

Class Environmental Assessment Project File Report

**Cawthra Phase 3 Trunk Sewer along
Burnhamthorpe Rd, City of Mississauga**

PROJECTS 18-2252, 20-2453, & 22-2254



Prepared for Region of Peel
by Arcadis Professional Services (Canada) Inc.
December 12, 2024

Class Environmental Assessment Project File Report

Cawthra Phase 3 Trunk Sewer along Burnhamthorpe Rd, City of Mississauga

December 2024

Prepared By:

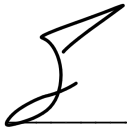
Arcadis Professional Services (Canada) Inc.
8133 Warden Ave, Unit 300
Markham Ontario L6G 1B3
Canada
Phone:905 763 2322

Prepared For:

Paul Rastrullo
Project Manager
Regional Municipality of Peel
10 Peel Centre Drive, Suite A
Brampton ON L6T 4B9

Our Ref:

141362



Hedieh Hashtroudi, P.Eng.
Associate - Manager, Linear Infrastructure



Fady Shweihat, P.Eng.
Principal - Practice Lead, Conveyance

Contents

1	Introduction	1
1.1	Background.....	1
1.2	2020 Wastewater Master Plan.....	1
2	Planning and Policy Context	2
2.1	Region of Peel Official Plan.....	2
2.1.1	Growth Management Strategy.....	3
2.2	Greenbelt Plan.....	3
2.3	Provincial Policy Statement (2020).....	4
3	Class EA Process and Public Consultation	5
3.1	Municipal Engineers Association’s Municipal Class EA Planning Process.....	5
3.2	Municipal Class EA Schedules.....	6
4	Existing Site Conditions	8
4.1	Site Description.....	8
4.2	Topography and Drainage.....	8
4.3	Natural Environment.....	8
4.4	Socio-Cultural Environment.....	9
4.4.1	Archaeological Assessment.....	9
4.4.2	Cultural Heritage.....	9
4.4.3	Land Uses.....	10
4.5	Local Geology.....	10
4.5.1	Previous Geotechnical and Hydrotechnical Investigation.....	10
4.6	Traffic.....	11
4.6.1	Roadways.....	11
4.6.2	Heavy Truck Restrictions.....	13
4.6.3	Transit Routes.....	13
4.6.4	Events.....	13
4.7	Existing Utilities.....	14
5	Problem/Opportunity Statement	15
5.1	Schedule B Class EA.....	15

6	Alternative Solutions	17
6.1	Identification of Alternatives	17
6.1.1	Alternative 1– Little Etobicoke Creek (LEC) Extension.....	18
6.1.2	Alternative 2 - Little Etobicoke Creek (LEC) Extension (Alternate Shaft 3-4)	19
6.1.3	Alternative 3 - “Do Nothing”	19
7	Evaluation of Alternative Solutions	20
7.1	Evaluation Criteria.....	20
7.2	Evaluation Methodology.....	22
8	Preferred Alternative	26
8.1.1	Construction Method	26
8.1.2	Launching and Reception Shafts	27
8.1.3	Compound Areas	27
9	Permits and Approvals	27
9.1	Approvals – Conservation Authority	28
9.1.1	Ontario Regulation 166/06: Toronto and Region Conservation Authority: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses	28
9.1.2	Source Water Protection – Clean Water Act (2006)	28
9.2	Approvals – Provincial	28
9.2.1	Ontario’s Endangered Species Act, 2007	28
9.2.2	Permit to Take Water / Environmental Activity and Sector Registry.....	29
9.2.3	Ontario Water Resources Act R.S.O. 1990 – Environmental Compliance Approval (“ECA”).....	29
9.2.4	Excess Soil Management (O.Reg. 406/19)	29
9.3	Approvals – Municipal.....	29
9.3.1	Public Utilities Coordinating Committee (“PUCC”) - City of Mississauga	29
9.3.2	Tree Protection By-law and Tree Removal Permit - City of Mississauga	30
9.4	Approvals – Federal.....	30
9.4.1	Fisheries Act Authorization	30
10	Identification of Mitigation Measures	30
10.1	Utilities.....	30
10.2	Social-Cultural Environment Impacts.....	30

10.2.1	Traffic	30
10.2.2	Speed Limits	31
10.2.3	Traffic Control – Working Hours.....	31
10.2.4	Traffic Control – Non-Working Hours.....	31
10.2.5	Protection to Hydro Poles	32
10.2.6	Work Site Delineation.....	32
10.2.7	Pedestrian Traffic.....	32
10.2.8	Public Notification.....	32
10.2.9	Noise and Vibration Control	32
10.2.10	Generation of Excess Materials	32
10.2.11	Encountering Unknown Archaeology Remains	33
10.3	Natural Environment Impacts	33
10.3.1	Erosion and Sediment Control	33
10.3.2	Spill Prevention and Contingency	33
10.3.3	Tree Protection.....	33
10.3.4	Dewatering	34
10.3.5	Restoration.....	34
11	Public, Agency, and Indigenous Community Consultation	35
11.1	Notices and Online Public Engagement	35
11.1.1	Notice of Study Commencement and Online Public Engagement	35
11.1.2	Online Public Engagement	35
11.1.3	Notice of Study Completion	35
11.2	Public and Agency Comments.....	36
11.3	Indigenous Communities Consultation	36

List of Figures

Figure 3-1	Municipal Class EA Planning and Design Process.....	6
Figure 6-1	Study Area	17
Figure 6-2	Alternative 1	18
Figure 6-3	Alternative 2	19

List of Tables

Table 4-1 Key Roadway Descriptions	11
Table 4-2 Other Roads within Study Area.....	12
Table 4-3 Heavy Vehicles Prohibition	13
Table 4-4 Existing Transit Service	13
Table 4-5 Special Events within the Study area.....	13
Table 7-1 Evaluation Criteria.....	20
Table 7-2 Comparative Evaluation Matrix	23

Appendices

- Appendix A:** Study Area Maps
- Appendix B:** Natural Sciences Report
- Appendix C:** Archaeological Assessment
- Appendix D:** Cultural Heritage Report
- Appendix E:** Geotechnical Investigation Report
- Appendix F:** Noise, Vibration and Dust Monitoring Plan
- Appendix G:** Arborist Report
- Appendix H:** Contact List and Project Notifications
- Appendix I:** Correspondence Log
- Appendix J:** OPE Display Boards

1 Introduction

The Region of Peel (Region) has identified the need to build a new gravity sanitary sewer to enhance wastewater servicing capacity and operational flexibility as part of the Central Mississauga Capacity Improvements identified in the 2020 Water and Wastewater Master Plan for the Lake-Based (South Peel) system. This includes implementing control sites designed to balance flow for infrastructures constructed to facilitate future growth and development.

In addition, the study will address objectives of the Region's State of Good Repair Basement Flooding Mitigation Program within the Wilcox Road and Runningbrook Drive sewersheds by diverting wastewater flows away from areas prone to sewer surcharging to the proposed Cawthra sanitary trunk sewer.

The Region is undertaking a Municipal Class Environmental Assessment (EA) to determine the preferred solution.

1.1 Background

The Mississauga City Centre (MCC) and the Hurontario Corridor are two areas within the Region where significant growth and development is planned to the year 2041 and beyond.

In the 2020 Water and Wastewater Master Plan for the Lake-Based System, the Region identified seven (7) trunk sewer projects, several new sanitary sewers as well as several other growth-related sewer improvements required to provide capacity for intensification growth to the year 2041 within Central Mississauga. These projects addressed capacity constraints in the Lower Cooksville Creek Sanitary Trunk Sewer and Canadian Pacific Railway (CPR) Sanitary Trunk.

In February 2022, the Region completed a Schedule "C" Municipal Class EA to develop and implement a strategy to service growth and relieve capacity constraints in the Central Mississauga area to meet the growth needs to 2041 and beyond. The preferred approach proposed a sanitary trunk sewer installation within the study area, including the 1500mm trunk sewer along Burnhamthorpe Road East from Central Parkway to the new Cawthra Road sewer. However, following completion of the Schedule "C" Class EA, the Region identified the need to also extend the proposed trunk sewer along Burnhamthorpe Road East from Cawthra Road to Little Etobicoke Creek (LEC), connecting to an existing 1200mm at Central Parkway East and a 1500mm trunk sewer at Cawthra Road. This proposed sewer is called the Cawthra Phase 3 Sanitary Trunk Sewer.

1.2 2020 Wastewater Master Plan

The significant growth within the MCC and the Hurontario Corridor is being driven by the Region and City of Mississauga (City)'s focus on intensification, and the planned Hurontario LRT which will turn Hurontario into a vibrant people-centered corridor connecting communities and encouraging growth. By the year 2041, the MCC and Hurontario Corridor are planned to grow to a population of 189,000 residents and jobs within a combined sewershed area of 551ha. Wastewater from these areas is conveyed by the Cooksville Creek Sanitary Trunk Sewer (STS), the Canadian Pacific Railway (CPR) STS, and the Confederation Parkway STS.

In the 2020 Water and Wastewater Master Plan for the Lake-Based System, the Region identified seven trunk sewer projects, several new sanitary sewers as well as several other growth-related sewer improvements required to provide capacity for intensification growth to the year 2041 within Central Mississauga. These projects addressed capacity constraints in the Lower Cooksville Creek Sanitary Trunk Sewer and CPR Sanitary

Trunk and were further developed, evaluated, and implemented through the 2022 Wastewater Capacity Improvements in Central Mississauga ESR (Central Mississauga ESR) and further documented in the PDR.

Optimization of existing asset performance under both dry and wet weather flow capture is critical to minimize life cycle costs in the collection system and the Wastewater Treatment Plants (WWTPs) and provide value for money. For this project, optimization is implemented in the collection system with the control sites designed as local reactive control (LRC) for integration within the Region's SCADA system. Integration of the control sites within the overall RTC Strategy's decision support system with more advanced forms of RTC will be completed, under separate contract, after their initial implementation as LRC sites.

With the construction of the Cawthra Phase 1 - 1500mm and 900mm dia. trunk sewer complete along Cawthra Road from Bloor Street to Dundas Street, connecting to the downstream ex. 900mm CPR trunk sewer and the subsequent completion of Cawthra Phase 2 – 1500mm dia. trunk sewer along Cawthra Road from Burnhamthorpe Road East to Bloor Street, connecting to the Phase 1 trunk sewer, there is critical importance of the completion of this Phase 3 component of the project with the overall objective of alleviating the capacity constraints, as determined in the Master Plan.

2 Planning and Policy Context

2.1 Region of Peel Official Plan

The Regional Official Plan (April 2022) sets the regional context for detailed planning and provides the Regional Council with a long-term policy framework for decision making. Section 6.5 of the Regional Official Plan outlines the Region's responsibility to supply and distribute water and collect and dispose of sanitary sewage. Additionally, the Region in cooperation with the province is to provide water and wastewater services through the South Peel Servicing Agreement.

As noted in Section 6.5.1 of the Official Plan, it is the Region's objective "to provide water supply and sanitary sewer services to appropriate areas of the Region in an adequate, efficient, planned and cost-effective manner consistent with public needs and financial realities". Section 6.5.2 states that it is the policy of Regional Council to "require and provide full municipal sewage and water services to accommodate growth in the Urban System to the horizon of this Plan...".

The proposed municipal servicing improvements support the development objectives of the Regional Official Plan.

Under Schedule A-2 of the Regional Official Plan, within the study area a large portion of Burnhamthorpe Road East is located within a highly vulnerable aquifer. On Schedule C-2 Etobicoke Creek and its associated valleylands are identified as part of the 'Core Areas of the Greenlands System'. Additionally, the study area is identified under Schedule E-1 within the 'Urban System', as the surrounding areas near the study area include residential land use. Selected Areas of Provincial Interest (Figure 7 of the Region of Peel Official Plan) indicates Etobicoke Creek is a river valley connection outside of the Greenbelt; however, the study area is entirely within the Region of Peel's Greenlands system. Figure 8 indicates that Etobicoke Creek falls under the Conservation Authority Natural Heritage System and has existing natural cover.

2.1.1 Growth Management Strategy

The Region has adopted an integrated approach to planning, managing, and financing growth. This incorporates Peel 2041 and the Regional Official Plan. This integrated approach provides a comprehensive framework that includes Official Plan Updates (Growth Management and Transportation), water and wastewater planning and servicing, and financial and policy inputs to the development charge by-law. The Cawthra Phase 3 Trunk Sewer enhances wastewater servicing capacity and operational flexibility but is not specific to growth management. However, the growth management looks at servicing development needs to 2041.

2.2 Greenbelt Plan

Consideration was given as to whether parts of the study area were subject to the Oak Ridges Moraine Conservation Plan (2017), Niagara Escarpment Plan (Office Consolidation April 2021), Greenbelt Plan (2017) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020). If these plans are applicable to the study area, then the relevant policies within these plans would be referenced.

