Appendix A

Existing Environment Information

Geotechnical and Hydrogeological Review
Arborist Report
NHIC Query Results
OBBA Data Summaries
Review of Potential for Provincially Sensitive Species
LSRCA Aquatic SAR Mapping
MNR Correspondence
Stage 1 Archaeological Assessment
Cultural Heritage Evaluation Report
PRELIMINARY GEOTECHNICAL ASSESSMENT
FOSTER DRIVE AREA
SANITARY SERVICING CLASS EA
BARRIE, ONTARIO
for
R.J. BURNSIDE & ASSOCIATES LIMITED

PETO MacCALLUM LTD.
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3 cc: R.J. Burnside & Associates Limited (+email)
1 cc: PML Barrie

PML Ref.: 14BF072
Report: 1 Revised
February 2015
February 27, 2015

Ms. Deanna De Forest
R.J. Burnside & Associates Limited
128 Wellington Street West, Suite 301
Barrie, Ontario
L4N 8J6

Dear Ms. De Forest

Preliminary Geotechnical Assessment
Foster Drive Area
Sanitary Servicing Class EA
Barrie, Ontario

Peto MacCallum Ltd. (PML) is pleased to present the results of the preliminary geotechnical assessment recently completed for the above noted project. Authorization for the work was provided by Ms. De Forest, in an email dated October 15, 2014.

R.J. Burnside & Associates Limited (RJB) is conducting a Municipal Class EA for the City of Barrie, for the Foster Drive Area Sanitary Servicing. The improvements will include a gravity sanitary sewer and road reconstruction. The study area limits are shown in Drawing 1, appended, and comprise a residential setting including Foster Drive, MacLaren Avenue, Merrett Drive, Garson Street, and Yeates Avenue. Within the study area the topographic high point of the site is near the mid-point of Garson Street (elevation 254), sloping down a few meters in all directions (down to about elevation 251 to 250). North of Merrett Drive the site slopes down about 5 to 10 m to elevation 240 to 245 on Foster Drive, and continues to drop toward the northwest corner of the site, along Foster Drive, to about elevation 236.

Two improvement options were provided for our review, referred to as the Shallow Option and the Deep Option. Details of each solution are described later in the report.

The purpose of this desk top assessment was to review existing geotechnical borehole information provided by the Client, and based on this information, provide preliminary geotechnical commentary on the sewer installation options, and road construction.
The comments and recommendations provided in this report are based on the subsurface conditions in the existing borehole information provided for our review. It is noted that the boreholes were carried out between 7 and 15 years ago and near surface conditions may have changed since that time.

**SUMMARIZED SUBSURFACE CONDITIONS**

The following reports were provided for our review:

- Geotechnical Report, dated May 1999 for Little Avenue between Yonge Street and Maclaren Avenue, prepared by Soil Engineers Ltd., (1999 Soil Eng report). Boreholes 1 to 4 from this report will be referred to as Boreholes 1999-1 to 1999-4;

- Geotechnical Report, dated May 2003 for Watermain and Future Sanitary Sewer on Foster Drive, prepared by PML, (2003 PML report). Boreholes 1 to 4 from this report will be referred to as Boreholes 2003-1 to 2003-4.

- Geotechnical Report, dated January 2008 for Residential Development and Road Reconstruction on Foster Drive, prepared by Soil Engineers Ltd., (2008 Soil Eng report). Boreholes 1 to 9 from this report will be referred to as Boreholes 2008-1 to 2008-9;

- Hydrogeological Report, dated November 2007, for proposed Urban Subdivision, Merrett Drive and Foster Drive, prepared by Goffco Limited. Boreholes 2008-1 to 2008-9 from the Soil Engineers Ltd. 2008 study were used by Goffco Limited.

Reference is made to the appended Log of Borehole sheets from the above noted reports, for details of the subsurface conditions, including soil classifications, pavement component thicknesses, inferred stratigraphy, Standard Penetration test N values, ground water observations and the results of laboratory moisture content determinations.
Pavement

All boreholes, except Boreholes 2008-1 to 2008-5, were drilled through existing roads. The table below provides a summary of the pavement component thicknesses.

<table>
<thead>
<tr>
<th>Borehole</th>
<th>Asphalt (mm)</th>
<th>Granular Base (mm)</th>
<th>Granular Subbase (mm)</th>
<th>Total Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999 Soil Eng Report – Little Avenue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999-1</td>
<td>30</td>
<td>400</td>
<td>--</td>
<td>430</td>
</tr>
<tr>
<td>1999-2</td>
<td>25</td>
<td>330</td>
<td>--</td>
<td>355</td>
</tr>
<tr>
<td>1999-3</td>
<td>25</td>
<td>450</td>
<td>--</td>
<td>475</td>
</tr>
<tr>
<td>1999-4</td>
<td>25</td>
<td>300</td>
<td>--</td>
<td>325</td>
</tr>
<tr>
<td></td>
<td>2003 PML Report – Foster Drive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003-1</td>
<td>40</td>
<td>130</td>
<td>130</td>
<td>300</td>
</tr>
<tr>
<td>2003-2</td>
<td>30</td>
<td>170</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>2003-3</td>
<td>40</td>
<td>140</td>
<td>--</td>
<td>180</td>
</tr>
<tr>
<td>2003-4</td>
<td>30</td>
<td>170</td>
<td>--</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>2008 Soil Eng Report – Foster Drive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008-6</td>
<td>25</td>
<td>250</td>
<td>165</td>
<td>433</td>
</tr>
<tr>
<td>2008-7</td>
<td>35</td>
<td>--</td>
<td>--</td>
<td>35</td>
</tr>
<tr>
<td>2008-8</td>
<td>25</td>
<td>250</td>
<td>--</td>
<td>275</td>
</tr>
<tr>
<td>2008-9</td>
<td>60</td>
<td>540</td>
<td>--</td>
<td>600</td>
</tr>
</tbody>
</table>

Topsoil

Topsoil was encountered at the surface of Boreholes 2008-1 to 2008-5 and was 280 to 600 mm thick.

Buried topsoil was encountered under the pavement structure in Borehole 1999-3 and 1999-4, being 300 mm thick.
Fill

Fill was encountered below the pavement structure in Boreholes 2003-1 to 2003-4 and 2008-6 to 2008-8. The fill extended to 0.8 to 1.6 m depth. The fill was variable and comprised silty sand, silty clay, and sandy silt, with trace gravel and organics noted locally. The fill was moist to very moist, with moisture contents of 6 to 14%.

Sandy Silt

A local sandy silt layer was revealed in Borehole 2003-3, below the fill to 2.1 m depth. The material was compact and moist (9%).

Silty Sand

A local silty sand layer was revealed in Borehole 2008-9, below the pavement to 1.5 m depth. The material was compact and moist (7%).

