City of Barrie
Class Environmental Assessment Report
Foster Drive Area Sanitary Servicing and
Stormwater Management
Barrie, ON

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December 14, 2015
300036021.0000
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<td>March 3, 2015</td>
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<td>August 31, 2015</td>
<td>Draft Submission to City of Barrie</td>
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<tr>
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<td>December 14, 2015</td>
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1.0 Introduction

1.1 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by The City of Barrie (City) to complete a Schedule “B” Municipal Class Environmental Assessment (EA) to consider options to address sanitary servicing for the Foster Drive Area in the City of Barrie. As part of this study, the City of Barrie is completing an assessment of stormwater management improvement opportunities to address the uncontrolled and untreated stormwater runoff generated from the Foster Drive area. This assessment is located in Appendix G of this report.

The EA process is a planning tool used to identify the possible adverse effects of proposed infrastructure projects on the environment that municipalities are required to complete before undertaking specific capital improvements including the proposed sanitary servicing of the Foster Drive area.

The study area is illustrated in Figure 1 and is bounded by Yonge Street and Whiskey Creek to the west, the Metrolinx Corridor to the north and east and Little Avenue in the south. The study area contains Foster Drive, Merrett Drive, Garson Street, Yeates Avenue and MacLaren Avenue (study area).

Foster Drive, Merrett Drive, and Garson Street run generally in an east-west orientation while Yeates Avenue and MacLaren Avenue are generally oriented in a north-south direction, providing local road access to the residential area. Yonge Street and Little Avenue provide access to the study area.

The core project area is comprised of a combination of open space and residential dwellings. The majority of homes were constructed between 1960 and 1970. The study area includes Highland Park as well as two undeveloped private parcels. There are 106 homes in the study area.

1.2 Background

Septic systems, if well maintained, will have a typical maximum life span of 15 to 25 years (Ontario Rural Wastewater Centre http://www.uoguelph.ca/orwc/Resources/documents/SepticBrochure-NewFormat_V7-ONLINE.pdf, 2014). The septic systems in the study area are approaching their life expectancy therefore many property owners will have to replace their septic fields unless municipal sanitary servicing is provided.
It has been the City of Barrie Council’s practice to proceed with sanitary and water servicing of unserviced areas when possible subject to available funding. The City of Barrie also works towards addressing the principals of the Lake Simcoe Protection Plan, which includes a proactive approach to protect the environment where there is uncertainty of potential environmental risks.

Additionally, the City has identified the need for road rehabilitation and reconstruction within this study area and as such, there is an opportunity to combine the preferred sanitary servicing alternative with future road improvements aimed at improving the travelled roadway, storm drainage and pedestrian infrastructure.

1.3 Purpose

The primary objective of this project is to review sanitary servicing alternatives for the study area and provide the community with viable long term technical and financial solutions. Currently, existing residences manage and maintain individual private septic systems. The secondary objective of this project is to assess stormwater management improvement opportunities to address the uncontrolled and untreated stormwater runoff generated from the Foster Drive area within the study area (see Appendix G). The stormwater assessment is supported by Sanitary Servicing Project File Report.

1.4 Definition of the Problem:

Problem Statement

The existing private septic fields adjacent to Foster Drive, Merrett Drive, Yeates Avenue, Garson Street and MacLaren Avenue (between Foster Drive and Little Avenue) have generally reached the end of their life expectancy and will eventually need to be replaced by property owners. The existing road structure (Foster Drive) and infrastructure within the study area require life cycle maintenance, repair and replacement activities in the form of rehabilitation or reconstruction.

Opportunity Statement:

As part of road rehabilitation and reconstruction efforts, there is the opportunity to replace and upgrade required infrastructure and to provide sanitary servicing in a cost effective and environmentally friendly manner.
1.5 Project Team

The project team is as follows:

<table>
<thead>
<tr>
<th><strong>City of Barrie</strong></th>
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<tbody>
<tr>
<td>Brett Gratrix, P.Eng.</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Ralph Scheunemann, P.Eng.</td>
<td>Senior Infrastructure Planning Engineer</td>
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<table>
<thead>
<tr>
<th><strong>Consultant – R.J. Burnside &amp; Associates Limited</strong></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Philip Rowe, C.E.T</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Deanna De Forest, B.Sc.</td>
<td>Environmental Assessment Coordinator</td>
</tr>
<tr>
<td>Jeff Langois, P.Eng</td>
<td>QA/QC</td>
</tr>
<tr>
<td>Steve Gendron, P.Eng</td>
<td>Project Engineer</td>
</tr>
<tr>
<td>Timothy Lozon, P.Eng</td>
<td>Sanitary Sewer Modelling</td>
</tr>
<tr>
<td>Kevin Butt</td>
<td>Certified Arborist</td>
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<tr>
<th><strong>Sub - Consultant – AMICK Consultants Limited (Archaeological, Built/Cultural Heritage)</strong></th>
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<tbody>
<tr>
<td>Kayleigh MacKinnon</td>
<td>Licensed Archaeologist</td>
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<tr>
<th><strong>Sub - Consultant – Peto MacCallum Limited (Geotechnical/Hydrogeological)</strong></th>
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<tbody>
<tr>
<td>Geoff White, P.Eng</td>
<td>Manager Geotechnical and Geoenvironmental Services</td>
</tr>
</tbody>
</table>

2.0 Project Environment

2.1 Physical Environment

The physical environment as it relates to the existing municipal and transportation infrastructure.

2.1.1 Sanitary Treatment/Collection System

The sanitary flows generated in the study area are currently treated by private septic fields. According to Barrie staff, the majority of systems were constructed in the late 1960’s. As such, many of these systems will be approaching the end of their useful life.
The study area is not presently serviced by sanitary sewers. The existing sanitary sewers in proximity to the study area are shown in Figure 1. The study area is bounded by the following existing sanitary sewer network:

**Table 1: Existing Sanitary Sewers**

<table>
<thead>
<tr>
<th>Street</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yonge Street at Foster Drive</td>
<td>250 mm</td>
</tr>
<tr>
<td>Little Avenue at MacLaren Avenue</td>
<td>250 mm</td>
</tr>
<tr>
<td>Little Avenue east of MacLaren Avenue</td>
<td>250 mm</td>
</tr>
</tbody>
</table>

### 2.1.2 Stormwater Management

The study area is located on a subwatershed divide between the Barrie Creeks and Lovers Creek subwatersheds. The study area is located within the subwatershed boundary of Whiskey Creek, part of the Barrie Creeks subwatershed to the west, and Lovers Creek subwatershed, to the east, both of which drain to Lake Simcoe. Stormwater generated in the southwestern portion of the study area is conveyed via roadside ditches to storm sewer inlets located on Little Avenue at Yeates Avenue (outlets to Whiskey Creek) and MacLaren Avenue outlets to Lovers Creek storm sewer via Little Avenue. Stormwater generated in the northern portion of the study area flows in a northwest direction to Whiskey Creek. See Figure 1 located in Appendix G – Stormwater Management Assessment Technical Memorandum.

Existing development in the Foster Drive area predates regulations governing stormwater quality and quantity control. The area is primarily serviced by roadside ditches.
2.1.3 Groundwater

The South Georgian Bay Lake Simcoe Assessment report for the Ministry of Environment and Climate Change confirms that the study area is not located within an Area of High Aquifer Vulnerability (sensitivity of groundwater quality to an imposed contaminant load) or in a source protection designated area (designated protected area that protects lakes, rivers and groundwater from contamination or overuse). The Lake Simcoe Conservation Authority (LSRCA) notes that lands in the northwest portion of the study area are identified as a significant groundwater recharge area.

Based on a review of existing hydrogeological conditions within the study area, completed by Peto MacCallum (Appendix A1), groundwater within the area of Foster Drive is anticipated at a depth of 3.0 m to 4.5 m below grade. Local perched water conditions can be expected in the southern portion and higher elevations of the study area.

2.1.4 LSRCA Regulation Limit

The northwest portion of the study area falls within the LSRCA regulation limits for Whiskey Creek (see Figure 2).

2.1.5 Watermains

The study area is serviced by municipal water servicing with watermains typically installed near the centreline of the existing drainage swales. Water infrastructure within the study area is as follows:

Table 2: Water Infrastructure

<table>
<thead>
<tr>
<th>Street</th>
<th>Date Installed</th>
<th>Condition Rating</th>
<th>Material</th>
<th>Diameter</th>
</tr>
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<tbody>
<tr>
<td>Foster Drive</td>
<td>2003</td>
<td>Very Good</td>
<td>PVC</td>
<td>150 mm</td>
</tr>
<tr>
<td>MacLaren Avenue</td>
<td>1965</td>
<td>Fair</td>
<td>AC</td>
<td>150 mm</td>
</tr>
<tr>
<td>Merrett Drive</td>
<td>1965</td>
<td>Fair</td>
<td>AC</td>
<td>150 mm</td>
</tr>
<tr>
<td>Garson Street</td>
<td>1965</td>
<td>Fair</td>
<td>AC</td>
<td>150 mm</td>
</tr>
<tr>
<td>Yeates Avenue</td>
<td>1965</td>
<td>Fair</td>
<td>AC</td>
<td>150 mm</td>
</tr>
</tbody>
</table>

PVC – polyvinyl chloride, AC – Asbestos Cement, Condition Rating as per Corporate Asset Management GIS database.
Source: City of Barrie

Watermains on MacLaren Avenue, Merrett Drive, Garson Street and Yeates Avenue were installed in 1965 and are approaching the end of their service life. Replacement
should be considered as part of road reconstruction work. A fire flow analysis was completed by City Staff using the City of Barrie Hydraulic Water Model. The most critical node located within the study area is at the northern limit of Merrett Drive due to the watermain ‘dead-end’ (non-looping). The calculated available fire flows exceeded the City's minimum requirements for fire flows (minimum 57 L/s at 138 kPa residual). It is understood that as part of future development of 223 Foster Drive, an extension of the Merrett Drive watermain to Foster Drive will be completed, thus eliminating the ‘dead-end’ conditions.

2.1.6 Private Utilities (Telecommunications, Hydro, Gas)

Hydro and telecommunication distribution system (cable, telephone) is primarily an aboveground overhead system. The majority of homes are serviced via overhead service connections. A number of newer reconstructed homes have underground service connections from the overhead distribution system.

Enbridge provides underground natural gas distribution to the study area.

2.1.7 Transportation Infrastructure

The roadways of the study area consist of a 2-lane rural cross-section with an asphalt surface and granular and grassed shoulder surfaces. The asphalt surface shows some signs of distress and has been patch repaired in some areas.

The study area is accessed via Yonge Street and Little Avenue. The streets within the study area consist of rural cross-sections with ditches and no sidewalks. The following summarizes the transportation network within the study area. The Condition Rating is provided by the City of Barrie.

Table 3: Road Condition Rating

<table>
<thead>
<tr>
<th>Street</th>
<th>Asphalt Width</th>
<th>ROW Width</th>
<th>Classification</th>
<th>Condition Rating</th>
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<tbody>
<tr>
<td>Foster Drive</td>
<td>6 m</td>
<td>Varies</td>
<td>Local</td>
<td>Fair</td>
</tr>
<tr>
<td>MacLaren Avenue</td>
<td>7 m</td>
<td>Varies</td>
<td>Local</td>
<td>Very Good</td>
</tr>
<tr>
<td>Merrett Drive</td>
<td>7 m</td>
<td>20 m</td>
<td>Local</td>
<td>Very Good</td>
</tr>
<tr>
<td>Garson Street</td>
<td>7 m</td>
<td>20 m</td>
<td>Local</td>
<td>Very Good</td>
</tr>
<tr>
<td>Yeates Avenue</td>
<td>7 m</td>
<td>20 m</td>
<td>Local</td>
<td>Good</td>
</tr>
</tbody>
</table>

Source: City of Barrie
2.1.8 Pedestrian/Active-Transportation Infrastructure

Local streets within the study area do not have sidewalks. Current City standards for urban local roads require 1.5 m sidewalks on one side of the street; typically located on the side of the street with streetlights.

Dedicated cycling facilities have been identified in the Multi-Modal Active Transportation Master Plan for Yonge Street and Little Avenue. These facilities will serve the study area.

2.1.9 Public Transit

City of Barrie public transit is accessible on Yonge Street (Route 8), Minet’s Point Road and Hurst Drive (Route 4). Metrolinx GO train is accessible at the Allandale and Barrie South Stations.

2.1.10 Parking

Residents living on MacLaren Avenue, Merritt Drive, Garson Street, Yeates Avenue and the majority of Foster Drive utilize private driveways for parking. Approximately 10 residences on the north side of Foster Drive have created parking pads located either entirely or primarily within the public right-of-way due to the significant slope between the roadway and the residences.

2.2 Natural Environment

Burnside updated the natural heritage information for the study area by completing a review of available information, policies and plans, natural features, fisheries population and habitat data, as well as any significant environmental features (e.g., woodlands, wetlands, significant flora and fauna) and environmentally sensitive areas within the study area. Information available from the LSRCA, GIS mapping was also reviewed for the study area.

In addition, Burnside completed a site visit to verify and assess the terrestrial, aquatic, and wildlife features of the study area. An investigation of the natural heritage features within the study area was completed on October 8, 2014 by qualified biologists. The analysis of natural heritage features within the study area was comprised of a single season inventory of seasonally evident vascular plant species, documentation of incidental observations of Species at Risk (such as Butternut) and delineation of natural communities according to the Ecological Land Classification system, where possible. Wildlife assessments consisted of incidental observations and an assessment of potential habitat for terrestrial and aquatic wildlife species in the study area, with particular focus on species of special concern and Species at Risk.
A condition assessment of plant species impacted by the alternatives included a tree assessment along street right-of-ways within the study area and a vegetation inventory for those areas outside of the existing right-of-way which would be directly impacted by the alternatives.

The tree assessment along the road right-of-ways was completed by a certified arborist. The findings are provided in the arborist report and tree preservation plan (Appendix A2). All trees located on private property in front yards that may be impacted by proposed work were also included in the assessment. Impacts will require review at subsequent design stages using the existing tree mapping and data. The report was prepared according to the City of Barrie’s Public Tree By-Law (2009-098) and Private Tree By-Law (2005-120). Additional boulevard and front yard elements such as perennial gardens, ornamental shrubs and landscape elements were documented as potential constraints and considerations for the proposed design and implementation. For those areas outside of the existing right-of-way, Ecological Land Classification (ELC) reference categorization was assigned by reviewing the seasonally evident vegetation on October 8, 2014 and supporting information contained within the LSRCA Lake Simcoe Ecological Land Classification mapping.