Schedule 1 of the Greenbelt Plan shows the study area is within the 'settlement area outside' of the Niagara Escarpment Plan and Oak Ridges Moraine Conservation Plan (including the Protected Countryside). The Etobicoke Creek (identified as an urban river valley) is present in the study area.

Section 6 of the Greenbelt Plan outlines the policies that apply to the 'Urban River Valleys' designation. Only publicly owned lands are subject to the policies of the 'Urban River Valleys' designation. Policy 6.2.3 states that all existing, expanded, or new infrastructure subject to the Environmental Assessment Act is permitted if it supports the needs of adjacent settlement areas or serves the significant growth and economic development expected in southern Ontario and supports the goals and objectives of the Greenbelt Plan.

In addition, several other policies are outlined under Section 3 of the Greenbelt Plan that apply to 'Urban River Valleys'. The following should be undertaken by government and agencies when undertaking work within Urban River Valleys:

- Consider how activities and land use changes within and abutting the Greenbelt relate to the areas of external connections and 'Urban River Valley' areas identified in the Greenbelt Plan;
- Promote and undertake appropriate planning and design to ensure that external connections and 'Urban River Valley' areas are maintained and/or enhanced; and
- Undertake watershed planning, which integrates supporting ecological systems with those systems contained in the Greenbelt Plan.

2.3 Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) (2020) provides direction to municipalities on matters related to land use planning and development. Policy 1.6 of the PPS provides direction to municipalities regarding infrastructure and public service facilities. Key policies state that infrastructure “shall be provided in an efficient manner that prepares for the impacts of a changing climate while accommodating projected needs”. Policies 1.6.3 and 1.6.4 state that the use of existing infrastructure should be optimized before consideration is given to developing new infrastructure and infrastructure should be strategically located to support effective and efficient delivery of emergency management services. With respect to wastewater, key sections of Policy 1.6.6 state that planning for sewage services shall:

- Ensure that these systems are provided in a manner that i) can be sustained by the water resources upon which such services rely, ii) prepares for the impacts of a changing climate; iii) is feasible and financially viable over the lifecycle, and iv) protects human health and safety, and the natural environment;
- Promote water conservation and water use efficiency; and
- Integrate servicing and land use considerations at all stages of the planning process.

The PPS also provides direction to regional and local municipalities on infrastructure and public service facilities, specifically sewage, water and stormwater. Section 1.6.6.2 indicates that municipal sewage services are the preferred form of servicing for settlement areas to support protection of the environment and minimize potential risks to human health and safety. Within settlement areas with existing municipal sewage services intensification and redevelopment shall be promoted wherever feasible to optimize the use of the services.

Policy 2.0 provides for the protection of natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits. Policy 2.1 Natural Heritage identifies that natural features and areas shall be protected for the long term. Specifically, site alteration shall not be permitted in or adjacent to significant wetlands, significant woodlands and valleylands, significant wildlife habitat and significant areas of natural and scientific interest unless the ecological features and areas have been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. Mitigation measures may be considered to protect, improve, or restore sensitive surface water features, sensitive ground water features and their hydrologic functions.

3 Class EA Process and Public Consultation

3.1 Municipal Engineers Association's Municipal Class EA Planning Process

This Class EA planning process, which follows the Municipal Engineers Association's (MEA) Municipal Class Environmental Assessment document (March 2023 revised February 2024), takes into consideration the protection of all aspects of the natural, social, and economic environment as well as long-term planning for the mitigation of any adverse effects during both construction and commissioning. The Class EA process also includes consultation with the Public, Indigenous Communities, Government Agencies, local interest groups and review bodies to obtain input and feedback and to ultimately attain general acceptance for the preferred alternative.

There are five (5) phases depicted in the Municipal Class EA Planning and Design Process, which include:

- **Phase 1 - Identify the problem(s) or opportunity:** Identify the problem or opportunity that the Class EA is intended to address.
- **Phase 2 - Identification of alternative solutions and selection of a preferred solution:** This is based on a thorough evaluation of the options against a set of criteria. Phase 2 includes a detailed inventory of the natural, social, and economic environment, the identification of adverse impacts/effects and associated mitigating measures. Public consultation is held to review the problem/opportunity and all alternative solutions to gain feedback leading to the selection of the preferred solution.
- **Phase 3 - Identification and assessment of alternative design concepts for the preferred solution:** The preferred solution selected in Phase 2 is expanded on in Phase 3 to include detailed design concepts. A second public consultation event is held to review the alternative design concepts to gain further feedback leading to the selection of the preferred design.
- **Phase 4 - Preparation of an Environmental Study Report (ESR):** An ESR is developed documenting all phases and components of the Class EA process. The ESR is placed on public record and a notice of completion is filed.
- **Phase 5 - Implementation:** Implementation of the project works, including complete contract drawings and tender documents followed by construction and commissioning.

The complete Municipal Class EA Planning and Design Process is shown in **Figure 3-1**.

EXHIBIT A.2. MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the MCEA

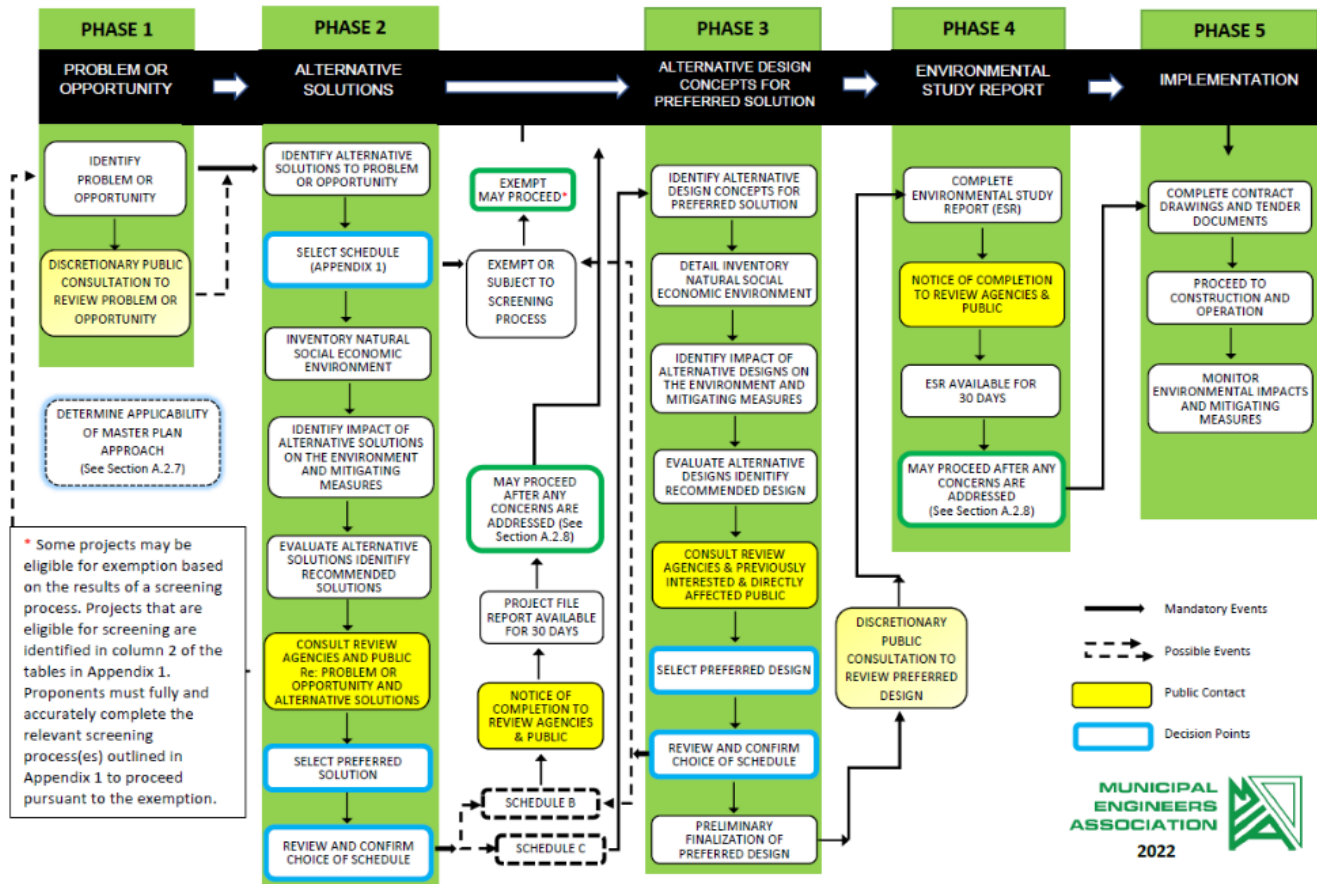


Figure 3-1 Municipal Class EA Planning and Design Process

3.2 Municipal Class EA Schedules

The Class EA document categorizes projects into one (1) of four (4) possible schedules depending on the project’s complexity and the nature and significance of potential adverse effects on the environment. The schedule under which a particular project falls determines the specific planning and design phases that must be adhered to. The four (4) schedules are:

Exempt Projects (formerly classified as Schedule A and A+ projects) are generally limited in scale and usually consist of minor operational/upgrade works. These projects usually have minimal adverse impacts on the environment and may proceed to implementation without further assessment since they are no longer required to meet the requirements of the EA Act.

Schedule B projects have the potential for some adverse environmental effects and must accordingly proceed through Phase 1 and Phase 2 of the planning and design process. Alternative solutions to the problem must be identified, all impacts to the natural, social-cultural and/or economic environment must be inventoried, and a preferred solution selected through consultation with the Public and government review agencies. The project file must be completed and put on public record for a minimum 30-day public comment period.

Schedule C projects are the most complex and require a more detailed study, public and agency consultation, and documentation. These projects have the potential for significant environmental effects. A Schedule C project must complete all five (5) phases of the planning and design process. An ESR must be completed and put on public record for a minimum 30-day public comment period.

It is important to note that the Schedule assigned to a particular project is proponent driven. For example, even if a project can be categorized as Schedule B, the proponent can decide to comply with the requirements of a Schedule C of the MEA process based on the magnitude of anticipated impacts or the special public and agency consultation requirements specific to that project.

Public and agency consultation are integral to the Class EA planning process, with minimum consultation requirements varying depending on the project's Class EA Schedule.

The Class EA process provides an appeal mechanism to change the project status. Under section 16 of the amended EA Act, there is an opportunity under the Class EA planning process for the Minister to review a project's status. Members of the public, interest groups and review agencies may request the Minister to require a Proponent to comply with section 16 of the EA Act before proceeding with a proposed undertaking. For Schedule B and C projects the public can request additional investigation by filing a section 16 Order Request to the Ministry of the Environment, Conservation and Parks. The Minister determines whether this is necessary, with the Minister's decision being final. The procedure for dealing with concerns, which may result in the Minister, by order, requiring the Proponent to comply with section 16 of the Act is outlined in the MEA document (MEA, 2015). Revisions to the Act found in the *More Homes, More Choice Act, 2019* resulted in a change to section 16 Order requests. This change removed the opportunity for anyone to request a section 16 Order (formerly a Part II Order) for any project unless the order may prevent, mitigate or remedy adverse impacts on existing Aboriginal and treaty rights.

Section 5 outlines the preferred Schedule for this project.

4 Existing Site Conditions

4.1 Site Description

The study area lies within the East Trunk Sewer Catchment Area which terminates near Lake Ontario at the G.E. Booth Wastewater Treatment Facility (WWTF). The approximate divide between the east and west trunk sanitary sewer systems is the watershed boundary between the Etobicoke Creek and the Credit River.

The site for the proposed sanitary sewer is in the City of Mississauga, Ontario along Burnhamthorpe Road East, between Wilcox Road and the LEC, Wilcox Road from Burnhamthorpe Road East to Kozel Court and along Tomken Road from Runningbrook Drive to Burnhamthorpe Road East including a small section on Runningbrook Drive. Most areas within the study area are zoned as residential, with some greenspace and commercial areas at the major intersections along Burnhamthorpe Road East. The study area map in **Appendix A** illustrates the project location.

4.2 Topography and Drainage

The western portion of the study area (west of Cawthra Road) is located within the Lake Ontario Shoreline East Subwatershed and falls within the jurisdiction of the Credit Valley Conservation (CVC). The eastern portion of the study area (east of Cawthra Road) is in the Little Etobicoke Creek Subwatershed and falls under the jurisdiction of the Toronto and Region Conservation Authority (TRCA).

The Little Etobicoke Creek natural watercourses traverses along the eastern limit of the study area with TRCA regulated areas along the alignment. The topography within the study area is relatively flat, with ground surface elevations ranging between 133 and 144 metres above sea level (masl) along Burnhamthorpe Road East, between 144 and 147 masl along Wilcox Road, and between 136 and 137 masl along Tomken Road. The regional topography generally slopes to the west from Cawthra Road, towards Cooksville Creek and to the east from Cawthra Road, towards Little Etobicoke Creek.