Till

A major till deposit dominates the site below the thin upper soil layers. It was revealed in all boreholes and extended to the 2.0 to 9.6 m depth of exploration. The till matrix was variable comprising silty sand, sandy silt or silty clay, with trace gravel. Cobbles and boulders were noted. The till was compact to very dense or very stiff to hard. Moisture contents ranged from 2 to 25%, typically less than 10%. The till was generally moist and noted to have wet layers. In Boreholes 2003-1 to 2003-4 the till was observed to be wet and grey below 3.0 to 4.5 m depth.
Ground Water

The table below summarizes the ground water level observations in the boreholes upon completion, and in standpipe installed in some of the boreholes:

<table>
<thead>
<tr>
<th>Borehole</th>
<th>Water level Upon Completion Date / Depth (m)/ Elev.</th>
<th>Water Level in Standpipe Date / Depth (m)/ Elev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-1</td>
<td>May 1999 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>1999-2</td>
<td>May 1999 2.4/252.7</td>
<td>N/A</td>
</tr>
<tr>
<td>1999-3</td>
<td>May 1999 4.0/249.6</td>
<td>N/A</td>
</tr>
<tr>
<td>1999-4</td>
<td>May 1999 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2003-1</td>
<td>March 2003 4.9/232.3</td>
<td>N/A</td>
</tr>
<tr>
<td>2003-2</td>
<td>March 2003 2.4/236.0</td>
<td>N/A</td>
</tr>
<tr>
<td>2003-3</td>
<td>March 2003 4.7/236.2</td>
<td>N/A</td>
</tr>
<tr>
<td>2003-4</td>
<td>March 2003 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-1</td>
<td>September 2007 No Water</td>
<td>Oct 24, 2007 3.05/237.95</td>
</tr>
<tr>
<td>2008-3</td>
<td>September 2007 No Water</td>
<td>Oct 24, 2007 No Water</td>
</tr>
<tr>
<td>2008-4</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-5</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-6</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-7</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-8</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
<tr>
<td>2008-9</td>
<td>September 2007 No Water</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Based on the measurements above and review of the moisture content profile, there is local perched water in the fill and local silty sand and sandy silt above the less pervious till. Wet layers were noted in the till along the low lying part of the site on Foster Drive, with some boreholes noting the till material being wet and grey below about 3.0 to 4.5 m depth.

Ground water levels will fluctuate seasonally in response to variations in precipitation.

GEOTECHNICAL ENGINEERING CONSIDERATIONS

RJB is conducting a Municipal Class EA for the City of Barrie, for the Foster Drive Area Sanitary Servicing. The improvements will include a gravity sanitary sewer and road reconstruction.

The two options provided for our review are referred to as the Shallow Option and the Deep Option. The alignment of the sewer is the same for both options as shown in a plan provided by the Client (presented in Drawing 2, attached). For the Deep Option the areas with deeper sewer inverts are shown in red. The invert depths of the two options are provided below.

- Shallow Option - Based on the information provided the inverts will range from 2.2 to 4.7 m below existing grade, locally up to 6 m in the higher ground in the south, corresponding to elevation 241 to 251, in the higher southern part of the site, and elevation 233 to 241, in the lower northern part of the site;

- Deep Option – In general the invert information provided shows the MacLaren Avenue section only slightly deeper (less than 1 m) than the Shallow Option. The Foster Drive section has inverts as much as 3 m deeper in the eastern part of the section. Overall, inverts range from 2.2 to 6.4 m below existing grade, corresponding to elevation 241 to 251 in the south, and elevation 232 to 241 in the north.
Sanitary Sewer

It is noted that the existing boreholes do not provide coverage of the study area; (particularly there are no boreholes along Merrett Drive) and in some instances the boreholes are not deep enough to address the proposed invert depths. When the design is finalized boreholes should be carried out to the appropriate depth to confirm subsurface conditions.

The table below summarizes the geotechnical considerations for each option:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SHALLOW OPTION</th>
<th>DEEP OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excavation</td>
<td>Excavation through fill and local native layers into the compact to very dense till. The occurrence of boulders and harder digging should be anticipated in the till. Trench excavation methods would be feasible. Trench boxes or shoring may be considered to reduce excavation size.</td>
<td>Same as Shallow Option. Due to the increased depth of the sewer, deeper excavation will be required in the compact to very dense till.</td>
</tr>
<tr>
<td>Ground Water Control</td>
<td>Local perched water can be expected in the higher southern part of the site where conventional sump pumping is anticipated to suffice. Along Foster Drive, in the low lying north part of the site, the design inverts are at 2.2 to 4.7 m depth. Considering water was encountered at 3.0 to 4.5 m depth, more aggressive ground water control will be required and a Permit-To-Take-Water will likely be required. Merrett Drive represents a transition where ground water control needs are not well defined.</td>
<td>Same as Shallow Option. The Foster Drive deep section will have more trench that is below the ground water table and greater ground water control will be required.</td>
</tr>
<tr>
<td>Subgrade</td>
<td>Anticipated to comprise compact to very dense till. No bearing capacity or settlement issues are anticipated. Conventional granular bedding should be satisfactory.</td>
<td>Same as Shallow Option</td>
</tr>
<tr>
<td>Backfill</td>
<td>Excavated material from trenches is expected to be generally acceptable for reuse as trench backfill. Some amount of wet soil in the north low lying part of the site, and cobbles/boulders in the till throughout the site can be anticipated, which should not be incorporated in the backfill.</td>
<td>Same as Shallow Option. More wet soil will be encountered in the base of the trench for the deep sewer sections.</td>
</tr>
</tbody>
</table>
Pavement Design and Construction

The existing roads are narrow local roads with a rural cross section. Traffic volumes for the roads were not provided, however the roads are considered to be lower volume residential streets.

The City Of Barrie current pavement standards require a minimum asphalt thickness of 110 mm.

Boreholes were not carried out on all the roads however based on the information available the road subgrade is anticipated to comprise variable fill or native sandy silt/silty sand with a moderate to high frost susceptibility.

Based on the above the following preliminary pavement structure is recommended for the roads.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>THICKNESS (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>110</td>
</tr>
<tr>
<td>Granular A Base Course</td>
<td>150</td>
</tr>
<tr>
<td>Granular B Subbase Course</td>
<td>400</td>
</tr>
<tr>
<td>Total Thickness</td>
<td>660</td>
</tr>
</tbody>
</table>

For reconstructed roads with urban cross section (curb and gutter) subdrains are recommended.
CLOSURE

We trust this report is complete within our terms of reference, and the information presented is sufficient for your present purposes. If you have any questions, or when we may be of further assistance, please do not hesitate to call our office.

Sincerely

Peto MacCallum Ltd.

Geoffrey R. White, P.Eng.
Associate
Manager Geotechnical and Geoenvironmental Services

GRWTLB:tc

Enclosures:
- List of Abbreviations
- Drawing 1 - Borehole Location Plan
- Drawing 2 - Sewer Alignment Drawing
LIST OF ABBREVIATIONS

PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

<table>
<thead>
<tr>
<th>CONSISTENCY</th>
<th>N (blows/0.3 m)</th>
<th>c (kPa)</th>
<th>DENSITY</th>
<th>N (blows/0.3 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Soft</td>
<td>0 - 2</td>
<td>0 - 12</td>
<td>Very Loose</td>
<td>0 - 4</td>
</tr>
<tr>
<td>Soft</td>
<td>2 - 4</td>
<td>12 - 25</td>
<td>Loose</td>
<td>4 - 10</td>
</tr>
<tr>
<td>Firm</td>
<td>4 - 8</td>
<td>25 - 50</td>
<td>Compact</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Stiff</td>
<td>8 - 15</td>
<td>50 - 100</td>
<td>Dense</td>
<td>30 - 50</td>
</tr>
<tr>
<td>Very Stiff</td>
<td>15 - 30</td>
<td>100 - 200</td>
<td>Very Dense</td>
<td>&gt; 50</td>
</tr>
<tr>
<td>Hard</td>
<td>&gt; 30</td>
<td>&gt; 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WTPL</td>
<td>Wetter Than Plastic Limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APL</td>
<td>About Plastic Limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTPL</td>
<td>Drier Than Plastic Limit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TYPE OF SAMPLE