### 2.2.1 Existing Vegetation Inventory

The majority of the study area is characterized as single family residential with properties having a manicured turfgrass with one or two ornamental trees in the front yard. A few properties have groupings of conifers, ornamental perennial / annual gardens or shrub beds. Data on properties with front yard landscaping is provided in the arborist report. Lands additional to the residential properties are illustrated on Figure 2 and identified by Ecological Land Classification (ELC) codes as follows:

- **Highland Park:** manicured turfgrass with a single tree (Dry – Fresh Graminoid Meadow Ecosite (ELC code MEGM3)).
- **237 Foster Drive** (undeveloped lands): comprised of a mix of mainly deciduous trees (Dry – Fresh Sugar Maple – Hardwood Deciduous Forest (ELC code FODM5-9)).
- **223 Foster Drive** (undeveloped lands): the majority of this site is occupied by cool season grass-dominated meadow (Dry – Fresh Graminoid Meadow Ecosite (ELC code MEGM3)) with hedgerows or tree groupings at the limits of the property.

### 2.2.2 Existing Wildlife Inventory

The habitat within the study area is considered to have the potential to support breeding birds and generalist mammal species typical of disturbed open habitat and small woodlands in an urban environment.
2.2.3 Rare and Special Concern Species

Rare species includes species with Provincial (or Subnational) “S ranks” of S1 to S3. Those listed as S1 to S3 are species which are tracked by the Province. Provincial (or Subnational) ‘S ranks’ are used by the Natural Heritage Information Centre (“NHIC”) to set protection priorities for rare species and natural communities. These ranks are not legal designations though indicate a level of regard due to rarity. Special Concern (“SC”) species are those species listed under the provincial Endangered Species Act, 2007 and/or Federal Species at Risk Act.

The NHIC was reviewed for records of rare and Special Concern Species (Appendix A3), as well as the Ontario Breeding Bird Atlas (OBBA), (1981-1985, 2001-2005) (Appendix A4) and correspondence with the Ministry of Natural Resources and Forestry (January 14, 2015) (Appendix A5). Records from NHIC cover the Study Area and a 1 km radius of the study area, while OBBA records cover a 10x10 square kilometre area. A description of these species and their habitat as well as their potential to be located within the study area is presented in the Review of Potential Species at Risk and Rare Species in Appendix A6.

Based on a comparison of the habitat of the identified rare and Special Concern species and the habitat available in the Study Area, the following species are noted as possibly being present within the vicinity of the study area:

- Plains Emerald (Somatochlora ensigera) (S1).
- Eastern Wood-Peewee (Contopus virens) (Special Concern).
- Common Nighthawk (Chordeiles minor) (Special Concern).
- Snapping Turtle (Chelydra serpentine) (Special Concern).

2.2.4 Endangered and Threatened Species

Designation of species under the Federal Species at Risk Act protect those threatened and endangered species on federally-owned lands and waterways. Outside of federally owned lands, provincial Endangered Species Act protections apply to listed species, with some exceptions.

The NHIC was reviewed for records of Endangered and Threatened species, as well as the OBBA and correspondence with the Ministry of Natural Resources and Forestry (MNRF) (January 14, 2015). Records from the NHIC cover the Study Area and a 1 km radius of the study area. Records from the OBBA cover a 10x10 square kilometre area including the study area. A description of these species and their habitat as well as their potential to be located within the study area is presented in the Review of Potential Species at Risk and Rare Species in Appendix A6.
Based on a comparison of the habitat of the identified Species at Risk and the habitat available in the Study Area, the following endangered and threatened species have the potential to be located within the Study Area:

- Barn Swallow (Hirundo rustica) (Threatened).
- Chimney Swift (Chaetura pelagica) (Threatened).
- Eastern Meadowlark (Sturnella magna) (Threatened).
- Butternut (Juglans cinerea) (Endangered).

These species were not observed during the site visit with the exception of Butternut. Seven mature Butternut trees (Juglans cinerea) were observed in a hedgerow in the northwest area of the undeveloped lands to the north of Merrett Drive. Several smaller saplings were observed on the same property. It is undetermined at this time whether the saplings are pure Butternut species, Black Walnut (Juglans nigra) or a hybrid Butternut. Black Walnut and hybrid Butternut share many similar characteristics of pure Butternut. The sapling specimens observed did not appear to have the characteristics which distinguish them as pure Butternut trees. However, the lack of observable characteristics may have been due to the seasonal timing of the site visit. The observations were made in the fall, outside of the MNRF’s acceptable window for Butternut assessment. Butternut is listed as an Endangered Species in Ontario. A 25 m setback is generally afforded to retainable Butternut trees.

Potential to impact these species and possible mitigation are described Section 8.

### 2.2.4.1 Site Visit Observations

Incidental wildlife observations made during the site visit is limited to urban tolerant species of birds and mammals such as Blue Jay (Cyanocitta cristata) and Eastern Grey Squirrel (Sciurus carolinensis). With the exception of Butternut, rare species and Species at Risk were not observed during the site visit.

### 2.2.5 Fisheries

The City of Barrie official plan identifies a watercourse, known as Whiskey Creek, to the west of the study area and Lovers Creek to the east of the study area (Figure 1). The watercourses and the associated regulated areas are under the jurisdiction of LSRCA.

The LSRCA Subwatershed Plan 2012 noted coldwater fish communities in these creeks including mottled sculpin and brook trout. The Aquatic Species at Risk segment information available from Conservation Ontario did not identify any Aquatic Species at Risk within study area (Appendix A7).
The LSRCA Subwatershed Plan 2012 identified impacts to the aquatic communities in these creek subwatersheds may be based on a wide range of factors, including expanding urban areas, uncontrolled stormwater runoff, changes made to streams, invasive species, the removal of streambank vegetation, and agriculture. City of Barrie staff have noted erosion in Whiskey Creek downstream of Foster Drive. Uncontrolled stormwater runoff from the portion of the study area draining to Whiskey Creek has the potential to contribute to these impacts.

It is suggested in the Subwatershed Plan that conditions can be improved through stream rehabilitation, wetland protection, streambank planting, and controlling/treating stormwater runoff from both urban and agricultural areas (LSRCA 2012).
2.3 Social Environment

2.3.1 Existing Policies

The study area is subject to a number of policies which provide the framework for the provision of servicing. The applicable provincial, regional and local policies are described in the following sections and summarized in Table 5.

2.3.1.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario (PPS, 2005). Section 1.6 of the PPS provides guidance on infrastructure and public service facilities. Section 1.6.6.2 specifically states that “Municipal sewage services and municipal water services are the preferred form of servicing for settlement areas. Intensification and redevelopment within settlement areas on existing municipal sewage services and municipal water services should be promoted, wherever feasible”. Section 1.6.6.7 states “planning for stormwater management should, among other things promote stormwater best management practices, including stormwater attenuation and re-use and low impact development”.

2.3.1.2 Lake Simcoe Protection Plan (Updated July 30, 2014)

The Lake Simcoe Protection Plan (LSPP) sets out several objectives under the Lake Simcoe Protection Act (2008) including to protect, improve or restore the elements that contribute to the ecological health of the Lake Simcoe watershed, including water quality, hydrology, key natural heritage features and their functions, and key hydrologic features and their functions.

The LSPP states that septic systems that are either inadequate (i.e., undersized or overloaded) or not functioning properly (not maintained, failing or have failed) as significant sources of phosphorus loadings and potentially significant sources of pathogens to Lake Simcoe and its tributaries. The LSPP estimates that septic systems adjacent to Lake Simcoe (and its tributaries) contribute approximately 4.4 tonnes of phosphorus to Lake Simcoe annually.

Contained within the LSPP are several policies intended to help improve water quality and prevent additional phosphorus loading to the lake including establishing policies for inspections of septic systems within 100 m of Lake Simcoe and its tributaries, research into advanced on-site treatment technologies and more stringent regulations governing septic system installation within 100 m of Lake Simcoe and its tributaries, of which Whiskey Creek, located at the west end of Foster Drive, is one. As such, septic systems
within the northwest portion of the study area within 100 m of Whiskey Creek are subject to this policy.

2.3.1.3 Source Water Protection (Clean Water Act), Ontario Building Code

Source Water Protection (required under the Clean Water Act) requires septic systems within 100 m of wellhead protection areas (WHPA-A), 100 m of the Lake Simcoe shoreline and 100 m of a tributary, will require regular inspections and re-inspections every five years. Inspections will begin in 2015. The Ontario Building Code amendment (O.Reg. 315/10), in support of the Clean Water Act and South Georgian Bay Lake Simcoe Protection Plan requires municipalities to establish a Sewage System Maintenance Inspection Program (SSMIP) by 2016. Municipalities may choose to implement a program for identified areas requiring mandatory inspections or implement a municipal wide program at the discretion of the municipality.

2.3.1.4 Ministry of the Environment and Climate Change (MOECC) Design Guidelines for Sewage Works (2008)

MOECC Design Guidelines for Sewage Works is used by design professionals for designing sewage works, ministry engineers responsible for reviewing and approving design of such works and the municipalities/owners of the sewage works. These province-wide guidelines identify the minimum requirements to obtain an Environmental Compliance Approval. These guidelines indicate that the minimum cleansing velocity of gravity sewers is 0.6 m/s, which serves to mitigate the deposition of solids.

2.3.1.5 City of Barrie Sanitary Sewage Collection System Policies and Design Guidelines (2012)

The City of Barrie Sanitary Sewage Collection System Policies and Design Guideline (Design Guideline) was recently updated to better reflect current and emerging standards as well as to more accurately calculate design flows using land use or by development details basis.

The City of Barrie Design Guidelines identifies a number of standards for the design of sanitary sewer collection systems including the following:

- Minimum pipe size of 250 mm.
- Minimum slope for first manhole run of 1.0%.
- Minimum slope for following sections of 0.4%.
- Manning's Number of 0.013.
- Minimum sewer velocity of 0.75 m/s.
- Maximum sewer velocity of 3.00 m/s.
• Depth of sewer based on 2% fall from basement elevation (basement floor elevation at least 2.5 m below first floor elevation).
• Manholes located maximum 110 m apart (for 250 mm sewer).
• Average Daily Flow of 225 L/cap/day.
• Infiltration allowance of 0.1 L/ha/s (used for flow calculations only).
• Population density of 3.13 persons per unit for low density housing.
• Population density of 2.34 persons per unit for med density housing.
• Peak domestic flow is to be calculated using the following formula:

\[ Q_p = \frac{P \times q \times M + L \times A}{86.4} \]

Where \( Q_p \) = peak residential sanitary sewage flow, including peak extraneous flows (L/s)
\( P \) = design population in thousands
\( q \) = average daily domestic flow per capita (L/day/person)
\( M \) = peaking factor
\( L \) = peak extraneous flow (L/s/ha)
\( A \) = tributary area (ha)

• The peaking factor \( M \) is to be calculated using the Harmon Formula.

\[ M = 1 + \frac{14}{4 + P^{0.5}} \]

Where \( P \) = design population in thousands

Note: \( M \) must be not less than 2 and not greater than 4.

• An extraneous flow rate of 0.1 L/s/ha shall be used for sanitary sewer design.

### 2.3.1.6 City of Barrie Official Plan

The City of Barrie Official Plan identifies the lands in the study area as primarily residential with open space in the east and commercial along Yonge Street. Yonge Street is identified as an intensification corridor and Yonge Street and Little Avenue is identified as an intensification node. Whiskey Creek is located at the northwest boundary of the study area. The area adjacent to the Whiskey Creek corridor, within the study area is classified as Level 1 with Development, Natural Heritage Resource Classification, as illustrated on Schedule H of the Official Plan. Level 1
identifies natural heritage resources which are critical components of the Natural Heritage Resource network within the City of Barrie.

2.3.1.7 City of Barrie Storm Drainage and Stormwater Management Policies and Design Guidelines (2009)

The City’s standard requires minor system storm sewers to convey the 1:5 year critical design storm. The major system is required to convey all flows in excess of the minor system up to the larger of the 100 year critical storm or the regional storm (Hurricane Hazel or Timmins) via overland routes. In areas where overland routes are not feasible, storm sewers are required to be sized for the larger of the 100 year critical storm or regional storm to a safe outlet that will prevent flooding of private property. The City’s standard for stormwater management for new development is as follows:

Table 4: Stormwater Management Requirements for New Development

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>Enhanced level treatment as per MOECC.</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>25 mm 4 hr Chicago released over 24 hrs minimum or as per Conservation Authority or Subwatershed Master Drainage Plan requirements.</td>
</tr>
<tr>
<td>Quantity Control</td>
<td>Post-to-pre up to the 100 year critical storm or as per Conservation Authority or Subwatershed Master Drainage Plan requirements (catchment areas closer to Lake Simcoe may have reduced control requirements).</td>
</tr>
<tr>
<td>Water Balance</td>
<td>Post-to-pre.</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>Minimized through best efforts to pre-development loadings.</td>
</tr>
</tbody>
</table>

Source: City of Barrie

2.3.1.8 Lake Simcoe Region Conservation Authority Technical Guidelines for Stormwater Management Submissions (2013)

The LSRCA Technical Guidelines for Stormwater Management Submissions provides guidance for development regarding the stormwater management (SWM) requirements of the Lake Simcoe Region Conservation Authority (LSRCA) in accordance with the LSRCA Watershed Development Policies and Lake Simcoe Protection Plan. The LSRCA’s requirements for all stormwater management submissions are outlined in the document, which include a description of LSRCA policies, guidance on approved
methods and techniques, a summary of key hydrologic parameters and a summary of submission requirements. LSRCA’s minimum standard for stormwater management is as follows:

**Table 5: Minimum LSRCA Stormwater Management Requirements**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>Enhanced level treatment as per MOECC with thermal mitigation.</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>25 mm 4 hr Chicago released over 24 hrs minimum or as per subwatershed master drainage plan requirements.</td>
</tr>
<tr>
<td>Quantity Control</td>
<td>Post-to-pre up to the 100 year critical storm or as per subwatershed master drainage plan requirements (under or over control may be required).</td>
</tr>
<tr>
<td>Water Balance</td>
<td>Post-to-pre.</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>Minimized through best efforts to pre-development loadings.</td>
</tr>
</tbody>
</table>

Source: LSRCA Technical Guidelines for Stormwater Management Submissions

2.3.1.9 Summary of Regulations, Policies and Guidelines Related to Land Use, Drainage and Sewers.

**Table 6: Summary of Regulations, Policies and Guidelines**

<table>
<thead>
<tr>
<th>Source</th>
<th>Reference</th>
<th>Regulation/Policy/Guideline</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Simcoe Protection Act</td>
<td>Lake Simcoe Protection Plan</td>
<td>Several policies are intended to help improve water quality and prevent additional phosphorus loading to the lake as well as protect our natural heritage.</td>
<td><a href="http://www.ontario.ca/page/lake-simcoe-protection-plan">http://www.ontario.ca/page/lake-simcoe-protection-plan</a></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>LSRCA</td>
<td>Stormwater Management Guidelines</td>
<td>Provides guidelines for stormwater management policies of the LSRCA contained in the LSRCA Watershed Development Policies. They must be read in conjunction with local municipal standards and/or watershed/sub-watershed studies in respect of stormwater quantity and quality control.</td>
<td><a href="http://www.lsrca.on.ca/pdf/swm_guidelines.pdf">http://www.lsrca.on.ca/pdf/swm_guidelines.pdf</a></td>
</tr>
</tbody>
</table>
2.4 Cultural/Heritage Environment

2.4.1.1 Archaeological Assessment

The Stage 1 Archaeological Assessment and the Cultural Heritage Evaluation of the study area was conducted by Burnside’s subconsultant Amick Consultants Limited.