4.3 Natural Environment

The Cawthra Phase 3 study area is within the jurisdiction of both the CVC and TRCA. The CVC jurisdiction is on the western side of the study area containing the Credit River watershed with the boundary approximately west of Cawthra Road. The TRCA jurisdiction is on the eastern side of the study area. The proposed trunk sewer alignment at Shaft 3-5, passes through the Etobicoke Creek Watershed crossing Little Etobicoke Creek which is within TRCA regulated area.

The Natural Sciences Report included in **Appendix B** was completed to conduct a natural heritage assessment at the proposed Shaft 3-5 location as part of this study. This report provides details on the environmental features and potential constraints in the study area, guiding the necessary permits and approvals for project implementation, and future studies that may be required.

Specific mitigation strategies will be required to minimize the impact on natural features. These strategies include implementing timing windows for vegetation removal, erosion and sediment controls to protect aquatic features, and tree protection buffers.

4.4 Socio-Cultural Environment

4.4.1 Archaeological Assessment

A Stage 1 Archaeological Assessment was conducted for the Schedule 'C' Class Environmental Assessment - Wastewater Capacity Improvements in Central Mississauga. Archaeological Services Inc. (ASI) was contracted by Arcadis, on behalf of the Region, to conduct a Stage 2 Archaeological Assessment as part of the Cawthra Phase 3 Sanitary Trunk Sewer.

The Stage 1-2 survey, completed on May 10, 2024, adhered to the *Ontario Heritage Act and Standards and Guidelines for Consultant Archaeologists* (S & G). Approximately 56% of the Study Area was excluded from Stage 2 Assessment, as it had been previously assessed with no further recommendations identified. Another 39% of the area, identified as having undergone deep and extensive disturbance, was also excluded from further assessment.

The remaining 5% of the area, consisting of manicured lawns, underwent a test pit survey at 10-metre intervals to confirm previous disturbances. No archaeological resources were found, and no further assessment is recommended. If the project expands or changes, any newly included areas should undergo a Stage 2 archaeological assessment.

While thorough, ASI notes that not all archaeological deposits can be predicted or identified. As a mitigation measure, if any remains are discovered during construction, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the Ministry of Citizenship and Multiculturalism (MCM) would be immediately notified.

A copy of the Archaeological Assessment is included in **Appendix C**.

4.4.2 Cultural Heritage

Previously, the Schedule 'C' Class Environmental Assessment - Wastewater Capacity Improvements in Central Mississauga Cultural Heritage Screening Report (C.H.S.R.) (Golder Associates, 2020) identified four built heritage resources in the project study area:

- 1050 Burnhamthorpe Road East (Designated under Part IV of the Ontario Heritage Act, By-law 222-78);
- 3625 Cawthra Road (Listed on Municipal Heritage Register);
- 3650 Dixie Road (Listed on Municipal Heritage Register); and
- 3700 Dixie Road (Designated under Part IV of the Ontario Heritage Act, By-law 160-2005).

Following reviews of the 2020 C.H.S.R. and the Cawthra Phase 3 project footprint, it was noted that three of the four identified built heritage resources were located more than 50 metres from the project footprint. For the fourth resource, 1050 Burnhamthorpe Road East, only indirect adverse impacts are allowable due to the potential for construction-related vibration impacts to this designated property.

Arcadis, on behalf of the Region, retained ASI to complete a Cultural Heritage Impact Assessment (CHIA) of 1050 Burnhamthorpe Road East (Copeland House) in October 2023 as part of this study. The property consists of a vernacular Georgian residence (known as the Copeland House) built of Credit Valley stone circa 1837, surrounded by dense tree coverage. The property is designated under *Part IV of the Ontario Heritage Act* and is listed on the Canadian register of Canada's Historic Places. The CHIA was undertaken to assess how the proposed construction work will impact the subject property's cultural heritage value, which included determining the appropriate mitigation measures for direct and/or indirect impacts, including vibration during construction.

The proposed project work is not expected to result in any direct or indirect adverse impacts upon Copeland House, which is located approximately 80 m from the proposed work (50 m is generally used as the threshold for construction-related vibration impacts). While the vibration related impacts are expected to be limited and temporary, a vibration assessment was also undertaken to determine the potential for vibration impacts.

In addition, to mitigate any potential impacts, staging and construction will be suitably planned and executed to ensure that unintended negative impacts to the character-defining elements of the property at 1050 Burnhamthorpe Road East are avoided.

A copy of the Cultural Heritage Impact Assessment is Included in **Appendix D**.

4.4.3 Land Uses

The study area is in the residential neighbourhoods of Rathburn, Mississauga Valleys, and Applewood. Low density residential uses dominate the area with the remaining pockets consisting of medium density residential, retail commercial, and open space uses. The City of Mississauga's map showing the land use within the study area is presented in **Appendix A**.

4.5 Local Geology

Generally, the surficial geology of the project site based on the Physiography of Southern Ontario (1984) consists of Late Wisconsinan Age Halton Glacial Till of silty clay to silty sand texture. While the Little Etobicoke Creek valleys have surficial alluvial deposits of gravel, sand, silt, and clay overlying the till or bedrock. The Georgian Bay Formation lies at 4 m to 11 m below existing ground surface generally consisting of Upper Ordovician shale interbedded with limestone and calcareous siltstone.

4.5.1 Previous Geotechnical and Hydrotechnical Investigation

The Region retained WSP Canada Inc. (WSP) to undertake a geotechnical and hydrogeological investigation for Cawthra Phase 3 to confirm soil conditions and evaluate dewatering requirements.

The findings of the previous geotechnical investigations are reported in the following documents:

- Geotechnical Data Report – Cawthra Rd Sanitary Sewer Replacement (Phase 3), Mississauga, Ontario, prepared by WSP, dated May 14, 2020.
- Hydrogeological Data Report and Impact Assessment – Cawthra Rd Sanitary Sewer and Watermain Project 17-2452S (Phase 3), Mississauga, ON, prepared by WSP, dated May 19, 2020.

A copy of the geotechnical investigation is included in **Appendix E**.

Twenty-one (21) boreholes were drilled for this project recording the ground geodetic coordinates, ground elevation, and soil stratigraphy with depths ranging from 6.2 m to 26.1 m.

Fourteen (14) groundwater monitoring wells were installed as part of the geotechnical / hydrogeological investigation. The monitoring wells included five (5) in overburden/ bedrock interface, six (6) in overburden, and three (3) in bedrock. The observed groundwater level in shallow wells across the site ranged between 0.5 m (Elev. 143.4 m) and 4.4 m (Elev. 132.2 m). Groundwater levels observed in deep wells (within bedrock) across the site ranged between 0.7 m (Elev. 142.1 m) and 4.3 m (Elev. 132.3 m).

Further supplemental Geotechnical and Hydrotechnical investigations will be undertaken over the course of detailed design.

4.6 Traffic

The study area defined for traffic considerations is generally along Burnhamthorpe Road East, Wilcox Road between Burnhamthorpe Road East and Meadow Boulevard, Cawthra Road, Tomken Road, and Runningbrook Drive between Tomken Road and Pinesmoke Crescent, including various side streets in the City of Mississauga.

Burnhamthorpe Road East is an east-west major arterial road under the jurisdiction of the City of Mississauga with a four (4) lane cross-section with exclusive left and right turning lanes at major intersections. The roadway has an urban cross-section, and the posted speed limit is 60km/h for eastbound and westbound directions near the study area. Parking and idling are prohibited on either side of the roadway. There is a sidewalk on the south side and a multi-use-path/Burnhamthorpe trail on the north side of the road.

Burnhamthorpe Road East does not have a dedicated bike lane, and bikes and cars share the roadway. Trucks are restricted from 7 PM to 7 AM daily and all-day Sunday. The surrounding land is mainly residential, with some commercial at the intersections.

Turning Movement Counts (TMC) for several intersections along Burnhamthorpe Road were obtained by Arcadis in 2016, 2019 (pre-pandemic), 2020 (during the pandemic), and 2022.

4.6.1 Roadways

The key roadways within the study area are Burnhamthorpe Road East, Central Parkway East, Tomken Road, Wilcox Road and Runningbrook Drive. A brief description of each road is provided in **Table 4-1**.

Table 4-1 Key Roadway Descriptions

Road	Description
Burnhamthorpe Rd E	<p>Burnhamthorpe Rd is an east-west major arterial road under the jurisdiction of the City of Mississauga with a four (4) lane cross-section and exclusive left and right turning lanes at major intersections. The roadway has an urban cross-section, and the posted speed limit is 60km/h for eastbound and westbound directions near the study area. Parking and idling are prohibited on either side of the roadway. There is a sidewalk on the south side and a multi-use-path/Burnhamthorpe trail on the north side of the road.</p> <p>There is no dedicated bike lane on Burnhamthorpe Rd. Bikes and cars share the roadway. Trucks are restricted from 7 PM to 7 AM daily and all-day Sunday. The surrounding land is mainly residential, with some commercial at the intersections.</p>
Wilcox Rd	<p>Wilcox Rd is a north-south local road under the jurisdiction of the City of Mississauga with a two (2) lane cross-section. The roadway has an urban cross-section, and the posted speed limit is 50km/h for the northbound direction up to Bookham Cres, where it then changes to 40km/h. There is a 40km/h posted speed limit southbound. Parking is prohibited on Sundays from 8 AM to 8 PM on either side of the roadway north of Rathburn Rd E. There is a sidewalk on the east side. The road begins at Burnhamthorpe Rd E and extends northward to Kozel Crt.</p>
Central Pkwy E	<p>Central Pkwy E is a north-south minor arterial road under the jurisdiction of the City of Mississauga with a four (4) lane cross-section and exclusive left and right turning lanes at major intersections. The roadway has an urban cross-section, and the posted speed limit is 50km/h for southbound and northbound directions near the study area. Parking and idling are prohibited on either side</p>

	<p>of the roadway. There is a sidewalk on the west side and a multi-use-path/Central Parkway trail on the east side of the road.</p> <p>Central Pkwy is a road with an unusual course; running south from Burnhamthorpe Rd as a continuation of Creditview Rd, then turning east along the baseline of Bloor St. west of its terminus, where it turns back north to Eglinton Ave and becomes Kennedy Rd, forming a U-shaped loop consisting of the three (3) streets.</p>
Tomken Rd	<p>Tomken Rd is a north-south minor arterial road under the jurisdiction of the City of Mississauga with a four (4) lane cross-section and exclusive left and right turning lanes at major intersections. The roadway has an urban cross-section, and the posted speed limit is 50km/h for southbound and northbound directions near the study area. Parking and idling are prohibited on either side of the roadway. There is a sidewalk on both sides of the road. Trucks are restricted.</p>
Runningbrook Dr	<p>Runningbrook Dr is a two (2) lane east-west connecting local road under the jurisdiction of the City of Mississauga. It is bounded by Cawthra Rd to the west and Bloor St to the east. It has an initial unposted speed limit of 50km/hr and reduces to 40km/h east of Tomken Rd due to the location of an elementary school. There are sidewalks on both sides of the road.</p>

Other roads within the study area that may be affected during project construction are Cawthra Road, Kozel Court, Rathburn Road East, and Bookham Crescent. A description of each road is provided in **Table 4-2**.

Table 4-2 Other Roads within Study Area

Road	Description
Cawthra Rd	<p>Cawthra Rd is a north-south major arterial road under the jurisdiction of the Region of Peel with a four (4) lane cross-section and exclusive left and right turning lanes at major intersections. The roadway has an urban cross-section, and the posted speed limit is 50km/h for southbound and northbound directions near the study area. Parking and idling are prohibited on either side of the roadway. There are sidewalks on both sides of the road.</p> <p>Cawthra Rd is designated as Peel Regional Rd 17 and runs from Lakeshore Rd to Eastgate Pkwy and then interchanges with Highway 403. The road originally continued to Eglinton Ave, but its northernmost section was absorbed into the present interchange, though access to/from Eglinton is still provided via the ramps.</p>
Kozel Crt	<p>Kozel Crt is an east-west connecting local road under the jurisdiction of the City of Mississauga. The road is a dead-end street connected to Wilcox Rd to the east. There are no sidewalks on the street, and it has an unposted speed limit of 50km/hr.</p>
Rathburn Rd E	<p>Rathburn Rd E. is a four (4) lane, east-west connecting minor arterial road under the jurisdiction of the City of Mississauga. It has a posted speed limit of 50 km/hr at Tomken Rd and sidewalks on both sides of the road.</p>
Bookham Cres	<p>Bookham Cres is a local road under the jurisdiction of the City of Mississauga. The road is bounded by Wilcox Rd with an unposted speed limit of 50 km/hr and a sidewalk on one side of the crescent.</p>

4.6.2 Heavy Truck Restrictions

Based on the Region's Heavy Truck Restriction map, locations and restriction times for heavy trucks on roads within the study area are listed in **Table 4-3**.