<table>
<thead>
<tr>
<th>SS</th>
<th>WS</th>
<th>SB</th>
<th>AS</th>
<th>CS</th>
<th>ST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split Spoon</td>
<td>Washed Sample</td>
<td>Scraper Bucket Sample</td>
<td>Auger Sample</td>
<td>Chunk Sample</td>
<td>Slotted Tube Sample</td>
</tr>
<tr>
<td>TW</td>
<td>TP</td>
<td>OS</td>
<td>FS</td>
<td>RC</td>
<td>PH PM</td>
</tr>
<tr>
<td>Thinwall Open</td>
<td>Thinwall Piston</td>
<td>Oesterberg Sample</td>
<td>Foil Sample</td>
<td>Rock Core</td>
<td>Sample Advanced Hydraulically</td>
</tr>
</tbody>
</table>

SOIL TESTS

Qu Unconfined Compression  LV Laboratory Vane
Q Undrained Triaxial FV Field Vane
Qcu Consolidated Undrained Triaxial C Consolidation
Qd Drained Triaxial
# LOG OF BOREHOLE No. 1 and 2

**LOCATION:** Little Ave. between Yonge St. & MacLaren Ave.  
**JOB DESCRIPTION:** Proposed Road Reconstruction  
**METHOD OF BORING:** Flight-Auger  
**DATE:** May 11, 1999

<table>
<thead>
<tr>
<th>ELEV. m</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>PENETRATION RESISTANCE (N/0.03m)</th>
<th>WATER CONTENT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>DEPTH SCALE m</td>
<td>SHEAR STRENGTH (kN/m²)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TYPE</td>
<td>&quot;N&quot;</td>
<td>0</td>
</tr>
<tr>
<td>251.3</td>
<td>Pavement Surface</td>
<td>BH</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>0.0</td>
<td>30mm ASPHALTIC CONCRETE</td>
<td>1</td>
<td>AS</td>
<td>-</td>
</tr>
<tr>
<td>250.3</td>
<td>Brown, compact</td>
<td>2</td>
<td>DO</td>
<td>18</td>
</tr>
<tr>
<td>1.0</td>
<td>Brown, compact</td>
<td>3</td>
<td>DO</td>
<td>12</td>
</tr>
<tr>
<td>249.3</td>
<td>SILTY SAND, Till</td>
<td>4</td>
<td>DO</td>
<td>22</td>
</tr>
<tr>
<td>2.0</td>
<td>END OF BOREHOLE</td>
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<tr>
<td>255.1</td>
<td>Pavement Surface</td>
<td>BH</td>
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<td>3</td>
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<td>25mm ASPHALTIC CONCRETE</td>
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<td>AS</td>
<td>-</td>
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<td>330mm GRANULAR, Fill</td>
<td>2</td>
<td>DO</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Brown, loose to dense</td>
<td>3</td>
<td>DO</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>weathered</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILTY SAND, Till</td>
<td>4</td>
<td>DO</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>traces of gravel and clay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. cobbles and boulders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. fine sand seams</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>251.8</td>
<td>Brown, dense to very dense</td>
<td>5</td>
<td>DO</td>
<td>45</td>
</tr>
<tr>
<td>3.3</td>
<td>SILTY CLAY, Till</td>
<td>6</td>
<td>DO</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>sandy, a tr. of gravel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. cobbles and boulders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. fine sand and silty sand till layers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>246.5</td>
<td>END OF BOREHOLE</td>
<td></td>
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</tbody>
</table>

*Soil-Eng Limited*
<table>
<thead>
<tr>
<th>ELEV.</th>
<th>DEPTH</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>PENETRATION RESISTANCE (kg/cm²)</th>
<th>WATER LEVEL</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>No.</td>
<td>TYPE</td>
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<td>0.0</td>
<td>Pavement Surface</td>
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<td>AS</td>
<td>-</td>
</tr>
<tr>
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<td></td>
<td>25mm ASPHALTIC CONCRETE</td>
<td>2</td>
<td>DO</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450mm GRAVEL, Fill</td>
<td>3</td>
<td>DO</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300mm TOPSOIL</td>
<td>4</td>
<td>DO</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brown, loose to competent</td>
<td>5</td>
<td>DO</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>DO</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>250.6</td>
<td></td>
<td>7</td>
<td>DO</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>Brown, hard</td>
<td>8</td>
<td>DO</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td>DO</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>245.5</td>
<td></td>
<td>10</td>
<td>DO</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>4.9</td>
<td>END OF BOREHOLE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250.4</td>
<td>0.0</td>
<td>Pavement Surface</td>
<td>1</td>
<td>AS</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25mm ASPHALTIC CONCRETE</td>
<td>2</td>
<td>DO</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300mm GRAVEL, Fill</td>
<td>3</td>
<td>DO</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300mm TOPSOIL</td>
<td>4</td>
<td>DO</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brown, soft to hard</td>
<td>5</td>
<td>DO</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>DO</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>245.5</td>
<td></td>
<td>7</td>
<td>DO</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>4.9</td>
<td>END OF BOREHOLE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Log of Borehole No. 1

**Location:** Barrie, Ontario  
**Project:** Watermain and Septic Tank Sewer  
**Boring Method:** Continuous Flight Solid Stem Augers  
**Boring Date:** March 24, 2003  
**Engineer:** JF W  
**Technical RM:** [Signature]

## Soil Profile

<table>
<thead>
<tr>
<th>Depth (m)</th>
<th>Description</th>
<th>Sample</th>
<th>Linear Attenuation (mm)</th>
<th>Density (g/cm³)</th>
<th>Plasticity</th>
<th>Water Content (%)</th>
<th>Ground Water Observations and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.30</td>
<td>Pavement: 40 mm asphalt concrete, over 150 mm brown sand, some gravel, some silt, over 150 mm brown sand, some gravel and silt</td>
<td>1</td>
<td>321</td>
<td>65</td>
<td></td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>1.20</td>
<td>Fill: Dark Brown, mixed, silt, sand and gravel, with orange inclusions</td>
<td>2</td>
<td>324</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>1.50</td>
<td>Silty Silt: Dense, brown, sandy, silt (to ely sand, loose gravel), moist, with 0.0 to 0.05 clay layers</td>
<td>3</td>
<td>323</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td>Very dense</td>
<td>4</td>
<td>321</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>2.50</td>
<td>Grey, wet</td>
<td>5</td>
<td>322</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td></td>
<td>6</td>
<td>321</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>4.50</td>
<td></td>
<td>7</td>
<td>321</td>
<td>65</td>
<td>3.8</td>
<td>93</td>
<td></td>
</tr>
</tbody>
</table>

**Borehole Terminated at 5.50 m**

Upon completion of boring, Water at 4.9 m, Cave at 5.8 m

---

**Notes:**

LOG OF BOREHOLE 23F/11/2003/316.PDF @P509/005.CDF 2003/04/03

**Checked By:** [Signature]
# LOG OF BOREHOLE NO. 2

**PRODUCT:** Watermain and Future Sanitary Sewer, Foster Drive  
**LOCATION:** Barrie, Ontario  
**BORING DATE:** March 24, 2003  
**ENGINEER:** JPW  
**TECHNICIAN:** RM