The Stage 1 Assessment was completed in compliance with the Ontario Ministry of Tourism, Culture and Sport (MTCS) 2011 Standards and Guidelines for Consultant Archaeologists.

A Stage 2 Archaeological Assessment was recommended for the Foster Drive right-of-way and other undisturbed lands outside of the right-of-way in the remainder of the study area, which includes the following areas:

- Foster Drive – all areas disturbed by proposed sewer.
- Merrett/Garson/Yeates/ MacLaren/Little – areas disturbed outside of right-of-way only.
- Development Lands (223 Foster and 357 Yonge Street) – all areas disturbed by proposed sewer.

The area within the existing road right-of-way in the remainder of the study area, with the exception of Foster Drive, is not subject to a Stage 2 Assessment recommendation.

A Stage 2 Archaeological Assessment is recommended for the development lands (223 Foster Drive and 357 Yonge Street) and is recommended to be included as a condition of site or subdivision plan approval. A copy of the Stage 1 Archaeological Assessment is provided in Appendix A8.

2.4.1.2 Cultural Heritage Evaluation

The cultural heritage evaluation was conducted by Amick Consultants Limited, in compliance with the Ontario Regulation 9/06, as recommended by the MTCS. An inspection of the study area was conducted in order to determine if there is any cultural heritage potential and to document the current conditions of the study area. The cultural heritage evaluation includes background research to determine the potential for the study area to yield significant cultural resources. The potential heritage significance of any existing structures was evaluated with recommendations derived from the assessed heritage value of existing structures and other cultural features within the study area. Cultural heritage resources were not observed within the study area. A copy of the Cultural Heritage Evaluation Report is provided in Appendix A9.
2.5 Economic Environment

The existing economic environment is characterized by the estimated costs to maintain and/or replace the existing private septic fields. These costs are the individual responsibility of each property owner. A typical residential septic system has a life time of 15 to 25 years and a replacement cost of approximately $20,000. Typical operating and maintenance costs are approximately $133 annually per system (prorated based on a pump-out every three years). Septic systems in the area are primarily the original systems and are approximately 50 years of age. These systems are approaching the end of their anticipated service life. Cost calculations are provided in Appendix D.

3.0 Description of Alternatives

Alternatives were developed based on topography, land use and technical and economic feasibility to provide sanitary servicing to the Foster Drive area. Several alternatives were considered but were pre-screened and not evaluated as these alternatives did not adequately address the problem statement. The pre-screened alternatives included: i) a combination of gravity sewers and a pumping station with forcemain, ii) low pressure sewer system, and iii) rear lot servicing. The pre-screened alternatives are discussed in further detail in the following section.

3.1 Pre-Screened Alternatives

3.1.1 Gravity Sewer with Pumping Station

A gravity sewer would collect sewage from those properties at the west end of Merrett Drive and a pumping station would deliver the sewage to a proposed manhole located on Merrett Drive at the midway point between MacLaren Avenue and Yeates Avenue via a new forcemain. Sewage from Foster Drive, MacLaren Avenue, Garson Street, Yeates Avenue and Merrett Drive (east end) would be collected via gravity sewer and outlet to a connection on Yonge Street (Foster Drive) or Little Avenue (balance of study area).

Property would be required at the north limit of Merrett Drive for the pumping station and associated infrastructure including wet well and standby generator. The potential sites are small and present a significant constraint once planning setbacks and setbacks for air and noise regulations are considered.

There are social/economic impacts as this alternative would negatively impact adjacent properties as a result of property acquisition, as well, from a community perspective, the presence of a pump house is non-desirable within a residential neighborhood as a result of noise and visual nuisance impacts. The environmental impact of this alternative is
negative due to the required continual energy use in the operation of the pump house relative to gravity servicing alternatives. The economic impact of this alternative is significantly negative due to high capital and continual operating/maintenance costs relative to gravity servicing alternatives.

This alternative was not examined further under the Class EA process given the impact to properties (both acquisition and nuisance impacts), environmental impact and high capital and operating/maintenance costs.

### 3.1.2 Low Pressure Sewer System

A low pressure sewer system consists of a series of pumps moving effluent along a network of small diameter polyethylene pipes. Each dwelling within the system has a below ground pump station that pumps into a low pressure sewer within the right-of-way. For this study area, the forcemain would outlet to a gravity sewer.

Pipe sizes typically start at 30 mm for house connections (compared to 100 mm for a gravity system) and are proportionally smaller than the equivalent gravity pipeline throughout the system. The individual pump station provides adequate holding capacity and pressure to transport the wastewater to a proposed low pressure sewer in the street on an intermittent basis. The pump is actuated when the depth of the sewage in the tank reaches a predetermined “turn-on” level, and pumping continues until the “turn-off” level is reached. The pump’s running time is typically short and power consumption is low. The unit is typically protected against backflow by an integrated check valve.

The drawback of this type of system is that, owing to the nature of intermittent pumping from the various individual homes connected, there is a higher tendency for emulsified grease and solids to settle out within the low-pressure force main and cause blockages, the City then has to clear those that occur within the right-of-way. This creates additional operational costs. A pro-active solution to overcome this disadvantage is to trap oils, grease and solids ahead of the force main in a septic tank. While this method will improve the reliability of the low-pressure sewer system and hence the level of service for the residents, it will mean that residents will have to bear the costs of periodically pumping out their septic tank. Pump-out costs are approximately $400; with a typical frequency of one every three years. From an overall community perspective such pump-out costs are much lower than having to unblock the force main through flushing or, at worst case, actually digging up the force main for repairs.

An additional drawback with this system is the ongoing operation and maintenance costs. As with any mechanical system, individual homeowners would need to plan and budget to cover the cost of repairs and lifecycle replacements.
Low pressure sewer systems are typically only an attractive solution when soils condition are difficult (rock excavation) and/or the topography is undulating. Under these conditions this alternative would be more attractive from a capital standpoint than a conventional gravity sewer thereby offsetting the higher operating and maintenance costs associated with a low pressure system. Within the study area these conditions do not exist and therefore do not support the use of this type of system. Low-pressure pumps were not examined further under this Class EA process.

3.1.3 Rear Lot Servicing

Given that a considerable portion of the homes are located down gradient from the right-of-way, particularly in the area north of Foster Drive, a possible solution would involve the construction a gravity sewer on the north side of Foster Drive; at the rear of existing lots to permit collection of wastewater from these homes by gravity. A new right-of-way would be required through the residential properties on Foster Drive (north side) adjacent to the north property line.

Capital, operation and maintenance costs would be higher than a traditional sewer located in the right-of-way since this proposed solution would require two sewers (one located within the right-of-way on Foster Drive to service homes on the south side of the right-of-way and one located north of Foster Drive to service homes north of the right-of-way).

Given the high capital cost; property requirements; difficult implementation and limited benefit, this approach was not examined further under this Class EA process.

3.2 Alternatives

This section identifies alternatives which are considered to adequately address the problem statement. There is usually more than one way to solve a problem. Therefore, the preferred alternative may involve a combination of the following alternatives.

Alternative 1 – Do Nothing
Alternative 2 – Deep Sewer Alignment
Alternative 3 – Shallow Sewer Alignment

3.2.1 Alternative 1 – Do Nothing

The do nothing alternative is a mandatory consideration within the Municipal Class Environmental Assessment process and applies across the entire study area. This alternative considers maintaining the use of private septic systems.
Septic systems are an effective treatment option for household generated effluent, but they require ongoing maintenance, inspections and special care from homeowners to ensure that they discharge properly to their septic. The Ontario Rural Wastewater Centre states that the typical septic system has a lifespan of 15 to 25 years.

Costs associated with inspections, maintenance, repair and/or replacement are typically the responsibility of the homeowner.

### 3.2.2 Alternative 2 – Deep Sewer Alignment

This alternative consists of sanitary servicing via gravity sewers as follows:

a) Foster Drive/MacLaren Avenue – deep sewer.
   - Northwest outlet – Existing sanitary sewer stub on Foster Drive.
   - Southeast outlet – Existing sanitary manhole on Little Avenue, east of MacLaren Avenue.

b) Merrett Drive to Foster Drive via utility corridor/new ROW – standard depth.

c) Garson Street, Yeates Avenue, Merrett Drive – standard depth.

Sewers will be installed within the existing right-of-way and the proposed utility corridor (refer to Figure 3). Reconstruction of affected streets would be required. The natural topography of the area requires that the sewer routed on Merrett Drive continue beyond the existing northwest terminus in a utility corridor (8 m width) or future road ROW to the proposed sewer on Foster Drive. A permanent easement will be required for the utility corridor or alternatively, the future ROW could be acquired as a condition of development approval. The utility corridor alignment reflects current zoning mapping illustrating a future road connection between Merrett Drive and Foster Drive. The sewer has been located at a depth (approximately 3 - 6m) that is intended to service the majority of existing basements by gravity.
3.2.3 Alternative 3 – Shallow Sewer Alignment

This alternative consists of sanitary servicing via gravity sewers as follows:

a) Foster Drive/MacLaren Avenue – shallow sewer.
   − Northwest outlet – Existing sanitary sewer stub on Foster Drive
   − Southeast outlet – Existing sanitary manhole on MacLaren Avenue at Little Avenue

b) Merrett Drive to Yonge Street via utility corridor along the south property line of 223 Foster Drive and 357 Yonge Street.

c) Garson Street, Yeates Avenue, Merrett Drive – standard depth.

Sewers will be installed within the right-of-way and proposed utility corridor (refer to Figure 4). Reconstruction of affected streets would be required. The natural topography of the area requires that the sewer routed on Merrett Drive continue beyond the northwest terminus in a utility corridor (8 m width) to the existing sanitary sewer on Yonge Street. The utility corridor will be in the form of a permanent easement along the south property line of 223 Foster Drive and 357 Yonge Street.

The sewer has been located at a depth (approximately 3 m to 4 m) which is intended to provide servicing to all first floors by gravity. This alternative provides basement servicing to most residences however, the basement elevation of some residences would be very difficult to service by gravity without dramatically increasing the depth and cost of the gravity solution. These homes with plumbing fixtures in their basement would require a sewage sump and pump to lift flows to the lateral elevation. Figure 4 identifies homes that require pumping for basement servicing.
3.3 Constructability Analysis

3.3.1 Alternative 1 – Do Nothing (septic system maintenance and replacement)

Constructability challenges include access to rear yards and removal/damage to driveways, landscaping, patios, decks and vegetation.

3.3.2 Alternative 2 and 3 – Deep/Shallow Sewer Alternatives

It is anticipated that the sewers for Alternatives 2 and 3 would be constructed using typical open cut construction methods, beginning at the downstream end of the sanitary catchment and proceeding upstream. Due to the rural cross-section and minimal underground utilities, work in the corridor would be relative unencumbered. Special care will be required to support the existing watermain during construction. If replacement of the watermain is included in the scope of the project, provision of temporary watermains should be considered to facilitate construction.

Alternative 2 includes sections of sewer that are relatively deep (approximately 6m on Foster Drive near MacLaren Avenue). Dewatering will likely be required on Foster Drive due to the depth of sewer as well as in the southern portion of the study area, due to a potentially perched water table. Dewatering may also be required for Alternative 3, but it is anticipated to be less than Alternative 2. As part of detailed design, a hydrogeological study complete with groundwater field investigations (monitoring wells, drawdown tests, etc.) need to be completed to provide a detailed assessment of potential dewatering requirements.

Alternatives 2 and 3 provide an opportunity to loop the existing dead-end watermain at the northern limit of Merrett Drive to Foster Avenue (Alternative 2) or Yonge Street (Alternative 3) to provide additional redundancy and system security. This is an enhancement of the water distribution network in the study area.

Alternative 2 requires a connection on Little Avenue east of MacLaren Avenue to allow the necessary grades for the deeper sewer alignment. Alternative 3 requires a new outlet on Yonge Street via the utility corridor along the south property line of 223 Foster Drive and 357 Yonge Street to accommodate flows routed from the north terminus of Merrett Drive. Alternative 3 will result in greater negative impacts to the physical, natural, social and economic environment due to the disturbance to Yonge Street relative to the required new connection on Little Avenue. The following table notes the outlet points for Alternative 2 and 3:
Table 7: Alternative 2 and 3 – Outlet Connections

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Outlet</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 2</td>
<td>Foster at Yonge</td>
<td>Connection to existing stub</td>
</tr>
<tr>
<td></td>
<td>MacLaren at Little</td>
<td>Connection to existing manhole (MH5688) on Little Avenue east of MacLaren Avenue</td>
</tr>
<tr>
<td>Alternative 3</td>
<td>Foster at Yonge</td>
<td>Connection to existing stub</td>
</tr>
<tr>
<td></td>
<td>MacLaren at Little</td>
<td>Connection to existing manhole (MH5838) on MacLaren Avenue</td>
</tr>
<tr>
<td></td>
<td>Utility Corridor to Yonge</td>
<td>Connection to existing sewer on Yonge Street</td>
</tr>
</tbody>
</table>

4.0 Alternatives Evaluation

The assessment process compares the alternatives in a comprehensive manner against a set of criteria under each of the physical, natural, social, cultural/heritage and economic environment categories, collectively known as the project environment. The ability of the alternative to address the opportunity statement is also considered in the assessment process. The assessment process endeavors to ensure that the conclusions and recommendations are reached in a clear and logical fashion, and that all environmental issues sensitive to each undertaking are given thorough consideration. This assessment is based on the impact to existing conditions within the study area including input from agencies and stakeholders with an interest in the project.

4.1 Alternative 1 - Do Nothing

There would be no construction impacts within the municipal right-of-way. No property is required to implement this alternative. There would be no municipal sanitary servicing to properties in the study area and no increased flows to Waste Water Treatment Facility (WWTF). There will be no opportunity to address drainage issues on Foster Drive and lack of pedestrian infrastructure in the study area.