Table 4-3 Heavy Vehicles Prohibition

Road	Section (Between)	Prohibition Times/Days
Cawthra Rd	Lakeshore Rd E and Hwy 403 Ramp	7a.m. – 7 p.m.
Burnhamthorpe Rd	Hurontario St and Etobicoke Creek	7a.m. – 7 p.m. daily And all-day Sunday
Tomken Rd	Dundas St and Eglinton Ave E	Anytime
Central Pkwy E	Hurontario St and Eglinton Ave E	Anytime
Runningbrook Dr	Cawthra Rd and Bloor St	Anytime
Wilcox Rd	Burnhamthorpe Rd E and North limit of Wilcox Rd	Anytime
Rathburn Rd E	Hurontario St and Etobicoke Creek	Anytime

4.6.3 Transit Routes

Transit services in the study area are operated through “MiWay” Mississauga and are listed in **Table 4-4**.

Table 4-4 Existing Transit Service

Road	Section
Burnhamthorpe Rd E	Route 26 and 76
Central Pkwy E	Route 53
Tomken Rd	Route 51
Rathburn Rd E	Route 20

4.6.4 Events

There are no special events in the City that would be directly impacted by the proposed construction work along Cawthra Rd. However, **Table 4-5** outlines annual events that could be indirectly impacted due to an increase in traffic volumes if a road became congested or closed due to the proposed construction. The construction schedule of the sanitary sewer may need to consider the timing of these special events to mitigate additional impacts to the road network.

Table 4-5 Special Events within the Study area

Event	Location(s)	Time	Road Closures
Carassauga	<ul style="list-style-type: none"> • 5500 Rose Cherry Place • 310 Bristol Rd E. • 1245 Eglinton Ave W • 53 Queen St. N • 2520 Dixie Rd 	May 26 th to 28 th	N/A

Canada Day	Celebration Square 301 Burnhamthorpe Rd West	July 1 st	N/A
Various cultural festivals	Celebration Square	Beginning in early June and continuing throughout the summer typically on weekends	Could have an impact on Burnhamthorpe Rd E and Dundas St due to their proximity to the square and therefore may be impacted by construction along Cawthra Rd

4.7 Existing Utilities

Subsurface Utility Engineering (SUE) Quality Level D was completed, to obtain utility records of the existing infrastructure within the project limits. Based on the responses received from these utility companies, it was determined that the following infrastructure exists within the study area:

Wilcox Road

- Bell: Buried cable along west side;
- Enbridge: NPS 2" Enbridge gas main along west side;
- Enersource: Overhead hydro along the east side of Wilcox Rd including 100x9 buried concrete encased ductbank crossing Burnhamthorpe Rd E; and
- Rogers: Aerial fibre along east side and aerial coaxial tv along west side, some buried.

Burnhamthorpe Road East

- Bell: Buried conduit along south side.
- Enbridge: NPS 6" Enbridge gas main along south side;
- Enersource: Overhead hydro along the south side;
- Rogers: Aerial fibre along south side on hydro pole; and
- Trans-Northern Pipelines: Twin 250mm and 500mm oil pipelines crossing Burnhamthorpe Rd E, approx. 55m west of Westminster PI;

Tomken Road

- Enbridge: NPS 6" Enbridge gas main along west side;
- Enersource: Overhead hydro along the west side with a buried duct bank crossing; and
- Rogers: Aerial and buried fibre along west side and buried cable on east side.

Runningbrook Road

- Bell: Buried conduit along south side;
- Enbridge: NPS 2" Enbridge gas main along south side;
- Enersource: Buried hydro along south side and duct bank crossing Tomken Rd; and
- Rogers: Buried fibre and cable on south side.

During the detailed design phase, SUE investigation Quality Levels B and A will be conducted to identify and confirm any conflicts and potential relocation requirements.

5 Problem/Opportunity Statement

Phase 1 of the Municipal Class EA process defines the starting point for any Class EA as the “Problem/Opportunity Statement.” The Problem/Opportunity Statement for the Cawthra Phase 3 Trunk Sewer along Burnhamthorpe Rd Municipal Class EA is defined as follows:

“To enhance wastewater servicing capacity and operational flexibility as part of Central Mississauga Capacity Improvements identified in the 2020 Water and Wastewater Master Plan for the Lake-Based (South Peel) system. This includes implementation of control sites designed to balance flow for infrastructures which are constructed to facilitate future growth and development.

In addition, to address the Region’s State of Good Repair Basement Flooding Mitigation Program within the Wilcox Road and Runningbrook Dr sewersheds and by diverting wastewater flows away from areas prone to sewer surcharging.”

In accordance with the requirements of the Municipal Class EA planning process, the Region of Peel initiated this Municipal Class EA to identify and evaluate alternative solutions to address this Problem/Opportunity Statement.

5.1 Schedule B Class EA

The proposed upgrades are necessary to enhance wastewater servicing capacity and operational flexibility as part of the Central Mississauga Capacity Improvements identified in the 2020 Water and Wastewater Master Plan to facilitate future growth and development. In addition, this Study is intended to address the Region’s State of Good Repair Basement Flooding Mitigation Program within the Wilcox Rd and Runningbrook Dr sewersheds by diverting wastewater flows away from areas prone to sewer surcharging.

As a result, a Schedule ‘B’ Class Environmental Assessment (EA) was undertaken to identify a preferred solution for this infrastructure need. The project falls under Schedule B, Class EA project as per the MEA’s Municipal Class Environmental Assessment document. Per Appendix 1 – Project Schedules of the document, this is characterized as:

- 22c Establish, extend or enlarge a sewage collection system and all works necessary to connect the system to an existing sewage outlet where such facilities are not located in an existing road allowance, or existing utility corridor.

While portions of the project are within an existing road allowance or an existing utility corridor, segments of the proposed sanitary sewer are outside of these areas. As such, this study is being conducted in accordance with the approved requirements for a Schedule B Municipal Class EA, which requires the completion of Phase 1 and Phase 2 of the planning and design process.

Consultation between the proponent and affected or interested stakeholders, the public, or Indigenous communities early on and throughout the process is a key feature of EA planning, which provides opportunities for the exchange of information by which decision-making may be influenced. In addition, one of the primary goals in effectively consulting with stakeholders, the public and Indigenous communities is to resolve issues proactively to avoid controversy.

In a Schedule B Class EA there exists two (2) mandatory points of contact with the public, Indigenous communities, and review agencies. The first point of contact follows the proponent's identification of the recommended alternative solution. It is at this point, through invitation for public comment and input that an opportunity for stakeholders, the public, and Indigenous communities to assist in the selection of a preferred solution exists. The second point of contact consists of the Notice of Completion of the planning process, with issuance of the final Project File Report, and made available for the mandatory 30-day public comment period by affected or interested stakeholders, the public, Indigenous communities, and agency groups.

6 Alternative Solutions

6.1 Identification of Alternatives

Three (3) alternative solutions for Phase 3 have been developed to address the problem statement, considering design considerations, technical feasibility, and storage capacity. These alternatives have been evaluated to determine a preferred solution. The following alternative solutions are available:

- **Alternative 1:** Extend the proposed sanitary trunk sewer along Burnhamthorpe Road East to Little Etobicoke Creek (LEC) and Central Parkway East; connecting to an existing 1200mm at Central Parkway East and 1500mm trunk sewer at Cawthra Road.
- **Alternative 2:** Extend the proposed sanitary trunk sewer along Burnhamthorpe Road East to Little Etobicoke Creek (LEC) and Central Parkway East; connecting to an existing 1200mm trunk sewer at Central Parkway East and 1500mm trunk sewer at Cawthra Road. This alternative proposes an alternative shaft location for Shaft 3-4 at Burnhamthorpe Road East and Tomken Road.
- **Alternative 3:** Maintain the current sanitary system without any proposed infrastructure upgrades. This option is equivalent to the "Do Nothing" approach.

Alternatives 1 and 2 will expand on the previously proposed upgrades included in the '*Wastewater Capacity Improvements in Central Mississauga Class EA Schedule C*'. These upgrades include:

- Installation of a new 1500mm gravity sewer along Burnhamthorpe Road East, extending from Central Parkway East to Cawthra Road.
- Connection to the existing 1200mm sewer at Central Parkway East and a 1500mm trunk sewer at Cawthra Road.

Figure 6-1 outlines the area previously assessed in the 'Wastewater Capacity Improvements in Central Mississauga Class EA Schedule "C"' and the current study area.

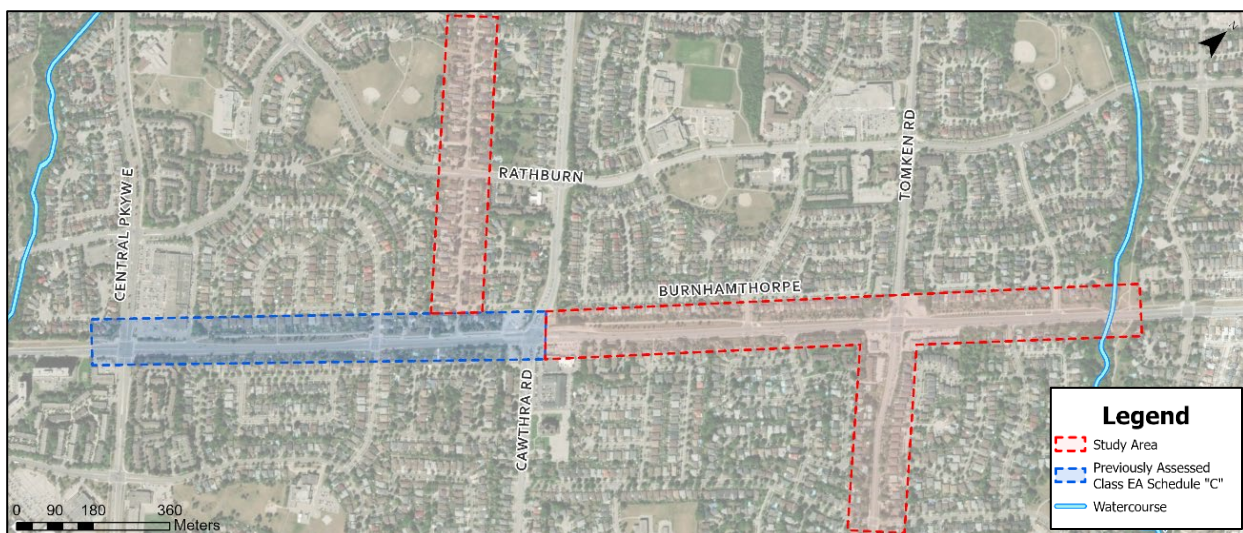


Figure 6-1 Previously Assessed and Current Study Areas

6.1.1 Alternative 1– Little Etobicoke Creek (LEC) Extension

Alternative 1 for Phase 3 proposes an extension of the 1500mm gravity trunk sewer along Burnhamthorpe Road East from Cawthra Road to Little Etobicoke Creek (LEC). The construction of the extension will involve establishing five (5) new shaft locations along Burnhamthorpe Road East, with Shaft 3-4 located at the north-west corner of the intersection of Tomken Road and Burnhamthorpe Road East, requiring a consent to enter public property.

Alternative 1 also includes several upgrades to local sanitary sewers within the study area. These proposed pipes and improvements are exempt from the requirements of the Environmental Assessment (EA) Act as they are within an existing road allowance or an existing utility corridor, and do not cross a watercourse. The specific upgrades and improvements include:

- A new local 300mm/375mm sanitary sewer on Wilcox Road, extending from Burnhamthorpe Road East north to Kozel Court, replacing the existing 250mm sanitary sewer.
- A new 300mm/375mm sanitary sewer on Tomken Road, extending from Runningbrook Drive north to Burnhamthorpe Road East, connecting to the 1200mm trunk sewer at the northeast corner of the intersection.
- A new 250mm sanitary sewer on Runningbrook Road, extending from Pinesmoke Crescent to Tomken Road, connecting to a new 300mm sewer on Tomken Road within the intersection.

Figure 6-2 presents a schematic drawing of the proposed upgrades for Alternative 1.