## BOREHOLE PROFILE

<table>
<thead>
<tr>
<th>DEPTH (M)</th>
<th>DESCRIPTION</th>
<th>SOIL TYPE</th>
<th>SAMPLED</th>
<th>BLOW COUNT (SAMPLE)</th>
<th>SUGAR STEMMING (CPM)</th>
<th>LIQUID LIMIT (%)</th>
<th>PLASTIC LIMIT (%)</th>
<th>WATER CONTENT (%)</th>
<th>OBSERVATIONS AND REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>Ground Elevation 238.36</td>
<td></td>
<td></td>
<td>220</td>
<td>60</td>
<td>80/22</td>
<td></td>
<td>85</td>
<td>Ground Elevation 238.36</td>
</tr>
<tr>
<td>1.40</td>
<td>Pavement: 30 mm asphalt concrete, over 170 mm brown loam, some gravel, some silt, over larger gravel, trace gravel</td>
<td>SS</td>
<td>227</td>
<td></td>
<td></td>
<td></td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10</td>
<td>Sandy Fill: Dark brown, sandy silt to silty sand, trace gravel, permeable fill</td>
<td>SS</td>
<td>228</td>
<td>80</td>
<td>85</td>
<td>85</td>
<td>85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>Silt Fill: Compact, brown, sandy silt, trace gravel, moist very stiff with wet sandy layer</td>
<td>SS</td>
<td>229</td>
<td>60</td>
<td>85</td>
<td>50</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.50</td>
<td>Gray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.20</td>
<td>BOREHOLE TERMINATED AT 6.20 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upon completion of boring Water at 2.6 m above at 5.8 m</td>
</tr>
</tbody>
</table>

**NOTES**

**CHECKED BY:** [Signature]
# LOG OF BOREHOLE NO. 4

**PROJECT:** Wetamatt and Putlaw Sanitary Sewer, Foster Drive  
**LOCATION:** Barra, Ontario  
**BORING METHOD:** Continuous Flight Solid Stem Auger  
**BORING DATE:** March 24, 2003  
**ENGINEER:** JFW  
**TECHNICIAN:** RM

<table>
<thead>
<tr>
<th>DEPTH (m)</th>
<th>DESCRIPTION</th>
<th>SOIL TYPE</th>
<th>DYNAMIC SHEAR STRENGTH</th>
<th>DYNAMIC CONE PENETRATION</th>
<th>LIQUID LIMIT</th>
<th>PLASTIC LIMIT</th>
<th>WATER CONTENT</th>
<th>GROUND WATER COORDINATION AND CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>Pavement: 50 mm asphaltic concrete, over 170 mm brown, sand and gravel, sparse silt</td>
<td>AS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.00</td>
<td>Silt: Breen to very dense, brown, sandy silt, trace gravel, moist</td>
<td>SS</td>
<td>32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.00</td>
<td>Grey</td>
<td>SS</td>
<td>60/620/0mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.00</td>
<td>Grey</td>
<td>SS</td>
<td>85/250/0mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.00</td>
<td>Grey</td>
<td>SS</td>
<td>65/200/0mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.00</td>
<td>Borehole terminated at 7.00 m</td>
<td>SS</td>
<td>50/150/0mm</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Upon completion of augering:  
No base water  
No caves

**NOTES:**

**CHECKED BY:** [Signature]

**PAGE:** 1 of 1
**JOB NO.:** 0707-S114  
**LOG OF BOREHOLE NO.:** 1  
**FIGURE NO.:** 1

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barre

**METHOD OF BORING:** Flight-Augur

**DATE:** September 5, 2007

### Soil Description

<table>
<thead>
<tr>
<th>Elev. Depth (m)</th>
<th>Soil Description</th>
<th>Samples</th>
<th>N-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>241.0</td>
<td>Ground Surface</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>60cm Topsoil</td>
<td>1 DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sand layer</td>
<td>2A DO</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Brown, dense to very dense</td>
<td>2B DO</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>SILTY SAND, TILL</td>
<td>3 DO</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>traces of clay and gravel, occ. all seams and layers, cobbles and boulders</td>
<td>4 DO</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 DO</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 DO</td>
<td>100+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 DO</td>
<td>100+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 DO</td>
<td>100+</td>
</tr>
</tbody>
</table>

### Penetration Resistance

- **Penetration Resistance (blows/0.3m)**
  - 10
  - 50
  - 100
  - 150
  - 200

### Shear Strength (kN/m2)

- **X**
  - 50
  - 100
  - 150
  - 200

### Atterberg Limits

- **Water Content (%)**
  - 6
  - 16
  - 26
  - 36
  - 46

**WATER LEVEL**

Dry on completion

---

**Soil Engineers Ltd.**
**JOB NO.: 0707-S114**

**LOG OF BOREHOLE NO.: 1**

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Auger

**DATE:** September 5, 2007

<table>
<thead>
<tr>
<th>Elev. (m)</th>
<th>Soil Description Cont’d</th>
<th>Number</th>
<th>Type</th>
<th>N-Value</th>
<th>X</th>
<th>Depth Scale (m)</th>
<th>Shear Strength (kN/m²)</th>
<th>Atterberg Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>233.0</td>
<td>Brown, very dense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>231.4</td>
<td>Silty sand, till</td>
<td>0</td>
<td>DO</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**END OF BOREHOLE**

- Installed 50mm ø standpipe to 0.1 m.
- Sand backfill from 1.2 to 0.1 m.
- Bentonite seal from 0.0 to 1.2 m.
- Provided with a steel protective casing.

---

*Soil Engineers Ltd.*
**LOG OF BOREHOLE NO.: 3**

**JOB NO.:** 0707-S114

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Auger

**DATE:** September 6, 2007

<table>
<thead>
<tr>
<th>Elev. Depth (m)</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>PENETRATION RESISTANCE (blows/0.3m)</th>
<th>SHEAR STRENGTH (kN/m2)</th>
<th>WATER CONTENT (%)</th>
<th>Atterberg Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Ground Surface</td>
<td>1A DO</td>
<td>0</td>
<td>X</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1B DO</td>
<td>0</td>
<td>X</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>30cm TOPSOIL</td>
<td>2 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>249.3</td>
<td>SILTY SAND, TILL</td>
<td>7 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>243.3</td>
<td>END OF BOREHOLE</td>
<td>9 DO</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Soil Engineers Ltd.**

*Installed 50-mm a standpipe to 0.1 m. Sand backfill from 0.0 to 0.1 m. Bentonite seal from 0.0 to 0.9 m. Provided with a steel protective casing.*
**LOG OF BOREHOLE NO.: 4**

**JOB NO.:** 0707-5114  
**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development  
**JOB LOCATION:** Foster Drive, City of Barrie  
**METHOD OF BORING:** Flight-Auger  
**DATE:** September 6, 2007

<table>
<thead>
<tr>
<th>Elev. Depth (m)</th>
<th>Soil Description</th>
<th>Samples</th>
<th>N-Vale</th>
<th>Number</th>
<th>Type</th>
<th>N-Vale</th>
<th>Shear Strength (kN/m²)</th>
<th>Penetration Resistance (blows/0.3m)</th>
<th>Atterberg Limits</th>
<th>Water Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>245.0</td>
<td>Ground Surface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>28cm TOPSOIL</td>
<td></td>
<td></td>
<td>1A</td>
<td>DO</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fine to coarse sand</td>
<td></td>
<td></td>
<td>1B</td>
<td>DO</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>weathered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown, compact to very dense</td>
<td></td>
<td></td>
<td>2</td>
<td>DO</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fine to coarse sand</td>
<td></td>
<td></td>
<td>3</td>
<td>DO</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Silty sand, till</td>
<td></td>
<td></td>
<td>4</td>
<td>DO</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fine to coarse sand</td>
<td></td>
<td></td>
<td>5</td>
<td>DO</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>traces of clay and gravel, occ. small stones and layers, cobbles and boulders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>240.0</td>
<td>END OF BOREHOLE</td>
<td></td>
<td></td>
<td>6</td>
<td>DO</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WATER LEVEL:**
- Dry on completion