There is the potential for impact on natural heritage features within the study area due to groundwater impacts from improperly functioning septic systems.
Individual homeowners would experience construction impacts when replacement of their septic tank and/or leaching field is required. Homeowners are negatively impacted due to loss of opportunities for home additions, additional outdoor living areas or outbuildings since a significant portion of the rear yard space is being occupied by septic systems. Additional negative impacts may occur during real estate transactions due to considerations of the existing septic system age/condition and associated cost of repairs or replacement (typically discovered during septic system inspections).

There is currently no authority-agency to ensure that private septic systems are properly operated and maintained (when outside of designated inspection areas). The current lack of requirements for regular inspections typically results in poorly maintained septic systems that are operated beyond their service life. Public health and safety is at risk if property owners do not ensure proper operation and maintenance of their septic systems.

Impact to archaeological or cultural heritage features of the study area is not anticipated for this alternative.

The operation and maintenance cost is the individual responsibility of each property owner. The direct residential capital costs for this alternative includes replacement of septic systems. The development of capital and operating costs for the alternatives are presented in Appendix D.

The replacement value for a typical septic system is approximately $20,000. Annual costs are approximately $133 per year (prorated based on $400 every three years for a septic tank pump out). These costs would be borne by the homeowner.

All of the septic systems in the Foster Drive area are unlikely to fail at the same time but for analysis it is helpful to consider the replacement of all systems for comparison to Alternatives 2 and 3.

The cost to construct 96 private systems is estimated at $2,112,000 including 10% contingencies.

The annual operating cost of maintaining a single private system is estimated at $133 per year.

4.2 Alternative 2 – Deep Alignment

A gravity sewer would be located within the existing ROW for the majority of the study area. A utility corridor through the undeveloped properly with legal description CON 14 S PT LOT 11 (223 Foster Drive) would be required for the sanitary sewer to convey wastewater from the north end of Merrett Drive to Foster Drive.
A sanitary sewer depth has been established that provides basement servicing for all homes in the study area with the exception of 238 Foster Drive and 242 Foster Drive which do not have basements. This is a result of the significantly lower elevation of these homes relative to Foster Drive. Should a property owner decide to construct a new home at 238 Foster Drive or 242 Foster Drive, they will need to ensure the basement elevation of the new home matches the existing first floor elevation or install a sewage pump to discharge flows to their sanitary lateral.

This alternative would result in possible temporary impact to meadow features on development lands at 223 Foster Drive during construction, depending on method of construction. There are possible impacts to natural features including Species at Risk trees, depending on alignment and method of construction along the proposed utility corridor. Impact to aquatic habitat and groundwater quality is not anticipated as wastewater would be treated at the municipal WWTF. Temporary groundwater impacts may occur as a result of dewatering during construction.

The desktop geotechnical study indicates that groundwater in the Foster Drive area can be expected at 3 to 4.5m in depth. This alignment is well within that zone and as such, dewatering should be expected. Dewatering is also expected to be required due to a perched water table in the southern portion of the service area. As part of detailed design, a hydrogeological study complete with groundwater field investigations (monitoring wells, drawdown tests, etc.) need to be completed to provide a more detailed assessment of dewatering requirements. Cost estimates for this alternative were developed with the assumption that dewatering with well points will be require for portions of the alignment installed at a deeper depth (Foster Drive and MacLaren Avenue).

The majority of construction of the sanitary servicing is to be completed within the existing right-of-way. Some temporary disruption to the use and access of private property may occur during construction, however, no nuisance impacts, such as noise and air quality, are anticipated following construction.

Temporary land use impacts would occur through the undeveloped property (described above); however the proposed sanitary sewer alignment is intended to be located within a future road right-of-way linking Merrett Drive to Foster Drive and thus would not negatively impact developable land. The provision of sanitary servicing would be a positive impact on this property as it is required for future development.

The road allowance on Foster Drive and any lands beyond the right-of-ways of the remaining streets in the study area are considered to have archaeological potential. As such, a Stage 2 Archaeological Assessment would be required for Foster Drive and the sanitary alignment through 223 Foster Drive (confined to the open cut disturbance area).
Operations and maintenance for this alternative is anticipated to be typical of other sewers within the City and is the City’s responsibility. This alternative would require an estimated increase in the annual operation and maintenance budget of $28,244 for conveyance and treatment related costs. These figures assume a daily flow of 225 L/person/day and 3.13 persons per household. These costs are recovered through user charges.

The capital cost related this Alternative includes gravity sewers, manholes, laterals to property line, dewatering, road reinstatement and engineering and contingencies. A geotechnical and hydrogeological investigation will be required to confirm soils and water conditions prior to detailed design. Costs for land acquisition and street urbanization have been excluded. The total capital cost is estimated at $1,330,000.

Under Section 326 of the municipal act, this project is deemed to be of local benefit and as such, costs are recovered from the benefiting property owners based on frontage (see Appendix H – Local Improvement and Section 326 Servicing Cost Apportionment Policy). The cost of the project is apportioned to each property owner based on frontage plus the cost to install a lateral from the sewer to property line. The property owner is responsible to complete the necessary work to connect the home to the lateral located at the property line.

There are 35 lots associated with the Foster Drive area, and 61 lots associated with the servicing of the balance of the service area.

For the Foster Drive Area, the total frontage cost (assuming 18.5 m frontage) is estimated to be between $9,100 and $10,500, including the lateral to property line. For the MacLaren, Garson, Yeates and Merrett Area the cost for a residence on a typical 18.5 m wide lot is estimated to be between $5,900 and $7,000. Frontage costs are subject to change based on bids received through the tendering process, inflation and phasing of this project.

The cost to connect the home to the lateral at property line (referred to as the building sewer) is incurred directly by the homeowner when the service connection is completed. This cost is typically $2,000 to $5,000 depending on the type of connection the home owner chooses. Also, homes requiring basement sewage ejector pumps will incur an additional capital cost of approximately $1,500 to $2,000.

Once connected to the system, users would be charged an annual sewer use rate based on usage. For the purposes of this analysis, an annualized fee of $365 is being utilized. For properties serviced with basement sewage ejector pumps, an additional non-municipal operating and maintenance cost (including pump replacement every 8 to 10 years) is estimated to be $120 per year and is incurred directly by the property owner.
4.3 Alternative 3 – Shallow Alignment

A gravity sewer would be located within the existing ROW for the majority of the study area. A utility corridor through the undeveloped properties 223 Foster Drive and 357 Yonge Street would be required for the sanitary sewer to convey wastewater from the north end of Merrett Drive to Yonge Street. A sanitary sewer depth of 3 m was assumed between Merrett Drive and Yonge Street and 5 m depth within the Yonge Street right-of-way.

A sanitary sewer depth has been established that provides servicing of all first floors by gravity. The Shallow Alignment alternative provides basement servicing to most residences however, not all. The basement elevation of some residences would be very difficult to service by gravity without dramatically increasing the depth and cost of the gravity solution. These homes with plumbing fixtures in their basement would require a sewage ejector pump to lift flows to the lateral elevation. Figure 4 identifies homes that require pumping for basement servicing. Properties requiring sewage ejectors include all properties located on the north side of Foster Drive as well as two properties located at the south end of MacLaren Avenue.

This alternative would result in possible temporary impacts to meadow features on the undeveloped lands (223 Foster Drive and 357 Yonge Street) during construction. There are possible impacts to natural features including Species at Risk trees, depending on alignment and method of construction along the proposed utility corridor. Impact to aquatic habitat and groundwater quality is not anticipated as wastewater would be treated at the municipal WWTF. Temporary groundwater impacts may occur as a result of dewatering during construction.

The majority of construction of the sanitary servicing is to be completed within the existing right-of-way for this alternative. Some disruption to the use and access of private property may occur during construction, however, no nuisance impacts, such as noise and air quality, are anticipated following construction.

Temporary land use impacts would occur through the undeveloped properties (223 Foster Drive and 357 Yonge Street), however, the proposed alignment would be located within traditional side-yard setback areas, thus minimizing any impacts. It is anticipated that the sewer elevation would not be deep enough to service the undeveloped properties (depending on type of development proposed) by gravity.

The road allowance on Foster Drive and any lands beyond the right-of-ways of the remaining streets in the study area are considered to have archaeological potential. As such, a Stage 2 Archaeological Assessment would be required for Foster Drive and the sewer alignment through 223 Foster Drive and 357 Yonge Street (confined to the open cut disturbance area).
Operations and maintenance for this alternative is anticipated to be typical of other sewers within the City and is the City’s responsibility. This alternative would require an estimated increase in the annual operation and maintenance budget of $28,068 for conveyance and treatment related costs. These figures assume a daily flow of 225 L/person/day and 3.13 persons per household. These costs are recovered through user charges.

The capital cost related to this alternative includes gravity sewers, manholes, laterals to property line, dewatering, road reinstatement and engineering and contingencies. With the shallower alignment, dewatering on Foster Drive is anticipated to be incidental while dewatering will still be required to address a perched water table in the lands in the southern portion of the study area. A geotechnical and hydrogeological investigation will be required to confirm soils and water conditions prior to detailed design. Costs for land acquisition and street urbanization have been excluded. The total capital cost is estimated at $1,190,000.

Under Section 326 of the municipal act, this project is deemed to be of local benefit and as such, costs are recovered from the benefiting property owners based on frontage (see Appendix H – Local Improvement and Section 326 Servicing Cost Apportionment Policy). The cost of the project is apportioned to each property owner based on frontage plus the cost to install a lateral from the sewer to property line. The property owner is responsible to complete the necessary work to connect the home to the lateral located at the property line.

For the Foster, MacLaren, Garson, Yeates and Merrett Area, the total frontage cost (assuming 18.5 m frontage) is estimated to be between $6,100 to $7,400, including the lateral to property line. Frontage costs are subject to change based on bids received through the tendering process, inflation and phasing of this project.

The cost to connect the home to the lateral at property line (referred to as the building sewer) is incurred directly by the homeowner when the service connection is completed. This cost is typically $2,000 to $5,000 depending on the type of connection the homeowner chooses. Also, homes requiring basement sewage ejector pumps will incur an additional capital cost of $1,500 to $2,000.

Once connected to the system, users would be charged an annual sewer use rate based on usage. For the purposes of this analysis, an annualized fee of $365 is being utilized. For properties serviced with basement sewage ejector pumps, an additional non-municipal operating and maintenance cost (including pump replacement every 8 to 10 years) is estimated to be $120 per year and is incurred directly by the property owner.
4.4 Life Cycle Cost Analysis

A life cycle cost analysis was completed for the three alternatives.

Life-cycle cost analysis (LCCA) is a process for evaluating the total economic worth of a usable project by analyzing initial costs and discounted future costs to identify the most cost effective project alternative.

For the analysis of the sanitary servicing alternatives, the life cycle cost (LCC) included capital costs, annual maintenance costs and replacement costs based on the life span of the alternative. A LCCA was completed for a 100 year period, based on the lifespan of a PVC sanitary sewer system. Operating and construction costs were assumed to inflate at 2% per year and the cost of financing was set at 3%. Based on these assumptions the anticipated LCC for the three alternatives have been identified as:

Table 8: Life Cycle Cost Comparison - 100 years (2015 dollars)

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1 – Do Nothing</th>
<th>Alternative 2 – Deep Sewer</th>
<th>Alternative 3 – Shallow Sewer*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Cycle Cost</td>
<td>$6,903,815</td>
<td>$3,587,095</td>
<td>$3,570,915</td>
</tr>
</tbody>
</table>

* includes provision and replacement of basement pumps

The analysis identifies Alternative 1 as having the highest (least attractive) LCC. The high LCC of Alternative 1 is due to the planned regular replacement of septic systems based on a service life of 25 years; over a 100 year period, a septic system would need to be replaced three times (does not include replacement at year 100). Alternatives 2 and 3 have a lower LCC since the anticipated life span of a sanitary sewer with PVC pipe is approximately 100 years. The LLCA does not include the replacement costs for the sanitary sewer at year 100.

4.5 Additional Infrastructure Improvements

4.5.1 Stormwater Management

As part of this Schedule B Class EA process, the City is examining opportunities to provide stormwater management to the Study Area. Please refer to Appendix G – Stormwater Management Assessment Technical Memorandum.
4.5.2 Road Reconstruction

It is critical to determine the municipal servicing needs of the study area prior to completing road rehabilitation and reconstruction efforts to ensure that any proposed underground work is completed prior to significant investments to the road structure and surface. This significantly mitigates the risk of having to excavate a newly reconstructed/rehabilitated road surface.

Alternative 2 and Alternative 3 require full reconstruction of the road and road structure due to the location and depth of the proposed sanitary sewer. The existing streets are rural cross-sections with pavement widths between 6 m and 7 m. It is the City’s practice to reconstruct these roads to urban standards including sidewalks, curbs/gutters, storm sewers and sufficient area for utility corridors. The City shall assess the provision of sidewalks using the City’s Infill Sidewalk Policy.

This Class EA study is focused on evaluating sanitary servicing alternatives for the study area. This study holistically considered the general impacts of constructing the sanitary servicing alternatives as well as restoring the road surface. It is not within the scope of this study to complete a direct evaluation of specific road elements as that work requires further design to confirm impacts and is common to all alternatives. The City of Barrie Official Plan, Schedule E – Road Widening Plan, indicates that all local roads within the Study area are to be widened to 20 m right-of-way width. Affected residents/owners will be notified by mail during the design process as property requirements are confirmed.

4.5.2.1 Foster Drive

The reconstruction of Foster Drive is challenging due to the topography along this street (primarily the east end). Homes on the south side of Foster Drive are at a much higher elevation than the street surface. Homes on the north side of Foster Drive are at a much lower elevation. Driveways on the south side of Foster Drive vary in slope between +12% to +18%. This slope is difficult for passenger vehicles to traverse. Residents on the north side experience a downward slope of between -13% to -19% to their homes. Residents within this section have constructed parking pads entirely or primarily within the public right-of-way to avoid traversing the difficult slope.