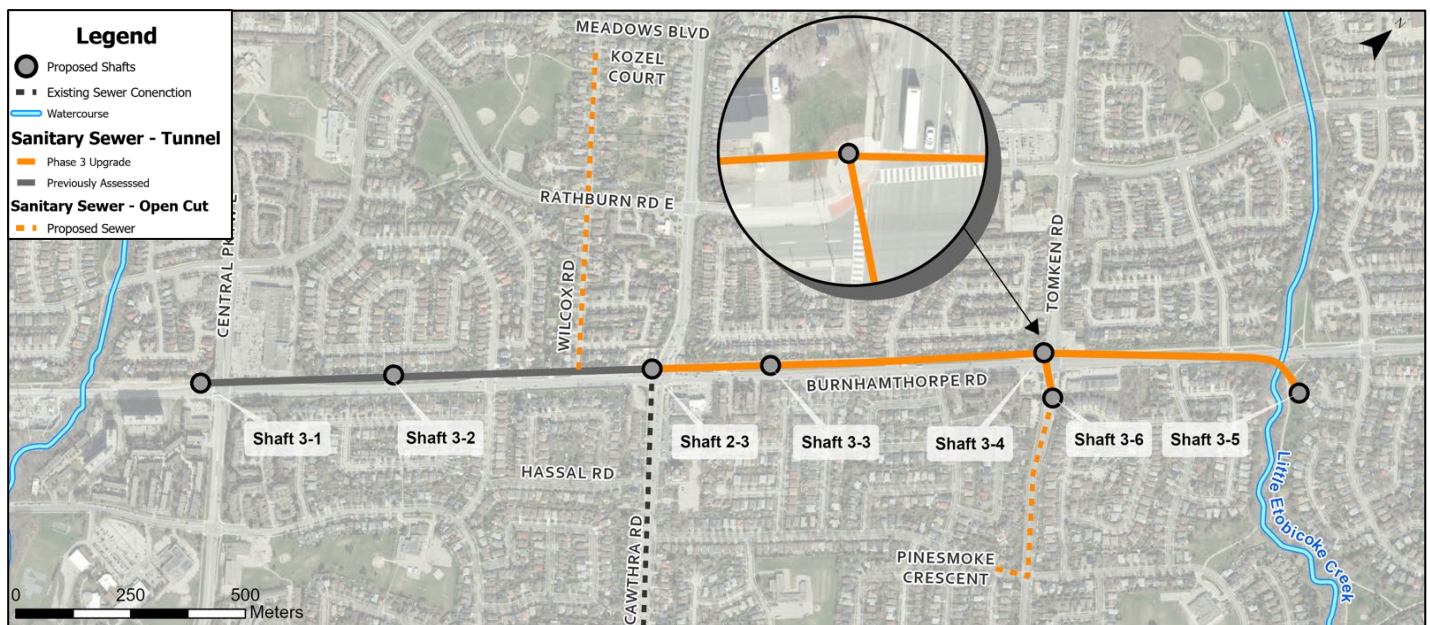


Figure 6-2 Alternative 1

6.1.2 Alternative 2 - Little Etobicoke Creek (LEC) Extension (Alternate Shaft 3-4)

Alternative 2 for the Phase 3 proposes an extension of the 1500mm gravity trunk sewer along Burnhamthorpe Road East from Cawthra Road to Little Etobicoke Creek (LEC). The construction of the extension will involve establishing five (5) new shaft locations along Burnhamthorpe Road East, with Shaft 3-4 being alternately located at the north-east corner of the intersection of Tomken Road and Burnhamthorpe Road East, requiring a temporary easement on private property during construction.

Alternative 2 also includes several upgrades to local sanitary sewers within the study area. These proposed pipes and improvements are exempt from the requirements of the Environmental Assessment (EA) Act as they are within an existing road allowance or an existing utility corridor, and do not cross a watercourse. The specific upgrades and improvements include:

- A new local 300mm/375mm sanitary sewer on Wilcox Road, extending from Burnhamthorpe Road East north to Kozel Court, replacing the existing 250mm sanitary sewer.
- A new 300mm/375mm sanitary sewer on Tomken Road, extending from Runningbrook Drive north to Burnhamthorpe Road East, connecting to the 1200mm trunk sewer at the northeast corner of the intersection.
- A new 250mm sanitary sewer on Runningbrook Road, extending from Pinesmoke Crescent to Tomken Road, connecting to a new 300mm sewer on Tomken Road within the intersection.

Figure 6-3 presents a schematic drawing of the proposed upgrades for Alternative 2.

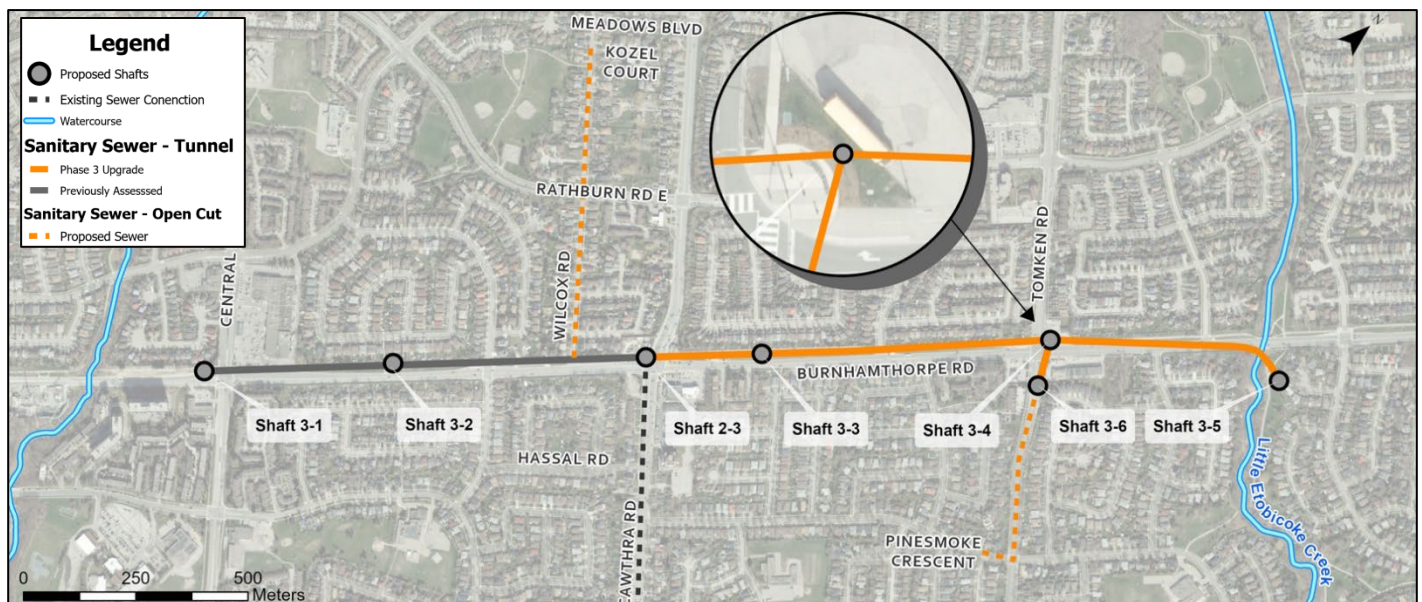


Figure 6-3 Alternative 2

6.1.3 Alternative 3 - “Do Nothing”

The “Do Nothing” Alternative suggests maintaining the current sanitary system without any proposed infrastructure upgrades. This option contrasts with the other alternatives, as it does not involve any additional sewers. This alternative will increase the risk of sewer system surcharging and overland flooding due to capacity issues arising due to future growth.

7 Evaluation of Alternative Solutions

This section documents the evaluation of alternatives presented in **Section 6**. Taking the existing environment into consideration, the alternative solutions were comparatively evaluated using a descriptive or qualitative assessment based on criteria developed within the following categories (representing the broad definition of the environment as described in the *EA Act*):

- **Natural Environment** – having regard for protecting the natural and physical components of the environment (e.g., air, land, water and biota) including natural and/or ESAs.
- **Social-Cultural Environment** – having regard for residents, neighbourhoods, businesses, community character, social cohesion, community features, historical/archaeological remains, and heritage features.
- **Technical Environment** – having regard for the technical suitability/longevity and other engineering aspects associated with the alternative solutions.
- **Financial Environment** – having regard for the cost implicating items associated with the alternative solutions.

7.1 Evaluation Criteria

Evaluation criteria were developed to comparatively assess the alternatives, to identify the potential environmental effects, and distinguish the advantages and disadvantages between alternatives. The criteria reflect all components of the environment in the study area, the alternative solutions being considered, the problem/opportunity being addressed, and the Class EA requirements. The criteria include the social, cultural, and natural environments, and technical and financial considerations and are described below in **Table 7-1**.

Table 7-1 Evaluation Criteria

Criteria	Measures
Natural Environment	
Surface Water Impacts	Potential for impacts (e.g., erosion) during construction to surface water (Little Etobicoke Creek) and proximity to regulated areas
Natural Heritage Area Impacts	Provincially, regionally, or locally significant natural areas (e.g., wetlands, areas of natural and scientific interest, environmentally significant areas) located adjacent to or directly intersected by the route
Groundwater / Subsurface Impacts	Potential for water taking during construction
Vegetation / Greenspace Impacts	Loss of vegetation (including impacts to trees and tree canopy)
Social and Cultural Environment	
Traffic Disruption/Impacts to Private Property/Existing Land Uses (e.g., Businesses)	Potential for temporary disruption to traffic as well as nearby public and private properties (e.g., businesses) including access considerations

Nuisance Impacts	Potential for vibration, dust and noise issues stemming from construction activities within proximity to nearby residences, businesses and schools
Cultural /Heritage /Known Archaeological Resource Impacts	Potential impact to cultural / built heritage areas and known archaeological resources (including First Nations)
Pedestrian Traffic	Potential impacts and disruptions to pedestrian traffic
Technical Considerations	
Ease of Construction (e.g., Construction Constraints)	Potential for encountering problems during construction (e.g., soil stability, geotechnical considerations, ease of excavation)
Staging Locations	Potential impacts from the location of staging area (e.g., off-site of property)
Operational Flexibility	Potential for operational flexibility (e.g., redundancy, storage during wet weather) and amount of additional storage provided
Impacts on Region’s Hydraulic Level of Service	Ability to meet the Region’s hydraulic level of service requirements and divert wastewater flows away from areas prone to sewer surcharging
Locations/Impacts on Other Existing Utilities	Number of and complexity of utilities present on the property (e.g., gas, hydro, telephone, cable, municipal services)
Economic Considerations	
Capital Costs	Estimate of total capital costs based on preliminary costing
Operating and Maintenance Costs	Estimate of level of operating and maintenance costs
Land Acquisition / Easement Requirements	Potential for land acquisition or the need for temporary and permanent easements for access

7.2 Evaluation Methodology

Evaluation criteria were developed to evaluate the alternatives based on natural, social and cultural environment and technical and financial considerations, and comparatively assess the alternatives in a qualitative manner. A numerical or weighted ranking system was not used; instead, the evaluation focused on the strengths and weaknesses of each alternative to identify the best possible solution.

Although set weightings of criteria were not specifically assigned, all evaluation criteria are not necessarily created equal and professional judgement and knowledge of the area and issues was used to understand preferences. The process requires considering trade-offs to select the preferred alternative which needs to take into consideration whether potential impacts can be mitigated or not. Reasonable mitigation measures were then identified to avoid or minimize any potential negative effects. The selection of the preferred alternative is based on the relative advantages and disadvantages of each alternative within the natural environment, social environment, technical and economic evaluation criteria and includes consideration of mitigation measures.

The ranking of each alternative solution relative to the specific evaluation criterion is included in **Table 7-2**. The table uses a color-coded system: green indicates the most preferred, yellow indicates moderate preference, and red indicates the least preferred. The comparison of each criterion was made horizontally (within a category such as the natural environment) between the alternatives and then vertically (between categories such as natural and technical environments) to derive the recommended solution. A summary row for each alternative is also provided, including key advantages and disadvantages across the following categories: natural, social-cultural, technical, and financial environments. The alternative solution demonstrating the highest number of "most preferred" boxes and/or the fewest "least preferred" boxes, relative to their potential environmental effects, is likely to be preferred. However, this preference depends on the extent of potential effects and whether they can be mitigated.