---

**Soil Engineers Ltd.**
**LOG OF BOREHOLE NO.: 5**

**JOB NO.: 0707-S114**

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Augur

**DATE:** September 6, 2007

<table>
<thead>
<tr>
<th>Elev. (m)</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>N-Value</th>
<th>Depth Scale (m)</th>
<th>Shear Strength (kN/m²)</th>
<th>Penetration Resistance (blows/0.3m)</th>
<th>Atterberg Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>245.6</td>
<td>Ground Surface</td>
<td></td>
<td></td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>30cm TOPSOIL</td>
<td>1A DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown, stiff to hard, weathered</td>
<td>1B DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILTY CLAY, TII</td>
<td>2A DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>some sand and a trace of gravel</td>
<td>2B DO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. all seams and layers, cobbles and boulders</td>
<td>3 DO 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>243.6</td>
<td>Brown, dense to very dense</td>
<td>4 DO 63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILTY SAND, TII</td>
<td>5 DO 41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>traces of clay and gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>occ. all seams and layers, cobbles and boulders</td>
<td>6 DO 70</td>
<td></td>
<td></td>
<td></td>
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</tr>
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</table>

**END OF BOREHOLE**

---

Soil Engineers Ltd.
**LOG OF BOREHOLE NO.: 6**

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Augur

**DATE:** September 6, 2007

<table>
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<th>Elev. Depth (m)</th>
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<th>SAMPLES</th>
<th>Depth Scale (m)</th>
<th>Shear Strength (kN/m²)</th>
<th>Atterberg Limits</th>
<th>WATER LEVEL</th>
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<tbody>
<tr>
<td>0.0</td>
<td>Pavement Surface</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>25mm ASPHALTIC CONCRETE</td>
<td></td>
<td>1</td>
<td>A5</td>
<td>-</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Brown</td>
<td>2</td>
<td>DO</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SILTY SAND, FIII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.9</td>
<td>Brown, very stiff to hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILTY CLAY, III</td>
<td>3</td>
<td>DO</td>
<td>22</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>some sand and a trace of gravel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>occ. silt seams and layers, cobbles and boulders</td>
<td>5</td>
<td>DO</td>
<td>52</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.5</td>
<td>END OF BOREHOLE</td>
<td></td>
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</tbody>
</table>
**LOG OF BOREHOLE NO.: 7**

**JOB NO.: 0707-6114**

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Augur

**DATE:** September 6, 2007

<table>
<thead>
<tr>
<th>Elev. Depth (m)</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>Penetration Resistance (b/30m)</th>
<th>Water Content (%)</th>
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<tr>
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<td></td>
<td>Brown</td>
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<td>2 DO 80</td>
<td>0 10 12 14 16 18 20 25 30</td>
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<td></td>
<td>with a trace of topsoil inclusions</td>
<td>3 DO 80</td>
<td>0 10 12 14 16 18 20 25 30</td>
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<tr>
<td>1.5</td>
<td>Brown, compact</td>
<td>SILTY SAND, TII</td>
<td>4 DO 25</td>
<td>0 10 12 14 16 18 20 25 30</td>
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<tr>
<td>2.2</td>
<td>Brown, hard</td>
<td>SILTY CLAY, TIII</td>
<td>8 DO 100+</td>
<td>0 10 12 14 16 18 20 25 30</td>
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<tr>
<td>2.9</td>
<td>Refusal to auger</td>
<td>END OF BOREHOLE</td>
<td></td>
<td>0 10 12 14 16 18 20 25 30</td>
</tr>
</tbody>
</table>

**Shear Strength (kN/m2)**

**Atterberg Limits**

Dry or completion

---

Soil Engineers Ltd.
**LOG OF BOREHOLE NO.: 8**

**JOB NO.: 0707-S114**

**JOB DESCRIPTION:** Proposed Road Reconstruction and Residential Development

**JOB LOCATION:** Foster Drive, City of Barrie

**METHOD OF BORING:** Flight-Augur

**DATE:** September 6, 2007

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<th>Samples</th>
<th>Shear Strength (kN/m²)</th>
<th>Atterberg Limits</th>
<th>Water Content (%)</th>
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<td>26mm ASPHALTIC</td>
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<tr>
<td></td>
<td>CONCRETE</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>260mm GRANULAR,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brown</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILTY CLAY, Fill</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>some topsoil</td>
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</tr>
<tr>
<td></td>
<td>inclusions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.2</td>
<td>Brown, compact</td>
<td>3 DO</td>
<td>100+</td>
<td></td>
<td>5 10 15 20 25 30</td>
</tr>
<tr>
<td></td>
<td>to very dense</td>
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</tr>
<tr>
<td></td>
<td>SILTY SAND, Till</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>traces of clay</td>
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</tr>
<tr>
<td></td>
<td>and gravel</td>
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<tr>
<td></td>
<td>occ. all seams</td>
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</tr>
<tr>
<td></td>
<td>and layers,</td>
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<td></td>
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<tr>
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<td>cobbles and</td>
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<td></td>
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<tr>
<td></td>
<td>boulders</td>
<td></td>
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<tr>
<td>2.1</td>
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<td>4 DO</td>
<td>100+</td>
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<td>occ. all</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>boulders</td>
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<td></td>
</tr>
<tr>
<td>3.5</td>
<td>END OF BOREHOLE</td>
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**Soil Engineers Ltd.**
<table>
<thead>
<tr>
<th>Elev. Depth (m)</th>
<th>SOIL DESCRIPTION</th>
<th>SAMPLES</th>
<th>PENETRATION RESISTANCE (b/100mm)</th>
<th>ATTERBERG LIMITS</th>
<th>WATER CONTENT (%)</th>
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<td>60mm ASPHALTIC CONCRETE - Brown GRANULAR, FILL</td>
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<td>Wl</td>
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<tr>
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<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
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<tr>
<td>1.8</td>
<td>Brown, stiff to very stiff SILTY CLAY, TILL</td>
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<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
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<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
</tr>
<tr>
<td>3.6</td>
<td>END OF BOREHOLE</td>
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<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
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<td></td>
<td></td>
<td>5 DO 14</td>
<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
<td>1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31</td>
</tr>
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</table>

**Soil Engineers Ltd.**
Arborist Report Foster Area
Environmental Assessment

City of Barrie

R.J. Burnside & Associates Limited
292 Speedvale Avenue West Unit 20
Guelph ON N1H 1C4 CANADA

December 16, 2014
300036021.0000
City of Barrie

Arborist Report Foster Area Environmental Assessment
December 16, 2014

Distribution List

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Record of Revisions

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<td>December 16, 2014</td>
<td>Initial Submission of Draft EA to City of Barrie</td>
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</table>

R.J. Burnside & Associates Limited

Report Prepared By:

[Signature]

Certified Arborist and Terrestrial Ecologist
KB:sr

Report Reviewed By:

[Signature]

Deanna De Forest, B.Sc.
Environmental Assessment and Regulatory Coordinator
DDF:sr

R.J. Burnside & Associates Limited
036021 Foster Drive Arborist report_December 2014
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2.0 Methodology .................................................................................................................. 1  
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   4.2 Tree Transplant ......................................................................................................... 3  
5.0 Conclusion ...................................................................................................................... 3  

# Appendices

Appendix 1 Trees Studies: Methodology  
Appendix 2 Tree Assessment Data  
Appendix 3 Properties with Front Yard Features  
Appendix 4 Tree Studies: Limitations
Disclaimer

This document contains proprietary and confidential information. As such, it is for the sole use of the addressee and R.J. Burnside & Associates Limited, and proprietary information shall not be disclosed, in any manner, to a third party except by the express written permission of R.J. Burnside & Associates Limited. This document is deemed to be the intellectual property of R.J. Burnside & Associates Limited in accordance with Canadian copyright law.
1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by the City of Barrie to complete a Class Environmental Assessment (EA), Schedule B for Wastewater Servicing of the Foster Drive area. The draft EA report, of which this report is a subcomponent, is being prepared for review by City staff prior to the Public Information Centre (PIC).