The existing roadway is 6 m wide. The proposed roadway is 8 m wide plus 1 m for curbs and gutters and 1.5 m for the sidewalk. Existing parking pads will need to be moved further north onto private property to ensure that vehicles clear the proposed sidewalk on the north side or construct a driveway. Property impacts could potentially be greater on the north side of Foster Drive. Due to the difficult topography and unique nature of this street, consideration of alternative cross-sections may be warranted. The following cross-sections represent the typical street arrangement for 20 m right-of-way width.
NOTES:
1. COVER ON STORM, SANITARY AND WATERMAIN AS PER DESIGN CRITERIA.
2. MINIMUM PAVEMENT AND ROAD STRUCTURE DESIGN AS LABELED, OR GREATER,
   AS OTHERWISE RECOMMENDED BY SPECIFIC GEOTECHNICAL INVESTIGATION & APPROVAL.
3. TREES TO BE PLACED IN LOCATIONS APPROVED BY THE PARKS, PLANNING, AND DEVELOPMENT BRANCH. (SEE BSD-28)
4. ALL BOULEVARDS TO BE ACTIVELY GROWING NURSERY SOD TO BE LAID ON 200MM OF TOPSOIL PROPERLY GRADED AND ROLLED.
5. SUBDRAINS TO BE INSTALLED AS PER GENERAL NOTE BSD-42 "E" AND BSD-34.
6. ALL SERVICE LOCATIONS ShOWN ARE FOR GUIDELINE PURPOSES ONLY AND MAY DEVIATE AS PER THE DIRECTION
   OF THE CITY ENGINEERING DEPARTMENT WHEN STANDARD LOCATION CANNOT BE ACHIEVED.
7. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
8. FOR COMMON UTILITY TRENCH DESIGN DETAILS REFER TO BSD-42.

CITY OF BARRIE STANDARD

8.5m ASPHALT
20.0m ROAD ALLOWANCE
URBAN-RESIDENTIAL

<table>
<thead>
<tr>
<th>NO.</th>
<th>REVISION</th>
<th>APR'D</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>NOTES 3, 4, 5, 6, 6b AND ADD NOTE 6b</td>
<td>B.R.</td>
<td>2002.10.20</td>
</tr>
<tr>
<td>2.</td>
<td>COMMON UTILITY TRENCH ADDED</td>
<td>G.M.</td>
<td>2005.01.11</td>
</tr>
<tr>
<td>4.</td>
<td>REVISED NOTE 4b &amp; 4b1 (TETRAZOLYL DEPTH)</td>
<td>G.M.</td>
<td>2006.02.15</td>
</tr>
</tbody>
</table>
4.6 Impacts

Natural Environment

Naturalized meadow areas may be impacted with the implementation of Alternatives 2 and 3. Impacts and mitigation measures are determined following the establishment of the Preferred Alternative and possible phasing of the implementation of the solution.

Impacts to trees, breeding birds and potential SAR habitat may result from the installation of linear infrastructure and construction access routes through undeveloped lands at 223 Foster Ave and the removal of vegetation and trees within the proposed alignment of the preferred solution.

An evaluation of the site conditions as compared with the alternative solutions and direct and indirect habitat requirements of the rare, Special Concern and Species at Risk noted in section 2.2.3 and 2.2.4, and identified as being potentially located within the vicinity of the study area concludes that there is a low potential for the these species, and associated habitat, to be present in the areas most likely to be impacted by the alternative solutions with the exception of Butternut (Endangered), Eastern Meadowlark (Threatened), Eastern Wood Pee-wee (Special Concern) and Common Nighthawk (Special Concern).

The requirement for subsequent studies to confirm the presence of rare, Special Concern and Endangered Species is dependent on the possible impact of the preferred solution on the potential habitat of such species, as well as appropriate seasonal timing for the studies. Based on the alternative solutions considered, subsequent studies may include, but are not limited to Butternut Health Assessment and breeding bird surveys.

Mitigation of potential impacts is discussed in Section 8.0. However, mitigation measures may include, but are not limited to, tree protection measures (i.e., tree protection fence) and the limited extent of construction footprint limits, as reasonable, to limit impact to vegetation. Replacement and compensation plantings may also need to be considered, depending on the extent of vegetation removal.

Direct impacts to breeding bird species are not anticipated with the implementation of avoidance measures, including construction timing (i.e., fell all trees outside of the core breeding window, typically late April until August 1) and minimizing vegetation removal during construction of the preferred alternative to the extent possible.

If this is not possible, a pre-construction nesting survey should be completed by a qualified ecologist / biologist immediately prior to tree removal activities.
Any disturbance or impact within 25 m of a retainable Butternut tree (as determined by a Butternut Health Assessment) must be avoided unless no other alternative is available. Any impacts to retainable Butternut trees and their habitat will need to be addressed through the Endangered Species Act, and the implementation of rules set out in regulation for Endangered Species, O.Reg 242/08. specifically the regulations pertaining to Butternut trees. Additionally, any impacts to the habitat of Easter Meadowlark will need to be addresses through the Endangered Species Act, specifically those regulations pertaining to Eastern Meadowlark.

Social/Cultural

Short-term nuisance and property access impacts are associated with all alternatives as they all require construction activities. Areas of potential Archaeological Heritage Features may be impacted with the implementation of Alternatives 2 and 3. Impacts and mitigation measures are discussed in Section 7.1

Property Impacts

This section explains property impacts that are related to road reconstruction and exclude the required utility corridor for Alternative 2 and Alternative 3.

As part of the road reconstruction; the municipal right-of-ways will require upgrading as required by City standards for a two-lane residential local road. Currently, Foster Drive and MacLaren Drive right-of-way widths do not meet City standards and will require widening if the standard City cross-section is implemented. The following identifies widening requirements:

Table 9: Road Summary

<table>
<thead>
<tr>
<th>Street</th>
<th>Pavement Width</th>
<th>ROW Width</th>
<th>Proposed Road Width</th>
<th>Proposed minimum ROW Width</th>
<th>Property Required (anticipated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster Drive</td>
<td>6 m</td>
<td>14 to 17 m</td>
<td>8 m</td>
<td>20 m</td>
<td>Yes – primarily north side</td>
</tr>
<tr>
<td>MacLaren Avenue</td>
<td>6.4 to 7 m</td>
<td>17 to 18 m</td>
<td>8 m</td>
<td>20 m</td>
<td>Yes</td>
</tr>
<tr>
<td>Merrett Drive</td>
<td>7 m</td>
<td>20 m</td>
<td>8 m</td>
<td>No change.</td>
<td>No</td>
</tr>
</tbody>
</table>
As part of detailed design, property requirements will be identified and communicated with affected residents.

### 4.7 Evaluation Table

The alternatives are evaluated against the environment in Table 10. The criteria within each category are provided with a weighting based on consideration of the importance to the project. Weighting ranged from 5 – Critical Importance, 4 – Very Important, 3 - Important, 2 – Less Important 1 – Least Importance (note that the weights are relative measures and all criteria are important).

As part of the evaluation of alternatives, each alternative is given a ranking based on the effect of the alternative on the selected criteria. Ranking ranges from:

- **Neutral Rank**: No significant change between alternatives.
- **Positive Rank (black)**: Fully shaded circle indicates greatest positive effect (4) and a quarter shaded circle indicates least positive effect (1).
- **Negative Rank (red)**: Fully shaded circle indicates greatest negative effect (-4) and a quarter shaded circle indicates least negative effect (-1).

The sum of multiplying the rank by the weight for each alternative provides for a total score.

<table>
<thead>
<tr>
<th>Garson Street</th>
<th>7 m</th>
<th>20 m</th>
<th>8 m</th>
<th>No change.</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yeates Avenue</td>
<td>7 m</td>
<td>20 m</td>
<td>8 m</td>
<td>No change.</td>
<td>No</td>
</tr>
</tbody>
</table>

*Source City of Barrie
## Table 10 – Evaluation of Alternatives

<table>
<thead>
<tr>
<th>Criteria</th>
<th>How the Criteria is Being Assessed</th>
<th>Weight</th>
<th>Alternative 1: Do Nothing (continue to maintain septic systems a required)</th>
<th>Alternative 2: Deep Alignment</th>
<th>Alternative 3: Shallow Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Environment</strong></td>
<td>Opportunity to provide municipal servicing to residents within Study Area</td>
<td>5</td>
<td>Does not provide municipal servicing to existing or future residents.</td>
<td>Provides opportunity for municipal servicing to existing and future residents.</td>
<td>Provides opportunity for municipal servicing to existing and future residents. Some residences will require basement sewage ejectors to lift sanitary flows to lateral elevation.</td>
</tr>
<tr>
<td><strong>Sanitary Servicing</strong></td>
<td>Opportunity for improvement overall road structure.</td>
<td>5</td>
<td>Does not contribute to the opportunity for improvement to road structure.</td>
<td>Road improvements can be completed in conjunction with sanitary servicing construction.</td>
<td>Road improvements can be completed in conjunction with sanitary servicing.</td>
</tr>
<tr>
<td><strong>Street/Road Condition</strong></td>
<td>Opportunity for improvement overall road structure.</td>
<td>5</td>
<td>Does not contribute to the opportunity for improvement to road structure.</td>
<td>Road improvements can be completed in conjunction with sanitary servicing construction.</td>
<td>Road improvements can be completed in conjunction with sanitary servicing.</td>
</tr>
<tr>
<td><strong>Stormwater Management</strong></td>
<td>Assessment of existing stormwater management and opportunity for improvement.</td>
<td>5</td>
<td>Does not contribute to implementation of stormwater management.</td>
<td>Provides an opportunity to implement comprehensive stormwater management in the study area to reduce environmental impact to Lake Simcoe via Whiskey Creek and Lovers Creek.</td>
<td>Provides an opportunity to implement comprehensive stormwater management in the study area to reduce environmental impact to Lake Simcoe via Whiskey Creek and Lovers Creek.</td>
</tr>
<tr>
<td><strong>Water Distribution System</strong></td>
<td>Assessment of existing water distribution system and opportunity for improvement.</td>
<td>4</td>
<td>Does not contribute to the opportunity for lifecycle replacement of the water distribution system.</td>
<td>Water distribution replacements can be completed in conjunction with sanitary servicing construction. Improved system connections can be implemented (potential to eliminate system dead-end on Merrett Drive).</td>
<td>Water distribution replacements can be completed in conjunction with sanitary servicing construction. Improved system connections can be implemented (potential to eliminate system dead-end on Merrett Drive).</td>
</tr>
<tr>
<td><strong>Private Utilities</strong></td>
<td>Potential impacts and degree of such to overhead and underground utilities.</td>
<td>2</td>
<td>No impact on existing utilities.</td>
<td>Minor potential impact on existing underground utilities.</td>
<td>Minor potential impact on existing underground utilities.</td>
</tr>
<tr>
<td><strong>Residence Improvement Opportunities</strong></td>
<td>Potential impact on availability of rear yard space to construct an addition or garage/pool/patio/deck.</td>
<td>3</td>
<td>Development opportunities may be limited due to the physical presence of septic systems.</td>
<td>No impact to residential rear yard spacing and potential for improvements.</td>
<td>No impact to residential rear yard spacing and potential for improvements.</td>
</tr>
<tr>
<td><strong>Section Scoring</strong></td>
<td></td>
<td></td>
<td>-74</td>
<td>90</td>
<td>81</td>
</tr>
<tr>
<td>Criteria</td>
<td>How the Criteria is Being Assessed</td>
<td>Weight</td>
<td>Alternative 1 Do Nothing (continue to maintain septic systems a required)</td>
<td>Alternative 2 Deep Alignment</td>
<td>Alternative 3 Shallow Alignment</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Terrestrial Impacts – woodlots, wetlands, vegetative corridors, etc.</td>
<td>4</td>
<td>No impact on existing vegetation. Possible impact to landscape features and manicured grass areas if replacement of septic system is required.</td>
<td>Possible temporary impact to meadow at 223 Foster Drive (development lands), during construction.</td>
<td>Possible temporary impact to meadow at 223 Foster Drive and 357 Yonge Street (development lands) during construction.</td>
</tr>
<tr>
<td>Terrestrial</td>
<td>Potential impacts on Species At Risk and sensitive species. Diversity of species.</td>
<td>4</td>
<td>No impact.</td>
<td>Possible impacts to species at risk trees.</td>
<td>Possible impacts to species at risk trees.</td>
</tr>
<tr>
<td>Fisheries / Aquatic</td>
<td>Potential impacts and degree of such to fisheries and aquatic habitat</td>
<td>4</td>
<td>Potential impact to aquatic habitat due to phosphorus loading from septic systems and no opportunities to implement SWM.</td>
<td>No impact anticipated. Wastewater is treated at WWTF to MOECC regulated quality. Opportunity to implement SWM as part of alternative.</td>
<td>No impact anticipated. Wastewater is treated at WWTF to MOECC regulated quality. Opportunity to implement SWM as part of alternative.</td>
</tr>
<tr>
<td>Groundwater Resources</td>
<td>Potential impacts to groundwater resources</td>
<td>3</td>
<td>Potential impact to ground water resources from failing private septic fields.</td>
<td>No impact anticipated. Wastewater is treated at WWTF. Possible impact resulting from dewatering during construction. Opportunity to improve water balance as part of SWM implementation.</td>
<td>No impact anticipated. Wastewater is treated at WWTF. Possible but reduced impact resulting in dewatering during construction. Opportunity to improve water balance as part of SWM implementation.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Opportunity to improve water quality as part of road reconstruction/renewal efforts</td>
<td>5</td>
<td>No opportunity.</td>
<td>Opportunity to implement SWM as part of alternative including SWM ponds and/or Low Impact Development techniques.</td>
<td>Opportunity to implement SWM as part of alternative including SWM ponds and/or Low Impact Development techniques.</td>
</tr>
<tr>
<td>Section Scoring</td>
<td></td>
<td></td>
<td>-11</td>
<td>25</td>
<td>28</td>
</tr>
</tbody>
</table>
**The City of Barrie**
**Foster Area EA, Sanitary Servicing Improvements**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>How the Criteria is Being Assessed</th>
<th>Weight</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Environment</td>
<td>Potential temporary construction impacts (noise, visual impacts, disruption during construction)</td>
<td>1</td>
<td>Minor impact when septic system replacement is required.</td>
<td>Majority of construction of deep sanitary servicing to be completed within the existing right of way. Some disruption to use and access of private property during construction.</td>
<td>Majority of construction of sanitary servicing to be completed within the existing right of way. Some disruption to use and access of private property during construction.</td>
</tr>
<tr>
<td>Construction</td>
<td>Potential impacts to air quality after construction.</td>
<td>3</td>
<td>Potential for nuisance odours from failing septic systems.</td>
<td>No impact anticipated.</td>
<td>No impact anticipated.</td>
</tr>
<tr>
<td>Air Quality</td>
<td></td>
<td>4</td>
<td>No improvement to public safety. No available controls to ensure septic systems are maintained.</td>
<td>Improvement to Public Safety through municipal servicing and quality control. Less risk from failing septic systems. Opportunity for sidewalk implementation.</td>
<td>Improvement to Public Safety through municipal servicing and quality control. Less risk from failing septic systems. Opportunity for sidewalk implementation.</td>
</tr>
<tr>
<td>Public Safety</td>
<td>Improvement to Public Safety</td>
<td>3</td>
<td>Individual septic systems are not the preferred sanitary treatment method within urban boundaries.</td>
<td>Conforms to municipal policy and planning, LLSP and PPS.</td>
<td>Conforms to municipal policy and planning, LLSP and PPS.</td>
</tr>
<tr>
<td>Conformity to Municipal Land Use, Policies and Planning</td>
<td>Compliance with Lake Simcoe Protection Plan (LSPP), Provincial Policy Statement (PPS)</td>
<td>3</td>
<td>Conforms to municipal policy and planning, LLSP and PPS.</td>
<td>Conforms to municipal policy and planning, LLSP and PPS.</td>
<td>Conforms to municipal policy and planning, LLSP and PPS.</td>
</tr>
</tbody>
</table>