Table 7-2 Comparative Evaluation Matrix

Criteria		Alternative 1	Alternative 2	Alternative 3 “Do Nothing Option”
NATURAL ENVIRONMENT	Surface Water Impacts	<ul style="list-style-type: none"> Requires excavation within TRCA regulated area and proximity to the Little Etobicoke Creek at Shaft 3-4, which requires permit and sediment/erosion controls to minimize impacts. The alignment and tunneling construction methodology avoids in-water works. 	<ul style="list-style-type: none"> Requires excavation within TRCA regulated area and proximity to the Little Etobicoke Creek at Shaft 3-4, which requires permit and sediment/erosion controls to minimize impacts. The alignment and tunneling construction methodology avoids in-water works. 	<ul style="list-style-type: none"> No impacts as construction/excavation is not required.
	Natural Heritage Area Impacts	<ul style="list-style-type: none"> The alignment is primarily within the R.O.W and outside vegetated area/natural features. Shaft 3-5 is located within natural features (manicured lawn with some planted trees). Mitigation measures should be implemented to reduce or minimize impacts on the natural heritage system form and functions. 	<ul style="list-style-type: none"> The alignment is primarily within the R.O.W and outside vegetated area/ natural features. Shaft 3-5 is located within natural features (manicured lawn with some planted trees). Mitigation measures should be implemented to reduce or minimize impacts on the natural heritage system form and functions. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Groundwater / Subsurface Impacts	<ul style="list-style-type: none"> Water taking is anticipated during construction. 	<ul style="list-style-type: none"> Water taking is anticipated during construction. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Vegetation / Greenspace Impacts	<ul style="list-style-type: none"> Potential impacts to existing trees, tree canopy and vegetation at compound locations. 	<ul style="list-style-type: none"> Potential impacts to existing trees, tree canopy and vegetation at compound locations. 	<ul style="list-style-type: none"> No impacts as construction is not required.
SOCIAL AND CULTURAL ENVIRONMENT	Traffic Disruption /Impacts to Private Property/Existing Land Uses (e.g., Businesses)	<ul style="list-style-type: none"> Access for residents and businesses will result in temporary impacts due to shaft compounds and temporary road traffic impacts along Burnhamthorpe Rd during construction. Traffic delays during construction due to staged closures required along Wilcox Rd and rolling closures along Tomken Rd. Shaft 3-4: Potential impacts on MiWay Bus Stop (Route 26 and 76) around shaft compound. 	<ul style="list-style-type: none"> Access for residents and businesses will result in temporary impacts due to shaft compounds and temporary road traffic impacts along Burnhamthorpe Rd during construction. Traffic delays during construction due to staged closures required along Wilcox Rd and rolling closures along Tomken Rd. Shaft 3-4: Potential impacts on MiWay Bus Stop (Route 51) around shaft compound. 	<ul style="list-style-type: none"> No impacts to traffic as construction is not required. Increased possibility of surcharging and basement flooding impacting private properties due to future population growth and insufficient sewer capacity.
	Nuisance Impacts	<ul style="list-style-type: none"> Noise, dust, vibration, and other nuisance impacts during construction is anticipated. 	<ul style="list-style-type: none"> Noise, dust, vibration, and other nuisance impacts during construction is anticipated. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Cultural / Heritage / Archaeological Impacts	<ul style="list-style-type: none"> Potential for limited vibration impacts to an identified heritage property (Copeland House) during construction. No known archaeological resources have been identified during Stage 1 assessment. 	<ul style="list-style-type: none"> Potential for limited vibration impacts to an identified heritage property (Copeland House) during construction. No known archaeological resources have been identified during Stage 1 assessment. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Pedestrian Traffic	<ul style="list-style-type: none"> Pedestrian pathways will be temporarily impacted at shaft compound locations. <ul style="list-style-type: none"> At Shaft 3-4, pedestrian multi-use trail requires partial closure and detouring along the north boulevard on Burnhamthorpe Rd E. At Shaft 3-5, Etobicoke Creek - Park Trail closure requires alternative route / detour. 	<ul style="list-style-type: none"> Pedestrian pathways will be temporarily impacted at shaft compound locations. <ul style="list-style-type: none"> At Shaft 3-4, pedestrian sidewalk closure and detouring required along east side of Tomken Rd. At Shaft 3-4, pedestrian multi-use trail requires partial closure and detouring along the north boulevard on Burnhamthorpe Rd E. At Shaft 3-5, Etobicoke Creek - Park Trail closure requires alternative route / detour. 	<ul style="list-style-type: none"> No impacts as construction is not required.

Criteria		Alternative 1	Alternative 2	Alternative 3 “Do Nothing Option”
TECHNICAL CONSIDERATIONS	Ease of Construction (e.g., Construction Constraints)	<ul style="list-style-type: none"> Permits and approvals will be required from TRCA due to the location of the facility within regulated area and floodplain. Construction risks associated with mixed face subsurface ground conditions. Construction vehicle movement and equipment storage constraints due to small compound area for Shaft 3-4. 	<ul style="list-style-type: none"> Permits and approvals will be required from TRCA due to the location of the facility within regulated area and floodplain. Construction risks associated with mixed face subsurface ground conditions. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Compound Locations	<ul style="list-style-type: none"> Smallest construction compound area for Shaft 3-4. Potential conflict with overhead high voltage hydro lines at Shaft 3-4. 	<ul style="list-style-type: none"> Large construction compound area for Shaft 3-4. No major conflicts with utilities. 	<ul style="list-style-type: none"> No impacts as construction is not required.
	Operational Flexibility	<ul style="list-style-type: none"> Enables the Region flexibility to divert flows partially or fully to the Cawthra Rd Sanitary Trunk Sewer. 	<ul style="list-style-type: none"> Enables the Region flexibility to divert flows partially or fully to the Cawthra Rd Sanitary Trunk Sewer. 	<ul style="list-style-type: none"> Alternative provides no improvement in operational flexibility to the wastewater system.
	Impacts on Region’s Hydraulic Level of Service	<ul style="list-style-type: none"> Enhances wastewater servicing capacity and operational flexibility to the Regions wastewater collection system. Minimizes future surcharges and basement flooding within the service area. 	<ul style="list-style-type: none"> Enhances wastewater servicing capacity and operational flexibility to the Regions wastewater collection system. Minimizes future surcharges and basement flooding within the service area. 	<ul style="list-style-type: none"> No improvement to the wastewater system. Continued surcharging and basement flooding.
	Locations/Impacts on Other Existing Utilities	<ul style="list-style-type: none"> Relocations of existing traffic signals and poles and buried cables required for Shaft 3-4 construction. Potential conflict with high voltage hydro lines and poles at Shaft 3-4. Potential conflict with overhead telecom cables spanning the Shaft 3-4 compound. 	<ul style="list-style-type: none"> Relocations of existing traffic signals and poles and buried cables required for Shaft 3-4 construction. 	<ul style="list-style-type: none"> No impacts as construction is not required.
ECONOMIC CONSIDERATIONS	Capital Costs	<ul style="list-style-type: none"> Similar construction and capital costs to Alternative 2. 	<ul style="list-style-type: none"> Similar construction and capital costs to Alternative 1. 	<ul style="list-style-type: none"> No capital costs as construction is not required.
	Operating and Maintenance Costs	<ul style="list-style-type: none"> Typical operating and maintenance requirements; equivalent to Alternative 2. 	<ul style="list-style-type: none"> Typical operating and maintenance requirements; equivalent to Alternative 1. 	<ul style="list-style-type: none"> Potential costs related to basement flooding.
	Land Acquisition / Easement Requirements	<ul style="list-style-type: none"> Consent to Enter and permanent easement will be required from the City of Mississauga to accommodate the alignment and Shaft 3-5. Consent to Enter on public property required for Shaft 3-4 construction at the northwest corner of the intersection of Tomken Rd and Burnhamthorpe Rd E. 	<ul style="list-style-type: none"> Consent to Enter and permanent easement will be required from the City of Mississauga to accommodate the alignment and Shaft 3-5. Temporary easement on private property required for Shaft 3-4 construction at the northeast corner of the intersection of Tomken Rd and Burnhamthorpe Rd E. 	<ul style="list-style-type: none"> No land acquisitions.

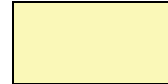
Criteria	Alternative 1	Alternative 2	Alternative 3 “Do Nothing Option”
SUMMARY			
Natural Environment	<ul style="list-style-type: none"> Work requires excavation within TRCA regulated area. Impacts to existing manicured lawn and planted trees at Applewood Hills Park. 	<ul style="list-style-type: none"> Work requires excavation within TRCA regulated area. Impacts to existing manicured lawn and planted trees at Applewood Hills Park. 	<ul style="list-style-type: none"> No impacts as construction is not required.
Social and Cultural Environment	<ul style="list-style-type: none"> Minimal temporary disruptions to vehicle traffic during construction and pedestrian detours. Temporary limited vibration impacts during construction. 	<ul style="list-style-type: none"> Minimal temporary disruptions to vehicle traffic during construction and pedestrian detours. Temporary limited vibration impacts during construction. 	<ul style="list-style-type: none"> Increased possibility of surcharging and basement flooding due to future population growth and insufficient sewer capacity.
Technical Considerations	<ul style="list-style-type: none"> Enhances wastewater servicing capacity and operational flexibility to the Regions wastewater collection system. Prevents future surcharges and basement flooding. 	<ul style="list-style-type: none"> Enhances wastewater servicing capacity and operational flexibility to the Regions wastewater collection system. Prevents future surcharges and basement flooding. 	<ul style="list-style-type: none"> Increased possibility of surcharging and basement flooding due to future population growth and insufficient sewer capacity.
Economic Considerations	<ul style="list-style-type: none"> Least number of private land acquisitions. 	<ul style="list-style-type: none"> Most number of private land acquisitions. 	<ul style="list-style-type: none"> Potential indirect costs related to basement and surface flooding.
OVERALL RANKING	<p>LESS RECOMMENDED</p> <ul style="list-style-type: none"> Minimizes future surcharges and basement flooding. Enhances wastewater servicing capacity and operational flexibility to accommodate future growth and development. Diverts wastewater flows away from areas prone to sewer surcharging, to the proposed Cawthra Sanitary Trunk Sewer. Consent to Enter on public property required for Shaft 3-4 construction at the northwest corner of the intersection of Tomken Road and Burnhamthorpe Road East. Potential conflict with high voltage overhead hydro lines and poles at Shaft 3-4. Construction vehicle movement and equipment storage constraints due to small compound area for Shaft 3-4. 	<p>RECOMMENDED</p> <ul style="list-style-type: none"> Minimizes future surcharges and basement flooding. Enhances wastewater servicing capacity and operational flexibility to accommodate future growth and development. Diverts wastewater flows away from areas prone to sewer surcharging, to the proposed Cawthra Sanitary Trunk Sewer. Temporary easement on private property required for Shaft 3-4 construction at the northeast corner of the intersection of Tomken Road and Burnhamthorpe Road East. Larger compound area available for Shaft 3-4. 	<p>NOT RECOMMENDED</p> <ul style="list-style-type: none"> Does not meet the sanitary service demands (e.g., potential surcharging and basement flooding) from a growing population. Does not address the Problem/Opportunity Statement. Potential indirect costs related to basement flooding.

Rating:

Preferred



Less Preferred



Least Preferred



8 Preferred Alternative

Section 7 offers a summary of the potential impacts associated with each alternative. Alternative 2 has been identified as the preferred solution, despite having the highest construction cost due to the acquisition of private land for Shaft 3-4. However, the chosen shaft location provides the largest compound area for construction, minimizing disruptions to traffic during construction, and poses no conflicts with overhead hydroelectric.

The impacts on the natural environment will be short-term during construction. It is acknowledged that Shaft 3-4 will be built within a TRCA regulated area; and permits and approvals will be necessary from TRCA due to the facility's location within a regulated area and floodplain. A Natural Science Report (**Appendix B**) was completed for the study area to establish an inventory of natural environmental features, assess potential construction disturbance impacts, and identify mitigation measures.

The social-cultural impacts encompass noise, dust, and other nuisances, including the temporary closure of the Etobicoke Creek Trail, necessitating an alternative route. Residents and businesses will experience temporary disruptions due to increased road traffic along Burnhamthorpe Road East during construction, alongside traffic delays on Wilcox Road and temporary pavement widening on Tomken Road. These impacts are strictly short-term, confined to the construction period, ensuring no lasting effects on the social-cultural environment. A comprehensive assessment of construction-related factors related to dust, noise, and vibration was undertaken to determine the necessity for monitoring and mitigation (**Appendix F**).

Additionally, a Stage 1-2 Archaeology Assessment (**Appendix C**) and Cultural Heritage Assessment (**Appendix D**) have been conducted. The Archaeology Assessment confirms that no archaeological resources were found, and no further assessment is recommended. The Cultural Heritage Report has identified a heritage property at 1050 Burnhamthorpe Road East (Copeland House). To mitigate any potential impacts, staging and construction should be suitably planned and executed to ensure that unintended negative impacts on the character-defining elements of the property at 1050 Burnhamthorpe Road East are avoided.

The proposed sanitary trunk sewer will be constructed within the existing road right-of-way (ROW). Exceptions include the shaft locations/compound areas. The shaft compounds will require permanent and/or temporary working easements to facilitate tunneling activities as described in **Section 8.1.3**.

Several reports were completed to determine the existing conditions of the study area, the potential impacts and possible mitigation measures. The possible mitigation measures are summarized within **Section 11** of this report.

8.1.1 Construction Method

The preferred alternative involves extending a 1500mm gravity trunk sewer along Burnhamthorpe Road East from Cawthra Road to Little Etobicoke Creek (LEC) and will be conducted exclusively through tunnelling methods. Trenchless pipe installation, suitable for deeper installations, environmentally sensitive areas, and locations with utility congestion, will be utilized. This method's design will be finalized during the detailed design phase, after completion of the geotechnical investigation.

The preferred alternative also includes specific upgrades and improvements to local sewers include:

- A new local 300mm/375mm sanitary sewer on Wilcox Road, extending from Burnhamthorpe Road East north to Kozel Court, replacing the existing 250mm sanitary sewer.