This arborist report is an investigation of trees within the study area that may influence the design of the servicing. Publicly and privately owned trees are a consideration of the design and their preservation will be accommodated where reasonable. The methodology used to assess the trees, and a summary of findings and general considerations to enhance tree preservation are provided.

The components listed below comprise this study:

- Appendix 1 - Tree Studies: Methodology
- Appendix 2 - Tree Assessment Data
- Appendix 3 - Properties with Front Yard Features
- Appendix 4 - Tree Studies: Limitations

Tree locations and measurements (i.e., crown reserves) are provided on the comprehensive drawings submitted with the draft EA.

2.0 Methodology

The Foster Drive area is comprised of the following streets:

- Foster Drive
- MacLaren Avenue
- Garson Street
- Yeates Avenue
- Merrett Drive

The tree assessment was completed by Kevin Butt, ISA Certified Arborist on October 8, 2014 and November 11, 2014. Trees subject to the assessment are:

- Trees within the public road right-of-way.
- Private trees in front yards.

The survey provided by the City was used as a base for locating the trees. Locations of trees not included in the survey were estimated during the field assessment.
Data collected for each tree are:

- Species (botanical and common names).
- Diameter at Breast Height - DBH (measured in cm).
- Minimum Tree Protection Zone: calculated as the Tree Protection Zone doubled plus the trees' diameter at breast height (measured in m).
- Condition (Good, Fair, Poor, Dead).

Appendix 1 provides Tree Studies: Methodology, a description of a standard methodology used to assess trees.

Tree assessment data is provided in Appendix 2 of this report. Recommendations of tree removal are limited to the existing condition of the tree (i.e., assigned condition rating is poor or dead). A detailed analysis of impacts to trees resulting from the proposed construction, including excavation to the property limit will be completed at the detailed design stage. Opportunities for repositioning laterals will be investigated and locations of tree protection fence will be provided at the detailed design stage.

Appendix 3 provides a list of properties in the study areas with front yard features. These properties contain landscaping beyond manicured turfgrass and the trees illustrated in the data and drawings.

Appendix 4 provides Tree Studies: Limitations, an explanation of constraints that the arborist works within and factors (e.g., seasonal) that limit a data collection in a tree investigation.

### 3.0 Findings

A total of 248 trees are included in the inventory. Trees are generally in good condition and are recommended for preservation. Measures to reduce impacts or removal of these trees with the proposed design should be considered.

Only eight trees are identified to be in poor condition. These trees assigned a poor condition rating are located at the following addresses:

- 204 Garson Street (tree #4) – private tree
- 212 Garson Street (tree #9) – private tree
- 34 Maclaren Avenue (tree #18) – public tree
- 209 Garson Street (tree #28) – private tree
- 217 Merrett Drive (tree #53) – private tree
- 246 Foster Drive (tree #124) – private tree
- 218 Foster Drive (tree #171) – private tree
- 219 Foster Drive (tree #211) – private tree
Removal is recommended for trees on private land. It is recommended that homeowners are notified in cases where these trees are on their private land.

4.0 Recommendations

4.1 Construction

All areas that will be used for construction vehicle access and material stockpile must not occur within the minimum tree protection zones of trees that will be retained in the final design. Drawings provided to the contractor(s) must identify all trees to be retained. Orange plastic mesh snow fence installed at the limits of the tree protection zone where trees are located in the road right-of-way. Tree protection hoarding as per City standards should be used to protect privately-owned trees adjacent to construction areas. Additional measures as provided in the Tree Protection Manual (Version 2, Revised January 2010) should also be considered.

4.2 Tree Transplant

It may be reasonable to transplant immature trees if their location is in conflict with the proposed construction. Ideally, trees removed from their existing locations should be installed in their final location. No grading (cut or fill) should occur adjacent to the trees once the trees are installed at their final recipient sites. Trees moved during their dormant period (i.e., late fall, winter, early spring) generally perform better than trees in the leaf-on period; however trees can be moved outside of this optimal period if adequate soil moisture, fertilization and other care are performed. Opportunities for tree transplant will be investigated at the detailed design stage.

5.0 Conclusion

This study has assigned the majority of the existing trees in the road right-of-ways and front yards a ‘good’ condition rating. Efforts to minimize impacts to these trees will be investigated in future phases of the design of the waste water servicing.
Appendix 1

Trees Studies: Methodology
Tree Studies: Methodology

The list provided below represents all data that may be collected in the analysis of trees. Methodology descriptions should be reviewed with the column headings provided in the data. The columns represent the scope and extent of the tree assessment carried out.

**Tree #:** This number may be assigned by the tree assessor or predetermined by the surveyor or client. The number corresponds with the tree tag affixed to the tree, if tree tagging is part of the study’s scope.

**Species Name:** Botanical name of the species.

**Common Name:** Commonly used English name.

**DBH (cm):** Diameter at Breast Height measured using DBH tape or tree caliper.

**Crown Reserve (m):** Average measurement of the diameter or width of the dripline (extent of branches from the trunk). Generally the trunk is trunk is the midpoint of this measurement. It is represented on the drawing(s) as a circle. This measurement may not be used in the subject jurisdiction.

**TPZ (m):** Tree protection zone required based on the required setback from the trunk, as designated by the agency (e.g. municipality). The TPZ is calculated by doubling the setback and including the trunk diameter to create a diameter of circle of protection around the tree.

**HT (m):** Estimated height from the base to the top of the tree.

**Condition (G, F, P, D):** A qualitative score of the combination of biological health and structural condition assigned as Good, Fair, Poor or Dead.

**Preserve or Remove Reason:** Reasons for recommended preservation or removal assigned in the tree study. Reasons for recommended removal may result from:

- Existing condition (critical deficiency such as severe crown dieback)
- Anticipated impacts of the proposed development (i.e., tree location is in conflict with construction element)
- Both existing condition and anticipated impacts

A checkmark is provided in the appropriate column.

**Description of Reason:** Rationale for the assignment of preservation or removal rationale based on analysis of collected data and proposed development.

**Transplant Potential (G, F, P):** Assignment of qualitative measure of reestablishment success of a tree when removed from its existing location and moved to another or removed and stored for replanting following construction. An assignment of Good, Fair or Poor is assigned based on a species' ability to reestablish, condition of the tree, new growing conditions, etc.
Appendix 2

Tree Assessment Data
## Appendix 2. Tree Assessment Data

<table>
<thead>
<tr>
<th>Tree #</th>
<th>Species</th>
<th>Common Name</th>
<th>DBH (cm)</th>
<th>Minimum TPZ (m)</th>
<th>Crown Reserve (m)</th>
<th>Condition (G,F,P,D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Picea pungens 'Glauc'a</em></td>
<td>Colorado Blue Spruce</td>
<td>8</td>
<td>2.1</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>2</td>
<td><em>Malus coronaria</em></td>
<td>Crabapple</td>
<td>26,29,34</td>
<td>5.5</td>
<td>8</td>
<td>G(F)</td>
</tr>
<tr>
<td>3</td>
<td><em>Malus coronaria</em></td>
<td>Crabapple</td>
<td>36,35,22</td>
<td>5.6</td>
<td>8</td>
<td>G(F)</td>
</tr>
<tr>
<td>4</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>90</td>
<td>8.9</td>
<td>12</td>
<td>P</td>
</tr>
<tr>
<td>5</td>
<td><em>Betula papyrifera</em></td>
<td>White Birch</td>
<td>30,34</td>
<td>5.5</td>
<td>12</td>
<td>F</td>
</tr>
<tr>
<td>6</td>
<td><em>Thuja occidentalis</em></td>
<td>Eastern White Cedar</td>
<td>6-8</td>
<td>n/a</td>
<td>3</td>
<td>G</td>
</tr>
<tr>
<td>7</td>
<td><em>Magnolia sp.</em></td>
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<td>n/a</td>
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<td>G</td>
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<tr>
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<td><em>Acer platanoides</em></td>
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<td>2.1</td>
<td>5</td>
<td>G</td>
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<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>36</td>
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<td>8</td>
<td>P</td>
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<td><em>Acer rubrum</em></td>
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<td>F</td>
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<td>Horse-chestnut</td>
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<td>2.1</td>
<td>3</td>
<td>G</td>
</tr>
<tr>
<td>12</td>
<td><em>Acer rubrum</em></td>
<td>Red Maple</td>
<td>43</td>
<td>5.4</td>
<td>7</td>
<td>G</td>
</tr>
<tr>
<td>13</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>58</td>
<td>5.6</td>
<td>15</td>
<td>G</td>
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<td><em>Betula papyrifera</em></td>
<td>White Birch</td>
<td>25,32,18</td>
<td>4.4</td>
<td>12</td>
<td>G</td>
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### Appendix 2. Tree Assessment Data