**Section Scoring**

-27  38  39
<table>
<thead>
<tr>
<th>Criteria</th>
<th>How the Criteria is Being Assessed</th>
<th>Weight</th>
<th>Alternative 1 Do Nothing (continue to maintain septic systems as required)</th>
<th>Alternative 2 Deep Alignment</th>
<th>Alternative 3 Shallow Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultural Heritage Environment</td>
<td></td>
<td>3</td>
<td>No impacts anticipated.</td>
<td>Possible impact with earthworks located on Foster Drive, easement through 223 Foster Drive and areas outside of the road right-of-way. A Stage 2 archaeological assessment is required.</td>
<td>Possible impact with earthworks located on Foster Drive, easement through 223 Foster Drive, 357 Yonge Street, and areas outside of the road right-of-way. A Stage 2 archaeological assessment is required.</td>
</tr>
<tr>
<td>Archaeological Impacts</td>
<td>Potential Impacts to Archaeological Resources.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Heritage Impacts</td>
<td>Potential Impacts to Community identity and Character.</td>
<td>3</td>
<td>No impacts anticipated.</td>
<td>No impacts identified.</td>
<td>No impacts identified.</td>
</tr>
<tr>
<td>First Nations Impacts</td>
<td>Potential Impacts to First Nations Lands and Resources.</td>
<td>3</td>
<td>No impacts anticipated.</td>
<td>No impacts anticipated.</td>
<td>No impacts anticipated.</td>
</tr>
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<td>Section Score</td>
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<td></td>
<td>12</td>
<td>-3</td>
<td>-3</td>
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</table>
## The City of Barrie Foster Area EA, Sanitary Servicing Improvements

### How the Criteria is Being Assessed

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Weight</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Acquisition Costs</td>
<td>Associated costs to acquire any lands necessary to implement the alternative.</td>
<td>2</td>
<td>No cost for land acquisition.</td>
<td>Potential for easement requirement or acquired through site or subdivision plan.</td>
<td>Potential for easement requirement or acquired through site or subdivision plan.</td>
</tr>
<tr>
<td>Construction Costs - Frontage</td>
<td>Overall project Cost to implement the alternative (this will be borne by residents under Section 326 of the Municipal Act for Local Servicing Improvements) This includes the installation of the sanitary sewer and sanitary lateral to property line.</td>
<td>3</td>
<td>No cost as there is no sanitary sewer construction.</td>
<td>Construction costs associated with gravity sewer, manholes, deep excavation and engineering costs.</td>
<td>Construction costs associated with gravity sewer, manholes, excavation, engineering costs.</td>
</tr>
<tr>
<td>Construction Costs – Individual Residential Private Plumbing Costs</td>
<td>Additional cost of work to physically connect existing homes to the sanitary lateral installed at property line (private property plumbing – cost is directly borne by property owner)</td>
<td>4</td>
<td>No connection cost. Future repair and replacement costs of septic systems are responsibility of resident.</td>
<td>Cost to construct a new building sewer from residence to municipal lateral located at property line.</td>
<td>Cost to construct new building sewer from residence to municipal lateral located at property line.</td>
</tr>
<tr>
<td>Sanitary Operation and Maintenance Costs - Municipal</td>
<td>Municipal costs to maintain and operate the sanitary sewers located within the municipal right-of-way</td>
<td>3</td>
<td>No impact. No municipal costs associated with private septic systems.</td>
<td>Minor increase to the municipal operations and maintenance budget.</td>
<td>Minor increase to the municipal operations and maintenance budget.</td>
</tr>
<tr>
<td>Sanitary Operation and Maintenance Costs - Private</td>
<td>Required Private residential cost to maintain and operate sanitary system/servicing components located on private property</td>
<td>4</td>
<td>Cost to maintain system borne by resident.</td>
<td>Responsible to maintain sanitary lateral from home to sanitary sewer.</td>
<td>Responsible to maintain sanitary lateral from home to sanitary sewer Operation and maintenance costs for those residences requiring sewage ejector pumps to lift basement sanitary flows to the lateral.</td>
</tr>
</tbody>
</table>

### Section Score

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Environment</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Property Acquisition Costs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Construction Costs - Frontage</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Construction Costs – Individual Residential Private Plumbing Costs</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sanitary Operation and Maintenance Costs - Municipal</td>
<td></td>
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<tr>
<td>Sanitary Operation and Maintenance Costs - Private</td>
<td></td>
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</tbody>
</table>

### Overall Score

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1</th>
<th>Alternative 2</th>
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<tr>
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</tr>
<tr>
<td>Sanitary Operation and Maintenance Costs - Municipal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary Operation and Maintenance Costs - Private</td>
<td></td>
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</tr>
</tbody>
</table>

Neutral Rank: No significant change between alternatives
Positive Rank: Fully shaded circle indicates greatest positive effect from 1 to 4
Negative Rank: Fully shaded circle indicates greatest negative effect from -1 to -4

Weight = 5 – Critical Importance, 4 – Very Important, 3 – Important, 2 – Less Important 1 – Least Importance
Score = Weight x Rank
5.0 Selection of the Preferred Alternative

The selection of a Preferred Alternative for Phase 2 of this Class EA has been based on the evaluation of the alternatives from established criteria. The weighting used for evaluating the alternatives was presented for input at the PIC held on April 29, 2015 and is shown in Table 10.

The Preferred Alternative was selected based on the evaluation of the alternatives and consideration of the comments received from stakeholders, agencies and interested parties. The Preferred Alternative is identified as Alternative 2 - Deep Sewer Alignment.

5.1 Preferred Alternative Solution

In consideration of the problem statement, the preferred solution for the provision of sanitary servicing to the Foster Drive Area is Alternative 2 – Deep Sewer Alignment. The primary reasons for the selection are as follows:

- Addresses the need for capital improvements on an area wide basis pertaining to the majority of septic systems that are operating beyond their expected service life.
- Reduces potential impacts to ground water and surface water quality of Whiskey Creek as a result of aging septic systems.
- Provides gravity sanitary servicing to the majority of residences to their basement elevation.
- Maintains a deep sewer alignment where necessary (primarily Foster Drive) and standard sewer depth for the majority of the servicing area.
- Minimizes impacts to 223 Foster Drive and 357 Yonge Street as the sewer alignment is intended to be routed within a future right-of-way.
- Facilitates the cost effective implementation of capital improvements to the study area including road renewal, sidewalks (urbanization of street cross-section), stormwater management, watermain renewal and overall esthetics.

The Preferred Alternative is intended to provide basement gravity servicing to most homes. There may be specific instances where homes may not be provided basement gravity servicing due to vertical alignment constraints that become evident during detailed design. Staff will confirm basement elevations during the design process and communicate updates regarding sanitary servicing to residents.

The City will take every reasonable effort to minimize these instances. Please note that in these situations a common sewage ejector system (available widely at home
improvement stores) will allow for the inclusion of plumbing fixtures in basements that cannot be serviced by a basement gravity sewer connection.

Through the conceptual design process, the project team has identified 238 Foster Drive and 242 Foster Drive for first floor gravity servicing as the homes are situated too low relative to Foster Drive to allow for basement gravity servicing (presently these homes do not have basements). As noted previously, through the detailed design process, other specific instances where basement gravity servicing is not possible may be identified.

Under Section 326 of the municipal act, this project is deemed to be of local benefit and as such, costs are recovered from the benefiting property owners based on frontage (see Appendix H – Local Improvement and Section 326 Servicing Cost Apportionment Policy). The cost of the project is apportioned to each property owner. The property owner is responsible to complete the necessary work to install the building sewer, which connects the home to the lateral located at the property line.

6.0 Summary of Public Consultation Program

Stakeholder and Agency Consultation is an integral part of the Municipal Class EA Planning Process as it provides an opportunity to exchange information and allows the public and agencies to contribute to the decision making process in a collaborative, rather than adversarial, atmosphere. The Schedule B Class EA requirement includes two mandatory public points of contact during the EA process. Mandatory public points of contact for the project include a Notice of Study Commencement, inviting public input on the project and a Notice of Completion. A Phase 2 Public Information Centre (PIC) was also held to provide a summary of the project and obtain input from the public. This is a summary of public consultation prior to submission of the recommended Preferred Alternative to General Committee.

6.1 Notice of Study Commencement

A Notice of Study Commencement was published in the Barrie Examiner on October 16, 2014 and October 18, 2014.

6.2 Notice of PIC

Notice of the PIC was published in the Barrie Examiner and notification of the PIC was mailed to agencies, utilities, Aboriginal communities, local residents who live within the study area and owners of property in the study area, but reside elsewhere. The notice of PIC was posted on the City’s website.
6.3 Public Information Centre

The PIC was held on April 29, 2015 at the Painswick Library (48 Dean Avenue, Barrie); from 4:00 p.m. to 7:00 p.m.

The purpose of the PIC was to provide a summary of the project, present an evaluation of the various alternative solutions based on technical, social/cultural, economic and natural environment factors, identify design alternatives, and obtain input from the public.

The PIC was arranged as a “drop-in” style session. Display boards were placed around the room and representatives from the study team were available to answer questions and discuss the project with interested members of the public. Attendees were greeted upon arrival, were encouraged to sign the registration sheet, and were provided with a comment form to provide comments on any aspect of the project. A total of 51 people attended the PIC excluding the project team members.

6.3.1 Public and Agency Comments

Comment sheets were mailed to all residents/property owners in the study area as well as Agencies and Aboriginal Communities. Comment sheets were also available at the PIC and on the City’s website. Responses to these comments, in context of the Preferred Alternative, are provided in Table 11.

Twenty-four written comments were received from stakeholders and five written comments from agencies as a result of the PIC. Completed comment sheets can be found in the PIC Stakeholder Participation Summary Table in Appendix C.
### Table 11: Stakeholder Comments and Responses following PIC