- A new 300mm/375mm sanitary sewer on Tomken Road, extending from Runningbrook Drive north to Burnhamthorpe Road East, connecting to the 1200mm trunk sewer at the northeast corner of the intersection.
- A new 250mm sanitary sewer on Runningbrook Road, extending from Pinesmoke Crescent to Tomken Road, connecting to a new 300mm sewer on Tomken Road within the intersection.

These upgrades will be implemented through open-cut construction and are exempt from the Environmental Assessment Act requirements, as they fall within existing road allowances or utility corridors without crossing watercourses.

8.1.2 Launching and Reception Shafts

Shafts will be required for sewer construction using tunnelling methods for pipeline installation. Shafts will generally be constructed as either circular or rectangular structures. Circular shafts are generally cheaper to construct than rectangular shafts. The shafts will also be sized to facilitate the installation of maintenance holes at each of the launching and reception shaft locations.

The shaft size and depth are dependent on the chosen tunnelling methodology. Launching and receiving shafts will be excavated through both soil and rock. Temporary ground support of the shafts will be required and water inflow to the shaft may require localized grouting of the shaft perimeter. The excavation of the shaft will likely be a top-down approach using sinking shaft methods or acceptable alternatives suggested by the Contractor.

8.1.3 Compound Areas

Compound areas, also known as "lay down" areas, will be necessary for the construction of tunnel shaft excavations, tunneling, entrances, etc. Staging areas are also used for storage, temporary spoil storage, shaft support, workshops, mixing and processing slurry for excavation support or tunnel excavation (slurry separation plant), and post excavation slurry treatment. Furthermore, these areas will be used for temporary storage of delivered materials and excavated spoils prior to removal from the site.

Generally, these areas will be required to facilitate access to the tunnel. Typically, a portion of the boulevard, traffic lanes, and/or parking areas, and some temporary working easements from private landowners will likely be required at various locations for staging. Construction compounds within the streets are also envisioned where no off-street areas can be utilized.

9 Permits and Approvals

Based on the pre-screening of study area, scope of works, and in accordance with the Region's Project Implementation Procedures Manual, the following permits and approvals are required or potentially required to be obtained over the design stage, for the construction works:

- A Permit for Development, Interference, with Wetlands and Alterations to Shorelines and Watercourses from the TRCA (Ontario Regulation 166/06);
- Ontario Water Resources Act R.S.O. 1990 – Environmental Compliance Approval ("ECA") - Regional Municipality of Peel Wastewater Collection System, ECA Number: 009-W601;
- Public Utilities Coordinating Committee ("PUCC");
- Traffic Management Permit/Coordination;

- City of Mississauga tree removal and/or protection permit/requirements; and
- A Permit to Take Water (“PTTW”) from the MECP, or registration as an Environmental Activity and Sector Registry (“EASR”).

9.1 Approvals – Conservation Authority

9.1.1 Ontario Regulation 166/06: Toronto and Region Conservation Authority: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses

The Study area is located within a TRCA regulated area in accordance with Ontario Regulation 166/06 under Section 28 of the Conservation Authorities Act.

The TRCA has delineated regulatory floodplains which cover the vicinity of the Shaft 3-5. Therefore, a permit under Ontario Regulation 166/06 will be required from TRCA.

Continuous consultations with the TRCA were conducted throughout various stages of the study to review project details and identify specific permitting requirements. During the detailed design phase, further discussions with TRCA will be held to ensure the implementation of all necessary mitigation measures.

9.1.2 Source Water Protection – Clean Water Act (2006)

An assessment of source water protection in the study area identified portions of the study area lying within Intake Protection Zone 3 (IPZ-3) and an Event Based Area (EBA).

By lying within an IPZ-3 and event-based area (EBA), the Credit Valley, Toronto and Region, and Central Lake Ontario (CTC) Source Protection Plan will need to be implemented.

The policy that would apply to the vulnerable area as delineated under the Clean Water Act, 2006 is LO-SEW-2 associated with a spill from a sanitary sewer trunk sewer break. LO-SEW-2 in the CTC Source Protection Plan requires MECP to ensure appropriate terms and conditions are included in an ECA so that the activity being carried out under this approval does not become a significant drinking water threat.

9.2 Approvals – Provincial

9.2.1 Ontario’s Endangered Species Act, 2007

Due to the proximity of the work to the Little Etobicoke Creek, Arcadis completed a review of secondary sources of information including MNR’s Make a Map: Natural Heritage Information Centre database, Land Information Ontario (LIO) database, and Aquatic Species at Risk maps (DFO website). No species at risk appear to be found within the study area.

In addition, in January 2020, Arcadis held a pre-consultation meeting with SAR MECP to review project details against species at risk records. Per MECP’s confirmation email received in February 2020, there is no concern about species at risk within the utility corridor of the Little Etobicoke Creek.

9.2.2 Permit to Take Water / Environmental Activity and Sector Registry

For construction dewatering, water takings of more than 50,000 L/day but less than 400,000 L/day do not require a PTTW but may be registered on the Environmental Activity and Sector Registry (“EASR”). Water takings of more than 400,000 L/day require a PTTW issued by the MECP. These permits often require supporting hydrogeology studies for their approval by the MECP.

Based on the previous hydrogeological work completed in the study area, relatively low hydraulic conductivities were observed. The hydraulic conductivity of the investigated units was found to be:

- Overburden and Bedrock Interface: 2.89×10^{-6} m/s to 2.62×10^{-8} m/s
- Bedrock: 2.95×10^{-8} m/s to 1.16×10^{-9} m/s

Consequently, a relatively localized zone of influence and low dewatering rate were predicted. It is anticipated that the installation of sewers could be completed within the EASR limits. A hydrogeological investigation will be conducted, and the dewatering rate will be estimated to identify and confirm the level of permit that is required.

9.2.3 Ontario Water Resources Act R.S.O. 1990 – Environmental Compliance Approval (“ECA”)

MECP recently issued the Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA) to the Region. This is a pre-authorized system allowing Municipal Sewage Collection System projects to proceed under their respective CLI ECA (009-W601).

“Pursuant to the Environmental Protection Act, R.S.O 1990, c. E. 19 (EPA), and the regulations made thereunder and subject to the limitations thereof, this environmental compliance approval is issued under section 20.3 of Part II.1 of the EPA to the Regional Municipality of Peel.

During detailed design, it will be discussed with the Region’s Compliance Department to assess and fulfill the necessary requirements to proceed under the respective CLI ECA.

9.2.4 Excess Soil Management (O.Reg. 406/19)

Excess soil will need to be managed during construction and production of planning documents will be required to inform and facilitate the handling and disposal of the project soils. This will include the completion of an Assessment of Past Uses (APU), a Sampling and Analysis Plan (SAP), and a Soil Characterization Report (SCR) during the design phase to inform soil quality within the project area.

9.3 Approvals – Municipal

9.3.1 Public Utilities Coordinating Committee (“PUCC”) - City of Mississauga

The City of Mississauga has a coordination and planning process that reviews infrastructure projects to minimize any conflicts with existing and proposed utilities and reduce the impact of construction. A PUCC approval will be required for this project.

9.3.2 Tree Protection By-law and Tree Removal Permit - City of Mississauga

A tree permit is required where any individual tree with a diameter of 15cm (6in) or greater, is to be injured or removed (destroyed) on a private (Private Tree Protection By-law 0021-2022) or public (Public Tree Protection By-law 0020-2022) property/lot.

An Arborist report is required to be completed in accordance with the New Special Provision for the City of Mississauga Public Tree Protection Bylaw, to support the design and selection of mitigation measures and to determine whether the conditions for requiring this permit are met.

Tree replacement is required for every 15cm (6in) of diameter of the tree removed. For example, when a tree with a diameter of 45cm (18in) is removed, three (3) replacement trees are required. Replacement trees (no matter the size) cannot be injured or removed without a permit.

An Arborist Report, which includes a tree inventory was completed (**Appendix G**) for the preferred alternative, to identify trees within the study area and summarize the impacts from the proposed construction works and mitigation measures.

9.4 Approvals – Federal

9.4.1 Fisheries Act Authorization

To ensure compliance under the Fisheries Act and the Species at Risk Act, the Fish and Fish Habitat Protection Program provided by the Fisheries and Oceans Canada (DFO) should be followed. As outlined by the DFO, any project that can potentially cause the death of fish and the harmful alteration, disruption or destruction of fish habitat requires a project review.

Where works are required within regulated areas, the completion of a Fisheries Act screening is recommended as Conservation Authorities no longer have an agreement to screen projects on behalf of the DFO. However, since no in-water work is anticipated for this project, authorization will not be required.

10 Identification of Mitigation Measures

10.1 Utilities

The exact number and locations requiring utility re-location and/or support will be determined during detailed design with continuous communication and cooperation with the utilities' owner.

10.2 Social-Cultural Environment Impacts

10.2.1 Traffic

To facilitate the construction of the sanitary sewer for Cawthra Rd Phase 3, traffic management plans and detours will be prepared during the detailed design stage. All traffic control plans and measures will be provided in accordance with the Ontario Traffic Manual, Book 7. The proposed road/lane closures during construction operations will be developed during detailed design.

Planned and ongoing projects within the Cawthra Sanitary Sewer Trunk Study area that require consideration for coordination during detailed design are:

- Peel Region (10-1205 and 10-1353) Hanlan Feedermain
- Peel Region (13-1125 and 15-2241) Cooksville Creek Sanitary Sewer Diversion and Drain Chamber Discharge Lines on Burnhamthorpe Rd
- Peel Region (17-4040) Cawthra Rd (Eastgate Pkwy to QEW) – Corridor Improvements Project
- Peel Region (21-2300 D) Wastewater System Improvements
- City of Mississauga – Hassal Rd 2023 Residential Rd Resurfacing Project (from Cawthra Rd to Holden Crescent)
- City of Mississauga – Runningbrook Dr 2023 Residential Rd Resurfacing Project (from Cawthra Rd to Pinesmoke Crescent)
- City of Mississauga – Runningbrook Dr 2023 Residential Rd Resurfacing Project (from Tomken Rd to Bloor Street)
- City of Mississauga – Golden Orchard Dr Sidewalk Repair (from Burnhamthorpe Rd to Bloor Street)

10.2.2 Speed Limits

There is no planned speed limit reduction on Burnhamthorpe Road East, however, due to the proposed temporary alignment on Tomken Road, an advisory speed limit reduction on Tomken Road between south of Burnhamthorpe Road East and south of Runningbrook Drive is necessary. A reduction from 50km/hr to 40km/hr within the construction zone for the duration of construction is recommended.

10.2.3 Traffic Control – Working Hours

To facilitate the construction of the sanitary sewer, a traffic management plan will be prepared to maintain four (4) lanes of traffic along Tomken Road to the full extent possible. This may require the construction of temporary detouring (pavement widening), where possible.

Rolling closures will be in effect on Wilcox Road during construction, and detour plans will be provided according to the road sections. In geometrically constrained areas, one traffic lane's closure will be required to effectuate construction with a Traffic Control Person on site to assist vehicles. Lane closures will be minimized as much as possible and will be further investigated during detailed design.

10.2.4 Traffic Control – Non-Working Hours

During non-working hours (and overnight), the designated construction corridor will, where possible, be reopened back to the existing lane configurations. Open excavations will need to be appropriately protected and backfilled at the end of each working day.

The Contractor shall schedule their work so that there will be no open excavation areas adjacent to a live traffic lane overnight and on non-working days. Excavation within 5.0 meters of a live lane shall be either backfilled with specified material up to profile grade or covered with steel plates, prior to terminating operations for the day.

10.2.5 Protection to Hydro Poles

Where construction traffic is close to the existing Hydro Poles (HP), temporary concrete barriers, as required (or for roadside safety) will be provided for protection.

10.2.6 Work Site Delineation

Traffic barrels (TC-54) will be used to separate the work zone from the travelled lanes or delineators in reduced lane widths. Temporary pavement markings will be provided along Tomken Road for open cut work. Further details will be provided through development of Traffic Management Plan over the course of detailed design.

10.2.7 Pedestrian Traffic

Sidewalks exist on both sides of Burnhamthorpe Road East from Central Parkway East to Little Etobicoke Creek, with a sidewalk continuing onto adjacent side streets. Alterations to existing sidewalks and the need for temporary pathways will be considered during detailed design. A pedestrian detour and signage plan will be developed during detailed design.

Pedestrian detour signage will be provided at Little Etobicoke Creek Trail during operation of the sanitary tunnel shaft compound. Advance notice of closure would be provided on all impacted trail approaches. Signage will be provided at the decision point indicating the path is closed and providing an alternative route / detour. Further details will be provided in the Traffic Management Plans.

10.2.8 Public Notification

Public notification should occur in advance of construction to ensure that businesses are kept informed. Commercial business and community services should be notified directly of impending works.

10.2.9 Noise and Vibration Control

There may be temporary impacts on surrounding communities during the installation of the preferred alternative. To limit disturbances and comply with the local noise by-law, RWDI developed a Noise and Vibration Construction Monitoring Plan for the preferred alternative, to help manage these impacts. The report provides recommended monitoring methodologies and relevant noise and vibration limits, as well as resources available during the project's construction.