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<th>Minimum TPZ (m)</th>
<th>Crown Reserve (m)</th>
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<td>Crown Reserve (m)</td>
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<td>Carolina Poplar</td>
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<td>Black Cherry</td>
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<td>3.1</td>
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<td>71</td>
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<td>F</td>
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<tr>
<td>185</td>
<td><em>Thuja occidentalis</em> (12 stems)</td>
<td>Eastern White Cedar</td>
<td>10-14</td>
<td>n/a</td>
<td>3</td>
<td>G(F)</td>
</tr>
<tr>
<td>186</td>
<td><em>Tilia americana</em></td>
<td>American Basswood</td>
<td>49,37,27</td>
<td>n/a</td>
<td>10</td>
<td>G</td>
</tr>
<tr>
<td>187</td>
<td><em>Betula alleghaniensis</em></td>
<td>Yellow Birch</td>
<td>18</td>
<td>3.2</td>
<td>8</td>
<td>G</td>
</tr>
<tr>
<td>188</td>
<td>Juniperus sp.</td>
<td>Juniper sp.</td>
<td>18</td>
<td>3.2</td>
<td>6</td>
<td>G</td>
</tr>
<tr>
<td>189</td>
<td><em>Betula papyrifera</em></td>
<td>White Birch</td>
<td>14,18,28,16</td>
<td>5.4</td>
<td>10</td>
<td>G</td>
</tr>
<tr>
<td>190</td>
<td><em>Picea pungens</em> 'Glaucia'</td>
<td>Colorado Blue Spruce</td>
<td>21</td>
<td>3.2</td>
<td>5</td>
<td>G</td>
</tr>
<tr>
<td>191</td>
<td><em>Picea pungens</em> 'Glaucia'</td>
<td>Colorado Blue Spruce</td>
<td>14</td>
<td>3.1</td>
<td>2</td>
<td>D</td>
</tr>
<tr>
<td>192</td>
<td><em>Picea pungens</em> 'Glaucia'</td>
<td>Colorado Blue Spruce</td>
<td>16</td>
<td>3.2</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>193</td>
<td><em>Picea pungens</em> 'Glaucia'</td>
<td>Colorado Blue Spruce</td>
<td>16</td>
<td>3.2</td>
<td>4</td>
<td>F</td>
</tr>
<tr>
<td>194</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>47</td>
<td>5.5</td>
<td>12</td>
<td>G</td>
</tr>
<tr>
<td>195</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>33,34,39</td>
<td>6.6</td>
<td>15</td>
<td>G(F)</td>
</tr>
<tr>
<td>196</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>22</td>
<td>3.2</td>
<td>6</td>
<td>F(P)</td>
</tr>
<tr>
<td>197</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>24</td>
<td>3.2</td>
<td>6</td>
<td>G</td>
</tr>
<tr>
<td>198</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>40</td>
<td>4.4</td>
<td>12</td>
<td>G</td>
</tr>
<tr>
<td>199</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>41</td>
<td>5.4</td>
<td>12</td>
<td>G</td>
</tr>
<tr>
<td>200</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>42</td>
<td>5.4</td>
<td>8</td>
<td>G</td>
</tr>
<tr>
<td>201</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>42</td>
<td>3.2</td>
<td>3</td>
<td>G</td>
</tr>
<tr>
<td>202</td>
<td><em>Picea glauca</em> (9 stems)</td>
<td>White Spruce</td>
<td>8-40</td>
<td>n/a</td>
<td>2-5</td>
<td>G-F</td>
</tr>
<tr>
<td>203</td>
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<td>White Spruce</td>
<td>16</td>
<td>3.2</td>
<td>4</td>
<td>F</td>
</tr>
<tr>
<td>204</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>48</td>
<td>5.5</td>
<td>12</td>
<td>G</td>
</tr>
<tr>
<td>205</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>14</td>
<td>3.1</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>206</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>16,18</td>
<td>3.2</td>
<td>6</td>
<td>G(F)</td>
</tr>
<tr>
<td>207</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>15,17,16,16</td>
<td>4.3</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>208</td>
<td><em>Acer saccharinum</em></td>
<td>Silver Maple</td>
<td>42</td>
<td>5.4</td>
<td>10</td>
<td>G</td>
</tr>
<tr>
<td>209</td>
<td><em>Acer saccharinum</em></td>
<td>Silver Maple</td>
<td>38</td>
<td>4.4</td>
<td>10</td>
<td>G</td>
</tr>
<tr>
<td>Tree #</td>
<td>Species</td>
<td>Common Name</td>
<td>DBH (cm)</td>
<td>Minimum TPZ (m)</td>
<td>Crown Reserve (m)</td>
<td>Condition (G,F,P,D)</td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>-----------------</td>
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</tr>
<tr>
<td>210</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>48</td>
<td>5.5</td>
<td>15</td>
<td>G</td>
</tr>
<tr>
<td>211</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>48</td>
<td>5.5</td>
<td>8</td>
<td>P</td>
</tr>
<tr>
<td>212</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>41</td>
<td>5.4</td>
<td>8</td>
<td>G(F)</td>
</tr>
<tr>
<td>213</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>33</td>
<td>4.3</td>
<td>6</td>
<td>F(P)</td>
</tr>
<tr>
<td>214</td>
<td><em>Picea abies</em></td>
<td>Norway Spruce</td>
<td>34</td>
<td>4.3</td>
<td>5</td>
<td>G</td>
</tr>
<tr>
<td>215</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>19</td>
<td>3.2</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>216</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>16-16</td>
<td>n/a</td>
<td>2.4</td>
<td>F</td>
</tr>
<tr>
<td>217</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>24</td>
<td>3.2</td>
<td>5</td>
<td>G(F)</td>
</tr>
<tr>
<td>218</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>22</td>
<td>3.2</td>
<td>5</td>
<td>G(F)</td>
</tr>
<tr>
<td>219</td>
<td><em>Acer negundo</em></td>
<td>Manitoba Maple</td>
<td>14</td>
<td>3.1</td>
<td>3</td>
<td>F</td>
</tr>
<tr>
<td>220</td>
<td><em>Juglans nigra</em></td>
<td>Black Walnut</td>
<td>8,14,16</td>
<td>3.2</td>
<td>5</td>
<td>G(F)</td>
</tr>
<tr>
<td>221</td>
<td><em>Fraxinus pennsylvanica</em></td>
<td>Green Ash</td>
<td>69</td>
<td>6.7</td>
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</tr>
<tr>
<td>222</td>
<td><em>Ostrya virginiana</em></td>
<td>Hop Hornbeam</td>
<td>32,13</td>
<td>5.4</td>
<td>8</td>
<td>G</td>
</tr>
<tr>
<td>223</td>
<td><em>Ostrya virginiana</em></td>
<td>Hop Hornbeam</td>
<td>18</td>
<td>3.2</td>
<td>4</td>
<td>G(F)</td>
</tr>
<tr>
<td>224</td>
<td><em>Ostrya virginiana</em> (6 stems)*</td>
<td>Hop Hornbeam</td>
<td>14-13</td>
<td>n/a</td>
<td>5</td>
<td>F</td>
</tr>
<tr>
<td>225</td>
<td>*Picea pungens 'Glaucan'</td>
<td>Colorado Blue Spruce</td>
<td>10</td>
<td>2.1</td>
<td>3</td>
<td>G</td>
</tr>
<tr>
<td>226</td>
<td>*Picea pungens 'Glaucan'</td>
<td>Colorado Blue Spruce</td>
<td>10</td>
<td>2.1</td>
<td>3</td>
<td>G</td>
</tr>
<tr>
<td>227</td>
<td><em>Betula papyrifera</em></td>
<td>White Birch</td>
<td>26,28,23</td>
<td>5.4</td>
<td>12</td>
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<tr>
<td>228</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>33,43</td>
<td>5.5</td>
<td>8</td>
<td>G</td>
</tr>
<tr>
<td>229</td>
<td><em>Tilia americana</em></td>
<td>American Basswood</td>
<td>4-18</td>
<td>n/a</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>230</td>
<td><em>Pinus sylvestris</em></td>
<td>Scots Pine</td>
<td>39</td>
<td>4.4</td>
<td>6</td>
<td>F</td>
</tr>
<tr>
<td>231</td>
<td><em>Juglans nigra</em></td>
<td>Black Walnut</td>
<td>57</td>
<td>5.6</td>
<td>15</td>
<td>G</td>
</tr>
<tr>
<td>232</td>
<td><em>Ulmus pumila</em></td>
<td>Siberian Elm</td>
<td>14</td>
<td>3.1</td>
<td>4</td>
<td>G</td>
</tr>
<tr>
<td>233</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>24</td>
<td>3.2</td>
<td>5</td>
<td>G(F)</td>
</tr>
<tr>
<td>234</td>
<td><em>Acer platanoides</em></td>
<td>Norway Maple</td>
<td>25</td>
<td>3.3</td>
<td>6</td>
<td>G</td>
</tr>
<tr>
<td>235</td>
<td><em>Pinus nigra</em></td>
<td>Austrian Pine</td>
<td>22</td>
<td>3.2</td>
<td>5</td>
<td>F</td>
</tr>
<tr>
<td>236</td>
<td>*Picea pungens 'Glaucan'</td>
<td>Colorado Blue Spruce</td>
<td>42</td>
<td>5.4</td>
<td>6</td>
<td>G</td>
</tr>
<tr>
<td>Tree #</td>
<td>Species</td>
<td>Common Name</td>
<td>DBH (cm)</td>
<td>Minimum TPZ (m)</td>
<td>Crown Reserve (m)</td>
<td>Condition (G,F,P,D)</td>
</tr>
<tr>
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<td>----------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>237</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>16</td>
<td>3.2</td>
<td>4</td>
<td>G(F)</td>
</tr>
<tr>
<td>238</td>
<td><em>Picea glauca</em></td>
<td>White Spruce</td>
<td>6</td>
<td>2.1</td>
<td>2</td>
<td>G</td>
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<tr>
<td>239</td>
<td><em>Pinus strobus</em></td>
<td>Eastern White Pine</td>
<td>6</td>
<td>2.1</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>240</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>48</td>
<td>5.5</td>
<td>12</td>
<td>F(P)</td>
</tr>
<tr>
<td>241</td>
<td><em>Acer saccharum ssp. saccharum</em></td>
<td>Sugar Maple</td>
<td>58</td>
<td>5.6</td>
<td>12</td>
<td>G</td>
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</tbody>
</table>
Appendix 3

