York Region departments, as appropriate, to potentially coordinate the construction of the new water and sewer infrastructure with other infrastructure projects.

Indigenous Communities

- York Region will notify the Indigenous communities involved in the Project prior to completion of the Stage 2 Archaeological Assessment and will invite them to provide an archaeological monitor.

Public

- York Region will inform residents of construction activities.
- York Region will continue to consult with property owners to obtain permanent and temporary easements along the route for the proposed new water and sewer infrastructure, where required, during design and construction.

10. Conclusion

In accordance with the MCEA, the planning and design process carried out for the Project was documented in the Project File Report. This Executive Summary was prepared to provide the main content of the highly detailed and technical Project File Report, in a version that is more public friendly and that is compliant with the *Accessibility for Ontarians with Disabilities Act*.

For further information, including the net effects tables that document the detailed impact assessment that was carried out for the preferred water infrastructure and trunk sewer, please view the Project File Report that is on public record for review and comment for thirty (30) calendar days from April 11, 2019 through to May 13, 2019 during regular business hours at the following locations:

The Regional Municipality of York	Vaughan City Hall
Clerk's Department	Office of the City Clerk
17250 Yonge Street	2141 Major Mackenzie Drive
Newmarket, ON L3Y 6Z1	Vaughan, ON L6A 1T1

Alternatively if you would like a copy of the Project File Report electronically please contact:

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