During the development of the Construction Monitoring Plan, it was determined that construction activities might impact the heritage property at 1050 Burnhamthorpe Road East. Consequently, RWDI completed a Construction Vibration Zone of Influence (ZOI) report to review potential ground-borne vibrations at this location. The report concluded that the ZOI does not extend into the legal boundaries of the heritage property; therefore, vibrations are not expected to impact the heritage property.

The Noise and Vibration Construction Monitoring Plan is included in **Appendix F**.

10.2.10 Generation of Excess Materials

The preferred alternative would require excavation and filling operations. Various types of materials, including soil, may be generated during these activities which will require appropriate management. An Excess Materials Management Strategy should be developed to establish a suitable characterization, handling, and disposal

protocol. All excess and unsuitable materials generated during construction should be managed in accordance with this plan.

Any contaminated waste should be taken to an appropriate disposal site, while beneficial reuse for other generated excess materials should be explored. Receiving sites should be defined through an Excess Soil Destination Assessment.

10.2.11 Encountering Unknown Archaeology Remains

Based on the Stage 1 Archaeological assessment (**Appendix C**), there is very low potential for archaeological resources within the study area.

However, in the unlikely event that unknown archaeological remains are encountered during construction, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the Ministry of Citizenship and Multiculturalism (MCM) must be immediately notified.

10.3 Natural Environment Impacts

10.3.1 Erosion and Sediment Control

Erosion and sedimentation controls (ESC) are to be in place to protect the existing swales/gutters from the transport of silt and oil residues. This will be achieved by the installation of heavy-duty silt fence and catch basin silt traps along the length of the open-cut pipe installation limits, and at strategic locations. In addition, silt protection fence will be placed at the limits of construction to prevent encroachment beyond the working zone. ESCs will be investigated further during the detailed design stage. During construction phase, an environmental consultant will inspect all erosion and sediment controls regularly.

10.3.2 Spill Prevention and Contingency

A Spill Prevention and Contingency Plan will be developed that provides on-site personnel with procedures, including notification to the relevant authorities, to reduce the risk of spills of pollutants and prevent, eliminate or improve any adverse effects that occur or may result from spills of pollutants. Prompt responses from qualified trained personnel would reduce the adverse impacts from such an event.

The Spill Prevention and Contingency Plans will be developed and implemented specific to the project over detailed design and construction.

10.3.3 Tree Protection

An Arborist Report, which includes a tree inventory was completed (**Appendix G**) for the preferred alternative, to identify trees within the study area and summarize the impacts from the proposed construction works and mitigation measures. The City of Mississauga defines that one replacement tree is required for every tree on public or private property that is over 15cm. Any tree removals, pruning, or root cutting are to be conducted by a qualified arborist. For trees that are not identified for removal, the following mitigation measures will be implemented to limit impacts:

- Installation of tree protection barriers (complying with the City of Mississauga's specifications) around each tree designated for protection prior to any construction works.
- Within the Tree Protection Zones:

- No fill, machinery, chemicals, fuel, or materials to be placed/stored.
- No heavy machinery to be operated.
- No re-grading, filling, or excavation unless permitted by the City.
- Soil compaction mitigation includes the application of wood chips and overlaying steel or plywood to dissipate the weight of machinery driven overtop.
- Prune any exposed roots with a diameter of less than 5cm to promote regeneration and prevent infection.
- No signs or objects shall be affixed to any trees identified as to be protected.
- Backfilling should occur as soon as possible and should use clear native uncontaminated topsoil.

10.3.4 Dewatering

Construction of the preferred alternative will likely require some dewatering during construction. As discussed in **Section 9.2.2**, it is likely that either an EASR or a Category 3 PTTW will be required, and refined dewatering requirements and mitigation measures should be explored through a detailed hydrogeological investigation completed during detailed design. The management and discharge of the dewatered effluent will also need to be taken into consideration, as the addition of a sizeable volume of water to the abutting watercourses may further exacerbate surface water, geomorphic and erosion impacts, while discharging the managed groundwater to existing municipal sewers will require capacity assessments and water quality confirmation.

10.3.5 Restoration

In addition to the efforts made to reduce impacts to natural heritage features, where impacts are unavoidable, restoration is required. A Restoration Plan will be developed to implement vegetation replacement, facilitate the restoration, remediation, and enhancements to existing natural features. Restoration plans will consider space requirements for future and ongoing maintenance access to the proposed infrastructure.

11 Public, Agency, and Indigenous Community Consultation

A key feature of the Class EA process is to ensure effective communication with the public, Indigenous communities, agencies and other stakeholders throughout the project. To meet the Class EA consultation requirements for this Schedule B study, steps were taken to ensure effective communication throughout the project with the public, Indigenous communities, agencies, and other stakeholders. The overall strategy has been to provide various opportunities to communicate and receive input from the public, government, agencies, Indigenous communities, and other stakeholders and to review, consider, integrate (as appropriate), file, and respond in a reasonable timeframe. Copies of notifications, as well as the list of regulatory agencies, Indigenous communities and project stakeholders are provided in **Appendix H**. Correspondence between the project team and Indigenous communities and stakeholders concerning the project is provided in **Appendix I**.

11.1 Notices and Online Public Engagement

11.1.1 Notice of Study Commencement and Online Public Engagement

Initial communication with stakeholders and the public started with issuance of the Notice of Study Commencement and Online Public Engagement, which provided information on the study background along with project contacts and included a map showing the Study Area. The Notices also provided information on the project and included a “How to Get Involved” section which provided a link to the online public engagement display boards.

The Notice of Study Commencement and Online Public Engagement was first issued on May 6, 2024.

Notices were emailed out on May 8, 2024, to Agencies, Ministries, Indigenous communities, and other stakeholders (a copy of the email sent out to the Project Stakeholder List is included in **Appendix H**).

For general distribution of project information to the public and stakeholders, the Notices were also posted:

- On the Region’s website and Mississauga News:

Notice of Study Commencement and Online Public Engagement on May 6, 2024

11.1.2 Online Public Engagement

An Online Public Engagement was created to communicate the details of the proposed project with the public, Indigenous Communities, and stakeholders. The Online Public Engagement ran from May 6, 2024, until June 17, 2024. The display boards were made available through a link provided in the Notice of Study Commencement and Online Public Engagement. The display boards identified three (3) alternatives and an evaluation matrix which summarized the different potential impacts each of the alternatives would have. The recommended alternative was displayed such that any concerns over the alignment could be brought to the attention of Arcadis to consider and address. A copy of the display boards is provided in **Appendix J**.

11.1.3 Notice of Study Completion

The Notice of Study Completion will be sent out to stakeholders (includes all Agencies, Ministries, Indigenous communities, and previously identified stakeholders), the residents that provided comments and businesses

located within the Study Area. The Notice provides a minimum 30-day comment period and outlines the MECP's revised section 16 Order request process. To also provide a more general distribution the Notice will be placed online in the Mississauga News on two issue dates and posted on the Region's website.

11.2 Public and Agency Comments

Following distribution of the Notice of Commencement and Online Public Engagement, comments were received from various agencies (City of Mississauga MiWay (MiWay), Ministry of the Environment, Conservation and Parks (MECP), Ministry of Citizenship and Multiculturalism (MCM), Hydro One and TELUS Network). These comments were considered and incorporated into the Class EA process and documented in the Project File Report, where applicable.

The comments received from MiWay, MECP, MCM, Hydro One and TELUS have been summarized along with all associated responses. The comments and responses have been logged in a table which shows the stakeholder, date of their response, summary of comments, response provided, and date of response and this table can be found in **Appendix I**.

No comments were received from the public or any other stakeholders.

The comments received did not result in changes to the recommended alignment and based on this the alignment was confirmed and carried forward as the preferred alignment.

11.3 Indigenous Communities Consultation

Indigenous community engagement and consultation were undertaken to ensure effective communication with those who have a potential interest. The consultation activities, comments, and responses are logged in a table within **Appendix I**, which includes the Indigenous community, date of their comments, a summary of comments, and the response provided. The following initiatives were undertaken to notify Indigenous communities about the Class EA project:

- Each of the potentially affected Indigenous communities on the project contact list was emailed notices to keep them informed of the project's progress and methods for providing input.
- In addition to the email notices, the communities were contacted through emails and phone calls to provide opportunities for follow-up.

The following Indigenous communities or associations were provided copies of all project notices and will also receive the Notice of Completion:

- Beausoleil First Nation
- Chippewas of Mnjikaning (Rama) First Nation
- Haudenosaunee Confederacy Development Institute
- Huron-Wendat Nation
- Métis Nation of Ontario Head Office
- Mississaugas of the Credit First Nation
- Six Nations of the Grand River First Nation

A summary of correspondences with Indigenous communities is as follows:

Six Nations of the Grand River First Nation

- Arcadis engaged with Six Nations of the Grand River First Nation to discuss the Cawthra Phase 3 Sanitary Trunk Sewer Class EA Study. Six Nations requested that future notices be sent to both their representatives, including Dawn LaForme (dlaforme@sixnations.ca). They also inquired about the availability of studies related to potential impacts on the watercourse and arborist reports.
- A virtual meeting was held with Six Nations to report that Stage 1 and 2 Archaeological Assessments were completed by our consultant, Archaeological Services Inc. (ASI). A Six Nations Field Representative was involved in the fieldwork.
- A copy of the Stage 2 Archaeological Assessment was provided to Six Nations on September 12, 2024, for their feedback, and followed up on October 10 and 18, 2024.
 - Six Nations reviewed the reviewed the draft Cawthra Phase 3 Stage 2 with no comments or concerns pertaining to the Archaeological assessment review (October 22, 2024).
- In response to inquiries about the watercourse and arborist studies, Arcadis confirmed that a Natural Heritage Screening and an Arborist Report were completed and provided copies for Six Nations' review. Arcadis also informed Six Nations that the project primarily involves constructing a sanitary sewer along existing road allowances, with a short section crossing Little Etobicoke Creek. The crossing will use tunneling methods to minimize impacts on the watercourse. Arcadis stated that the Region is committed to restoring disturbed vegetated areas and compensating for tree removals as much as possible.
- Furthermore, Arcadis stated that a summary of environmental impacts and proposed mitigation measures will be included in the Project File Report, expected in Summer/Fall 2024, which will be available for comment.

Mississaugas of the Credit First Nation (MCFN)

- Arcadis conducted a phone call with Adam LaForme from MCFN, informing them that ASI conducted Stage 1 and 2 Archaeological Assessments for the project. Although an MCFN Field Liaison Representative could not participate, the assessments proceeded with the involvement of other Indigenous communities. The Stage 2 Assessment found no archaeological potential in the study area.
- A copy of the Stage 2 Archaeological Assessment was provided to MCFN on September 12, 2024, for their feedback, and followed up on October 9 and 18, 2024.
 - MCFN reviewed the reviewed the draft Cawthra Phase 3 Stage 2 with no comments or concerns pertaining to the Archaeological assessment review (October 21, 2024).

Haudenosaunee Confederacy Development Institute (HDI)

- A meeting was initiated to begin consultations related to this study. Since then, continuous engagement and consultation meetings have been conducted to ensure that all concerns are addressed, and comments are incorporated.
- The Region provided HDI with copies of the Stage 2 Archaeological Assessment, Natural Heritage Screening Report, Arborist Report, and Cultural Heritage Impact Assessment for their review and feedback.

Alderville First Nation

- An email was received from Alderville First Nation indicating that they had no comments regarding the project.

Huron-Wendat Nation

- Huron-Wendat Nation inquired whether archaeological studies or fieldwork would be necessary for this project and requested copies of the Stage 2 Archaeological Assessment and Cultural Heritage Impact Assessment (CHIA) for review. Arcadis informed Huron-Wendat that ASI conducted Stage 1 and 2 Archaeological Assessments. Attempts were made to involve a Huron-Wendat Nation representative in the fieldwork by reaching out to Dominique Lesage and Thiefaine Terrier, but no response was received. The assessments proceeded with the participation of other Indigenous communities, and the Stage 2 Assessment found no archaeological potential in the study area.
- Arcadis also stated that ASI completed a Cultural Heritage Screening (CHS) for the area, identifying a protected heritage property at 1050 Burnhamthorpe Road East. A Cultural Heritage Impact Assessment and a vibration assessment were conducted, concluding that construction vibrations would not impact the heritage property. Additionally, natural heritage studies were conducted by LGL Limited, documenting existing conditions without intrusive methods.
- A copy of the Stage 2 Archaeological Assessment was provided to Huron-Wendat on September 25th, 2024, for their feedback, and followed up on October 10 and 18, 2024.

The Notice of Completion, with a link to the Project File Report, will be provided to the Indigenous communities by email. As necessary, follow-ups to confirm information was received and to discuss any comments or concerns related to the project will be undertaken.