<table>
<thead>
<tr>
<th>Stakeholder Comments</th>
<th>City Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific concerns for our property are less about the actual storm/sanitary options selected (given that our property is connected to the Little Line) but more to the traffic impact that will result when construction is underway.</td>
<td>Construction of the Preferred Alternative will be monitored by the City to ensure that the most efficient routes are being used. The City will coordinate with the Contractor to minimize construction traffic where practical to do so.</td>
</tr>
<tr>
<td>The cost/issue with selling house.</td>
<td>The implementation of the Preferred Alternative will reduce the work associated with demonstrating the condition of your septic system to prospective buyers. Cost estimates indicate that the Preferred Alternative will be lower cost versus replacement of a septic system.</td>
</tr>
<tr>
<td>Find the money and get it done ASAP.</td>
<td>Noted. The 2015 - 2019 Business Plan identifies design in 2017 and construction (year 1) in 2019. The Business Plan is subject to the annual capital planning process and Council approval. Funds for construction (year 2) have been requested for inclusion in the 2016 – 2020 Business Plan.</td>
</tr>
<tr>
<td>It’s hard to make a decision without knowing the associated costs. Do you know the costs of each alternative? If so please send to the address ***.</td>
<td>The cost estimates were presented at the PIC and are included in the Class EA study report. The report can be found online at <a href="http://www.barrie.ca/EAstudies">www.barrie.ca/EAstudies</a>. Information regarding costs has been sent to the email address provided. All future correspondence will be sent to the address as indicated. Please note that it’s the City's practice to send notices both to the property within the study area as well as the indicated owner if different than the property address to satisfy the Class EA process requirements.</td>
</tr>
<tr>
<td>Adding cost (estimated) to home owners would help in making decisions.</td>
<td>The cost estimates were presented at the PIC and are included in the Class EA study report. The report can be found online at <a href="http://www.barrie.ca/EAstudies">www.barrie.ca/EAstudies</a>. Information regarding costs has been sent to the email address provided. Note that the cost estimates have been refined since email correspondence.</td>
</tr>
<tr>
<td>Doing nothing is not an alternative. There have been too many flooded basements in this neighbourhood to do nothing.</td>
<td>Your flooding concern has been forwarded to the Standards and Policy Branch.</td>
</tr>
<tr>
<td>Stakeholder Comments</td>
<td>City Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>We have a new septic system put in 8 years ago no body from city told us about sewers going in when we got the permit we would of left old septic.</td>
<td>The implementation of the Preferred Alternative is based on the City’s Business Plan (2015-2019). At the time the permit was issued, this project was not in the City’s Business Plan. The current Business Plan identifies design in 2017 and the first year of construction in 2019. This is subject to annual review and endorsement by Council. During this review, projects are either maintained in the plan, added or removed depending on a yearly budget evaluation. In cases such as yours, the City allows residents to defer connection to the City’s sanitary sewer system until the time your septic system requires replacement; thus eliminating the need to pay user rate charges during this period. Frontage fees must be paid at the time of construction; this includes a sanitary lateral to the property line to allow future connection.</td>
</tr>
<tr>
<td>Huge ditch exists on MacLaren side of my property. Created from sewer installation on Little Ave in 2000. Safety factors when cutting lawn.</td>
<td>As part of the implementation of the Preferred Alternative, affected streets are typically urbanized with curbs and storm sewers. As part of the stormwater management Preferred Alternative (see Appendix G), the ditch may be reduced in size or eliminated depending on the LID practice utilized. LID practices will be selected during detailed design.</td>
</tr>
<tr>
<td>With respect to Alternative 2 Deep Sewer Alignment:</td>
<td></td>
</tr>
<tr>
<td>1) Foster Drive + 2 or 3 properties on MacLaren. Balance Standard Depth.</td>
<td>1) The Preferred Alternative (for sanitary servicing) will consist of deeper sewers on Foster Drive and sewers generally installed at standard depth on MacLaren, Merrett, Garson and Yeates with the exception of the east limit of MacLaren Avenue (where a deeper section of sewer is require to provide basement servicing near Little Avenue). The intent is to maximize the number of properties that will be able to have gravity basement servicing. A few properties on Foster Drive that are at a significantly lower elevation than the street elevation will require a sewage ejector pump if plumbing fixtures are installed in the basement. The Preferred Alternative is intended to provide most homes with gravity basement servicing, but specific instances may exist where gravity basement servicing will not be possible. During detailed design, staff will confirm basement elevations and provide servicing updates.</td>
</tr>
<tr>
<td>2) Not convinced that connection on Merrett + Foster via 223 is better than connection to Yonge Street.</td>
<td>2) The Preferred Alternative will be routed through 223 Foster Drive between Merrett Drive and Foster Drive. This is the optimal route as it eliminates construction on a major arterial street, can be constructed with little impact to the public as it is off road and is intended to be routed in a future right-of-way through this property as indicated by current zoning mapping.</td>
</tr>
<tr>
<td>3) Support retaining ditches with possible exception of Foster Dr. which needs more thought for alternatives.</td>
<td>3) The Preferred Alternative (for stormwater management) will consist of low impact development (LID) practices with traditional sewers servicing this catchment. LID practices will be further reviewed and selected during detailed design. Retaining ditches or shallow swale is dependent on the LID practice selected during detailed design.</td>
</tr>
<tr>
<td>4) The cost needs to be addressed with the intent to achieve a cost for sanitary sewer and lateral not exceeding 100.00 per meter. Mind over matter</td>
<td>4) The installation of sanitary servicing (and associated frontage costs) is reflective of the level of effort and materials required to complete the installation. In addition to material costs for the sewer and lateral pipes, more significant costs are associated with excavation, imported aggregate for bedding and backfill, disposal of surplus backfill and proper backfill and restoration</td>
</tr>
<tr>
<td>Stakeholder Comments</td>
<td>City Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>needed here.</td>
<td>procedures (and the associated labour and equipment). Additional allowances have been included for dewatering operations due to anticipated groundwater interception. The cost estimate for the Preferred Alternative is based on historical cost data for similar projects. Frontage charges will be using actual costs that the City incurs through a competitive bid process.</td>
</tr>
<tr>
<td>Lack of information</td>
<td>Contacted by phone. Voicemail left indicating location of Class EA reports.</td>
</tr>
<tr>
<td>Cost factor for stormwater management alternatives.</td>
<td>Costs for the Preferred Alternative (for stormwater management) will be borne by the City. City will investigate funding/partnership opportunities with the Lake Simcoe Conservation Authority, Provincial and Federal Governments to implement the alternative. The City allows residents to defer connection to the sanitary sewer system. This allows residents to defer the private costs associated with connecting to the sanitary system and user rate charges. The frontage costs cannot be deferred, but the City allows residents to finance the frontage costs over 10 years, resulting in a more manageable cost.</td>
</tr>
<tr>
<td>I am concerned with the cost implications for Sanitary Servicing Alternatives 2+3 for seniors and families on fixed incomes that could be forced out of their homes in order to pay for sewers in our community. Would it be possible for any families in this position to defer payment until they choose to sell their homes in the future when they are ready to leave them? Although I understand the bill can be paid in addition to taxes over a period of years this may not address the needs of families in either of these two categories. If a decision is made to proceed with sewers I would like to know if it would be possible to start and complete work on all streets involved in one year rather then spread it out over two or possibly three in order to minimize the inconvenience, noise, dirt and disruption for all of us in the community?</td>
<td>Due to impacts to residents, budgetary planning and natural topography, construction is planned to occur over two years for the entire servicing area. Construction activities will be focused in one project area per year; Area 1 (area draining to Little Avenue via MacLaren Avenue) and Area 2 (area draining to Yonge Street via Foster Drive).</td>
</tr>
<tr>
<td>Unable to attend PIC.</td>
<td>Noted. The mail out letter providing notification of the PIC contains direction to all pertinent information (including PIC presentation material) located on the City’s website as well as a listing of locations where hardcopy reports are available. Contact information for the City’s Project Manager is also listed and can be contacted for any questions or comments.</td>
</tr>
<tr>
<td>Stakeholder Comments</td>
<td>City Response</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>I had no idea of those cost different in these chose so I cannot pick those.</td>
<td>The cost estimates were presented at the PIC and are included in the Class EA study report. The report can be found online at <a href="http://www.barrie.ca/EAstudies">www.barrie.ca/EAstudies</a>. Information regarding costs has been sent to the email address provided.</td>
</tr>
<tr>
<td>We would strongly oppose a shallow sewer alignment as it would almost certainly cause sewer backup into basements during heavy rains.</td>
<td>The Preferred Alternative (for sanitary servicing) will consist of deeper sewers on Foster Drive and sewers generally installed at standard depth on MacLaren, Merrett, Garson and Yeates with the exception of the east limit of MacLaren Avenue (where a deeper section of sewer is required to provide basement servicing near Little Avenue). The intent is to maximize the number of properties that will be able to have gravity basement servicing. As identified in the Class EA study, a few homes on Foster Drive that are at a significantly lower elevation than the roadway will require a sewage ejector pump if plumbing fixtures are installed in the basement.</td>
</tr>
<tr>
<td>No one could answer the questions presented here-in:</td>
<td></td>
</tr>
<tr>
<td>Foster Drive Sanitary Servicing and Stormwater Management Class EA Concerns:</td>
<td></td>
</tr>
<tr>
<td>1) 90% of Foster is on well water. Who will be responsible should our wells dry up in the process.</td>
<td>1) As part of detailed design for the Preferred Alternative, a hydrogeological study will be completed to fully assess groundwater conditions. This assessment will determine if dewatering is required, an acceptable dewatering rate and assess any potential impacts. As water services have been provided to all homes on Foster Drive, a viable alternative would be to connect to the municipal water system. Approximately 50% of homes have connected.</td>
</tr>
<tr>
<td>2) Some have in the past 5 yrs replaced old septic tanks with new updated ones. Will they still have to pay for sewers to run past their homes?</td>
<td>2) For residents who have replaced their septic, they are allowed to defer connection to the City’s sanitary sewer system until the time their septic system requires replacement; thus eliminating the need to pay user rate charges during this period and the cost to connect the home to the sewer lateral. Frontage fees must be paid at the time of construction, which includes a sanitary lateral to the property line to allow future connection.</td>
</tr>
<tr>
<td>3) 206 Foster Drive rents out a number of garage bays to weekend mechanics who over the passing of time have no doubt polluted the immediate ground and surrounding area. Do you really want to put a stormwater Management Pond in without cleaning up the surrounding area of toxics that are already feeding into Kempenfelt Bay through its</td>
<td>3) The City has a standard due diligence protocol for real estate transactions that includes relevant investigations based on present and historic land use/activities.</td>
</tr>
<tr>
<td>Stakeholder Comments</td>
<td>City Response</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>natural watershed?</td>
<td>4a) Residents on Foster Drive paid for their water servicing when it was installed in 2003. All residences have water services to property line. Approximately 50% of residences are connected to the municipal system. Residents on Foster Drive have not been charged nor have they paid for sanitary servicing.</td>
</tr>
<tr>
<td>4) And we are to understand that the old residence of Foster Drive previously under another name, had paid for this service and for some reason the installment of sewers never happened? When they put water and sewers down Little Avenue, why did they not finish the job with said Assessment Area of Foster Drive? Anyone like to investigate?</td>
<td>4b) The Little Avenue sewer project was completed in conjunction with the subdivision to the south. This work had to occur first to provide a drainage outlet for the portion of the study area that drains to the southeast. The provision of sanitary servicing to the study area was intended to occur in the future, subject to available budgets.</td>
</tr>
<tr>
<td>All I could find was a &quot;draft&quot; - are these documents the latest available to the owners to review.</td>
<td>The final report is now available.</td>
</tr>
<tr>
<td>Do not want sidewalks!</td>
<td>The installation of the Preferred Alternative will require reconstruction of the existing road right-of-way. It has been the City's practice to reconstruct roads to current City standards, which include full urbanization with sidewalks. The City's Criteria for Infill Sidewalks included with Road Reconstruction will be assessed during detailed design to determine whether sidewalks are suitable for inclusion with the implementation of the Preferred Alternative.</td>
</tr>
</tbody>
</table>
Respondents were asked to rank the alternatives in order of preference. The following table outlines the instances each alternative was ranked number one (Preferred Alternative):

**Table 12: Alternative Ranking**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Instances Ranked No. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1 – Do Nothing</td>
<td>20%</td>
</tr>
<tr>
<td>Alternative 2 – Deep Sewer Alignment</td>
<td>67%</td>
</tr>
<tr>
<td>Alternative 3 – Shallow Sewer Alignment</td>
<td>13%</td>
</tr>
</tbody>
</table>

Respondents ranked Alternative 2 – Deep Sewer Alignment as the Preferred Alternative.

Key issues noted within the written stakeholder responses following the PIC relate to:

- Cost difference between alternative solutions.
- Cost to residents to implement preferred solutions and the ability to defer or amortize payment.
- Timing and requirement to connect to sanitary sewers if existing septic system is in good working order.
- Altering existing ditches.
- Area of service.

Key issues noted within the written agency responses following the PIC relate to:

- Recommendation for a solution that would reduce the number of private on-site sewage systems in the Lake Simcoe watershed.
- Consideration of mitigation measures for potential impacts to Whiskey Creek and natural meadow areas within the study area.
- Recommendation of Low Impact Development as the preferred stormwater management treatment alternative.

The elements of the Public Consultation program are contained within Appendix C, including:

- Information panels presented at the PIC.
- Notice of Study Commencement and Public Information advertisements.
- Notice of PIC resident and agency letter and comment sheet.
- Notice of PIC agency address list for mail out.
• Mail out area for residents (note that property owners that live outside the study area were also mailed a letter and comment sheet).
• Returned comment sheets.

7.0 Sanitary Modelling of the Preferred Alternative

The hydraulic modelling of the proposed sanitary sewer has been completed in accordance with the proposed gravity based Alternative Solution as outlined in Section 5.0 above. Peak flows have been calculated based on a per capita ADF (225 L/cap/day) in accordance with the City of Barrie Official Plan. A minimum proposed pipe size of 250 mm diameter has been used in accordance with City of Barrie design standards. Please refer to Appendix B for the sanitary design sheets. Review of the sanitary sewer design sheets reveal peak flows to range from 1.1 L/s to 18.6 L/s depending on location, producing a maximum pipe percentage full of 65%.

In addition to the sanitary design sheets in Appendix B, hydraulic modeling of the proposed sanitary sewer has been completed in PCSWMM. PCSWMM has the unique ability to model Hydraulic Grade Lines (HGL) within a pipe network. Peak flows have been added into the PCSWMM model as incremental baseline flows. Incremental baseline flows have been calculated at each manhole location; please refer to the Sanitary Design Sheets in Appendix B for supporting baseline flow calculations.

The PCSWMM hydraulic modeling provided similar results to those in the sanitary design sheet in that the proposed sanitary sewer has sufficient capacity to convey the calculated peak flows with excess capacity. Refer to Appendix B for PCSWMM modeling outputs including plan, profile and status report plots.

As part of detailed design, basement elevations shall be confirmed; slopes optimized to ensure minimum scour velocity and updated modeling.
8.0 Implementation

8.1 Impacts and Mitigation

The following mitigation measures and design approach should be implemented in order to mitigate negative impacts of the proposed project on the environmental features of the study area.

Surface Water / Hydrology & Soils and Sedimentation

Impact

- Temporary earth works associated with construction activities

Effect

A. Potential for sediments to enter area watercourses (Whiskey Creek) as a result of the following project activities:
   1) site clearing
   2) stockpiling
   3) excavation
   4) construction

B. Potential for localized water quality impacts as a result of spills.

Mitigation

A. The footprint of the disturbed area will be minimized as much as possible.

The watercourses and the associated regulated areas are under the jurisdiction of LSRCA. The LSRCA is to be contacted prior to the planning of construction activities within Whiskey Creek and its associated regulated area.

An erosion and sediment control plan will be developed. Implementation of the erosion and sediment control measures will conform to recognized standard specifications such as Ontario Provincial Standards Specification (OPSS).

Any stockpiled material will be stored at a safe distance from the watercourse to ensure that no deleterious substances enter the water.

Sediment and erosion control measures (silt curtains, silt fence) will be installed and will be maintained during the work phase and until the site has been stabilized. Control measures should be inspected daily to ensure they are functioning and are
maintained as required. If control measures are not functioning properly, no further work will occur until the problem is resolved.

Any temporary mitigation measures will be installed prior to the commencement of any site clearing, grubbing, excavation, filling or grading works and will be maintained on a regular basis, prior to and after runoff events.

B. All equipment fueling and maintenance will be done at a safe distance from the watercourse to ensure that no deleterious substances enter the waterway. No equipment or fuel storage shall be permitted in the LSRCA regulated area or in any flood plain area.

The contractor will be required to develop spill prevention and contingency plans for the project.

Personnel will be trained in how to apply the contingency plans and the plans will be reviewed to strengthen their effectiveness and ensure continuous improvement. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on site at all times during the work. Spills will be reported to the Ontario Spills Action Center at 1-800-268-6060.

All waste generated during construction must be disposed of in accordance with MOECC requirements.

The above mitigation measure will be implemented for any construction activity and will have to be identified and implemented in order to secure relevant agency permits.

**Groundwater**

*Impact*

- Temporary earthworks and dewatering associated with construction

*Effect*

A. Potential for localized groundwater quality impacts as a result of spills during construction.

B. Potential for localized groundwater quantity impacts as a result of dewatering.
Mitigation

A. Refueling of equipment and fuel storage should be conducted in designated areas with spill protection.

B. As part of detailed design, a hydrogeological study will be completed. Groundwater field investigations (monitoring wells, drawdown tests, etc.) need to be completed to provide a more detailed assessment of dewatering requirements as well, the short and long-term impacts to Whiskey Creek and impacts to the significant groundwater recharge area and the limited number of residents on wells.

Vegetation, Wildlife / Habitat

Impact:

− Temporary impact to meadow features on lands at 223 Foster Drive from the installation of linear infrastructure and construction access routes.
− Impact to boulevard trees and residential landscape features from the installation of linear infrastructure and construction access routes.
− Possible impact to the habitat of breeding bird and generalist mammal species as a result of vegetation removal. The habitat within the footprint of the preferred alternative alignment represents common local habitat types considered to have the potential to support breeding birds and generalist mammal species.
− Possible impact to SAR birds from the installation of linear infrastructure and construction access routes at 223 Foster Drive.
− Possible impacts to SAR trees from the installation of linear infrastructure and construction access routes at 223 Foster Drive.

Effect

A. Loss of vegetation.

B. Habitat loss.

C. Impact to SAR

Mitigation

A. Minimize disturbance to existing vegetation by limiting the extent of construction footprint limits, as reasonable. Disturbed areas will be stabilized and re-vegetated upon project completion and restored to a pre-disturbed state where practical. Topsoil located where excavation will occur shall be stripped and stockpiled separately. This material will be used for restoration to facilitate natural regeneration of native species.
Impacts to trees by the proposed construction will be assessed at the detailed design stage using the tree mapping and data and recommendations contained within the arborist report (Appendix A2) for the project, including tree protection measures.

B. Construction activities with the potential to destroy migratory birds, nests and eggs, such as vegetation clearing, should not take place during the core breeding season, generally considered to be from April 30 to August 1. If this is not possible, a pre-construction nesting survey should be completed by a qualified ecologist / biologist immediately prior to tree removal activities to determined there will be no contravention under the Migratory Birds Convention Act.

C. During detailed design, an assessment of the smaller saplings observed at 223 Foster Drive, within 25 m of the proposed alignment and construction activities should be completed in an effort to determine whether the saplings are pure Butternut species. Should Butternut species be located within 25 m of construction activities, a Butternut Health Assessment must be completed by a certified Butternut Health Assessor during the MNRF’s acceptable window for Butternut assessment.

The local district MNRF Species at Risk Biologist is to be contacted to discuss the presence of Butternut trees and potential impact and mitigation measures.

Any disturbance or impact within 25 m of a retainable Butternut tree is to be avoided unless no other alternative is available.

Should avoidance measures not be sufficient to mitigate impacts to identified Species at Risk, construction and alteration of habitat will be subject to rules in regulation established under the Endangered Species Act and/or consultation with the MNRF to determine whether or not the proposed works are likely to contravene subsection 9(1) or 10(1) of the ESA.

Impacts to retainable Butternut trees will need to be addressed through the Species at Risk Act, and the implementation of rules set out in regulation for Endangered Species, O.Reg 242/08, specifically the regulations pertaining to Butternut trees. Retainable Butternuts are protected and cannot be removed without an authorization under the Endangered Species Act 2007, i.e., without either (1) an overall benefit permit, or, if no more than 10 trees are concerned; (2) a planting plan that has been approved by the MNRF, or has not been approved or refused within 30 days following its submission to the MNRF district office.

Targeted breeding bird surveys are recommended to detect the presence of Eastern Meadowlark (Species at Risk) and other Species at Risk birds, within the vicinity of the proposed works in the meadow lands of 223 Foster Drive and 3576 Yonge. The targeted breeding bird surveys are to be completed in the season before proposed construction and/or alteration of the study area. Breeding bird surveys will consist of three surveys during the active breeding bird window (May 24 to July 10).
Should avoidance measures not be sufficient to mitigate impacts to identified Species at Risk birds, construction and alteration of habitat will be subject to rules in regulation established under the Endangered Species Act, specifically those regulations pertaining to Eastern Meadowlark, and/or consultation with the MNRF to determine whether or not the proposed works are likely to contravene subsection 9(1) or 10(1) of the ESA.

Should SAR be encountered at any time during the project, the MNRF District Office and Environment Canada – Ontario Region shall be contacted for advice on how to proceed.

**Noise / Vibration / Air Quality / Access**

**Impact**

- Possible temporary nuisance impacts, such as noise and air quality, during construction.
- Some temporary disruption to the use and access of private property may occur during construction.

**Effect**

A. Temporary nuisance noise during construction activities.

B. Increased dust in air from construction activities.

C. Road closures and/or detours. Possible driveway access restrictions.

**Mitigation**

A. Noise control measures, such as adhering to the City’s Noise By-law 2006-140 and the use of appropriate machinery with mufflers will be implemented where required. All equipment with internal combustion engines should be in good repair, equipped with emission controls as applicable and operated within regulatory requirements.

B. Dust generation will be monitored during construction. Both surface wetting using water (to protect water quality), street sweeping and mud mats will be employed as necessary.

C. Construction will be phased to allow ingress and egress from either Foster Drive or Little Avenue depending on the phase of Construction. As construction progresses past individual residences, driveways will be temporarily blocked. Notification will be given to residents of the upcoming temporary access restriction advising them to utilize a designated parking area outside of the immediate construction area if they need to leave their home during this period (using a vehicle). Pedestrian access will be maintained at all times.
Every reasonable effort will be employed to minimize this temporary restriction.

Archaeology / Cultural Heritage

Impact

- The municipal right-of-way on Foster Drive and any lands beyond the right-of-ways of the remaining streets in the study area are considered to have archaeological potential. Earthworks associated with construction activities may disturb or damage archaeological features, if present within the study area.
- No Cultural Heritage Features were observed within the Study Area such that the proposed project would impact these features.

Effect

A. Potential to impact archeological features.

Mitigation

A. A Stage 2 Archaeological Assessment is required for Foster Drive and the sanitary sewer alignment through 223 Foster Drive (confined to the open cut disturbance area).

Human health and safety

Effect

A. Potential safety hazard from construction activities, heavy equipment and increased traffic.

Mitigation

A. The contactor will be required to implement a Health and Safety Plan (OHSA 1990).

8.2 Approval Requirements

8.2.1 Dewatering

As part of detailed design, the geotechnical and hydrogeological investigation/report, will outline groundwater conditions at the site and will provide recommendations for dewatering requirements. A Permit to Take Water (PTTW) will be required if dewatering activities will exceed 50,000 L/day. The desktop study geotechnical investigation prepared to support this study has identified that a dewatering permit is likely required.
8.2.2 Ministry of Environment and Climate Change, Environmental Compliance Approval

An Environmental Compliance Approval (ECA), or an amended ECA approval will be required to install new sanitary sewers prior to the construction of works.

8.2.3 Lake Simcoe Conservation Authority (LSRCA)

A permit will be required from the LSRCA as Foster Drive at Whiskey Creek is located within a regulated area.

8.2.4 Ministry of Natural Resources and Fisheries (MNRF)

Impacts to Species at Risk will need to be addressed through the Endangered Species Act, e.g., the regulations pertaining to Butternut trees. The local district MNRF Species at Risk Biologist is to be contacted to discuss the presence of Species at Risk and potential impact and mitigation measures.

8.3 Staging of Works for the Preferred Alternative

The proposed construction staging for the Preferred Alternative is based on the sewershed boundary within the study area and to minimize access restrictions during construction. It is anticipated that this project will be completed in two phases (based on the areas listed below) and require approximately 12 months of construction per phase.

Area 1 – East Section

- MacLaren Avenue from Merrett Drive to Little Avenue (outlet).
- Merrett Drive/Garson Street from sewershed boundary at street midpoint to MacLaren Avenue.

Area 2 – West Section

- Foster Drive – MacLaren Avenue to Yonge Street (outlet).
- Yeates Avenue.
- Merrett Drive/Garson Street from sewershed boundary at street midpoint to Yeates Avenue.
- Utility Corridor/New ROW – Merrett Drive to Foster Drive.

The completion of Area 2 (Yeates Avenue, Merrett Drive, Garson Street) is subject to obtaining a road right-of-way through 223 Foster Drive as part of development approval. In the event of delay or if the City is required to purchase those lands, this component of Area 2 would be delayed. Installation of sanitary sewers would occur on Foster Drive,
but the remaining Area two streets (Yeates Avenue, Merrett Drive, Garson Street) would be implemented at a future date subject to budget availability.

The 2015-2019 Business Plan identifies detailed design in 2017 and construction in 2019 for the first phase of the project. The second phase is subject to inclusion in the 2016-2020 Business Plan, Council approval and acquisition of either a road right-of-way through 223 Foster Drive as part of development approval or through acquisition of a permanent easement for the utility corridor.

9.0 Summary and Recommendations

9.1 Summary

The project planning and decision process is documented in this Class EA report. The intent of the report is to:

- Describe the project and its purpose.
- Outline the public consultation process.
- Identify and evaluate alternatives.
- Select a preferred alternative based on clear, publicly vetted criteria.
- Identify the environmental effects.
- Recommend mitigating measures for identified effects.
- Recommend how the selected project is to be implemented, including staging, permitting and monitoring procedures, as required.

The Class EA report is placed on the public record (e.g., publicly accessible hardcopies at City Hall and the Downtown and Painswick Libraries and the City’s website) and accompanied by a Notice of Completion (to be advertised in The Barrie Examiner) that notifies stakeholders and members of the public with the dates, times and locations where the report can be reviewed, a deadline for their comments, and names and addresses of people to send their comments to. As per the requirements of the Municipal Class EA, the report is available for public review and comment for a period of 30 calendar days following the publication of the Notice of Completion.
9.2 Recommendations

Detailed Design

Mitigation, monitoring and reporting measures are to be included as part of the detailed design process and incorporated into the tender documents, as applicable. The detailed design and construction of this project will be based on best management practices that centre on the prevention of impacts, protection of the existing environment and seeks opportunities for rehabilitation and enhancement of impacted areas.

1) During detailed design and construction of the project, the following commitments are required:

- Assessment of Butternut trees and saplings to confirm if they are within 25 m of the proposed construction and disturbance; consult with MNRF if Butternut trees are identified within 25 m of proposed alignment.

- Targeted breeding bird survey to assess the presence of Species at Risk birds in potential habitat possibly impacted by the implementation of the preferred alternative, specifically Eastern Meadowlark.

- Completion of a hydrogeological study including/identification of:
  - Groundwater field investigations (monitoring wells, drawdown tests, etc.).
  - Dewatering requirements/rates and if a PTTW is required.
  - Groundwater samples from monitoring wells, determine if any treatment is required (to meet sewer use by-law) and develop disposal plan (i.e., sanitary sewer).
  - Coordination and notification to the WWTF as significant dewatering operations can adversely affect plant processes.
  - Assess impacts to drinking water wells located within the zone of influence of dewatering operations.
  - Assess impacts to Whiskey Creek including the significant groundwater recharge area (SGRA).
  - Develop mitigation measures for identified impacts.

- Implementation of the recommendations contained within the arborist report (Appendix A2), including tree protection measures as part of detailed design and tender documents.

- Completion of a Stage 2 Archaeological Assessment for Foster Drive (within the municipal right-of-way) and the sanitary sewer alignment through 223 Foster Drive (confined to the open cut disturbance area).
• Prohibit construction activities with the potential to destroy migratory birds, nests and eggs, such as vegetation clearing, during the core breeding season, generally considered to be from April 30th to August 1st, unless it can be determined there will be no contravention under the Migratory Birds Convention Act. Specify working periods within 223 Foster Drive outside of the core breeding season. In the event breeding birds are encountered in the project area, work is to be stopped immediately around all nests. The removal of trees, grubbing of stumps and chipping of brush may be completed outside of the general nesting season and/or in the absence of migratory bird nests, eggs and young; If this is not possible, a pre-construction nesting survey should be completed by a qualified ecologist / biologist immediately prior to tree removal activities to determined there will be no contravention under the Migratory Birds Convention Act.

• Completion of a detailed erosion and sediment control plan.

• Clearly identify the requirement to support the existing watermain on Foster Drive as it was recently replaced. It is anticipated that the watermains on Merrett Drive, MacLaren Avenue, Yeates Avenue and Garson Street will be replaced as they are approaching the end of their service life and it is the most cost effective opportunity to complete this work.

2) The City will be required to secure all necessary permits and/or authorizations required for the project, including permits from the LSRCA for working within a regulated area. MNRF authorization pertaining to Species at Risk, if required.

3) Additional requirements are outlined in the Appendix G - Stormwater Management Assessment Technical Memorandum.

Future Study Area Considerations

Should a property owner decide to construct a new home at 238 Foster Drive or 242 Foster Drive, they will need to ensure the basement elevation of the new home matches the existing first floor elevation or install a sewage ejector pump to discharge flows to their sanitary lateral to have basement servicing.

Additional Infrastructure Improvements

Stormwater Management

As part of this Schedule B Class EA process, the City examined opportunities to provide stormwater management to the Study Area. Please refer to Appendix G – Stormwater Management Assessment Technical Memorandum for an overview, conclusion and recommendations for stormwater management in the study area.
Road Reconstruction

The Preferred Alternative will require full reconstruction of the road and road structure due to the location and depth of the proposed sanitary sewer. The existing streets are rural cross-sections with pavement widths between 6 m and 7 m. It is the City’s practice to reconstruct these roads to current City standards including sidewalks, curbs/gutters, storm sewers and sufficient area for utility corridors.

This Class EA study holistically considered the general impacts of constructing the sanitary servicing alternatives as well as restoring the road surface; however, it is not within the scope of this study to complete a direct evaluation of specific road elements. During detailed design, the City will notify affected residents/owners if property is required.

Foster Drive

Reconstruction of Foster Drive will be further assessed during detail design but consideration should be given to maintaining the location of the southern edge of pavement and widening the roadway to the north. This is suggested since any widening of the street surface to the south would result in driveways being unpassable due to extreme slopes. This will impact the current practice of parking in the boulevard and will require homeowners to either construct parking pads on their property or construct driveways. Existing parking pads will need to be moved further north onto private property to ensure that vehicles clear the proposed sidewalk on the north side. Property impacts could potentially be greater on the north side of Foster Drive.

9.3 Next steps to Implement/Construct the Preferred Alternative

The City will advise by mail those individuals and agencies that have indicated they wish to be kept informed. The letter will contain staff recommendations for the Preferred Alternative and outline the process for residents/agencies to provide a deputation to Council.

Subject to Council’s endorsement of the Preferred Alternative, a Notice of Completion will be published in two editions of the Barrie Examiner at the culmination of the project. Following the Notice of Completion, if concerns are raised, which cannot be resolved in discussion with the City, a request may be made to the Minister of the Environment and Climate Change, to make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order), which addresses individual Environmental Assessments. A Part II Order must be filed within thirty calendar days of the City publication of the Notice of Completion and must do so, in writing, to the Minister of the Environment and Climate Change (a copy of the Part II...
Order Request must also be sent to the City’s Engineering Department) at the address below:

Minister

Ministry of the Environment and Climate Change
Floor 11
77 Wellesley St. W
Toronto ON M7A 2T5

As per the requirements of the Municipal Class EA process, this report is available for public review and comment for a period of 30 calendar days following the publication of the Notice of Completion.

The Schedule B project is considered “approved” under the EA with the completion of Phases 1 and 2 of the process. If the Minister does not receive a request for a Part II Order within the 30 calendar days, the project can proceed to implementation.

Respectfully submitted by:

R.J. Burnside & Associates Limited

Report Prepared By:

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DDF: sr

Report Reviewed By:

Jeff Langlois, P.Eng.
QAQC
DDF: sr

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