Properties with Front Yard Features
### Appendix 3. Front Yard Features

**Date of Assessment:** Oct. 8 & Nov. 11, 2014  
**Assessor:** Kevin Butt

<table>
<thead>
<tr>
<th>House #</th>
<th>Street Name</th>
<th>Description of Landscape Feature</th>
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<tbody>
<tr>
<td>208</td>
<td>Foster Drive</td>
<td>Metal fence</td>
</tr>
<tr>
<td>209</td>
<td>Foster Drive</td>
<td>Sporadic shrubs in yard</td>
</tr>
<tr>
<td>210</td>
<td>Foster Drive</td>
<td>Perennial beds</td>
</tr>
<tr>
<td>212</td>
<td>Foster Drive</td>
<td>Perennial beds</td>
</tr>
<tr>
<td>213</td>
<td>Foster Drive</td>
<td>Trees along front</td>
</tr>
<tr>
<td>214</td>
<td>Foster Drive</td>
<td>White cedar hedgerow across front</td>
</tr>
<tr>
<td>215</td>
<td>Foster Drive</td>
<td>Trees along front</td>
</tr>
<tr>
<td>219</td>
<td>Foster Drive</td>
<td>Perennial beds</td>
</tr>
<tr>
<td>224</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>225</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>227</td>
<td>Foster Drive</td>
<td>Miscellaneous front yard elements</td>
</tr>
<tr>
<td>228</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>229</td>
<td>Foster Drive</td>
<td>Immature trees and goutweed</td>
</tr>
<tr>
<td>230</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>231</td>
<td>Foster Drive</td>
<td>Hedgerow of immature trees and goutweed</td>
</tr>
<tr>
<td>232</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>233</td>
<td>Foster Drive</td>
<td>Retaining wall in front yard, goutweed in ROW</td>
</tr>
<tr>
<td>236</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>238</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>240</td>
<td>Foster Drive</td>
<td>Built up grade in front yard for driveway</td>
</tr>
<tr>
<td>242</td>
<td>Foster Drive</td>
<td>Shrubs and trees throughout yard</td>
</tr>
<tr>
<td>244</td>
<td>Foster Drive</td>
<td>Asphalt front yard with lilac clump, privet and sugar maple saplings, variegated brome in ROW</td>
</tr>
<tr>
<td>200</td>
<td>Garson Street</td>
<td>Turf in ROW, perennials &amp; cedar rail fence in front, hedge on west side</td>
</tr>
<tr>
<td>404</td>
<td>Little Ave</td>
<td>Lilac shrubs sparsely planted in yard</td>
</tr>
<tr>
<td>6</td>
<td>MacLaren Ave</td>
<td>Grape vines established on post &amp; wire fence &amp; perennial bed by driveway</td>
</tr>
<tr>
<td>15</td>
<td>MacLaren Ave</td>
<td>Paver driveway</td>
</tr>
<tr>
<td>17</td>
<td>MacLaren Ave</td>
<td>Paver driveway</td>
</tr>
<tr>
<td>21</td>
<td>MacLaren Ave</td>
<td>Siberian dogwood in paver bed</td>
</tr>
<tr>
<td>22</td>
<td>MacLaren Ave</td>
<td>Woody regeneration north side, perennial bed on south side + stone pillars</td>
</tr>
<tr>
<td>39</td>
<td>MacLaren Ave</td>
<td>Perennial bed at property limit</td>
</tr>
<tr>
<td>41</td>
<td>MacLaren Ave</td>
<td>Apple trees dense in front yard</td>
</tr>
<tr>
<td>201</td>
<td>Merrett Drive</td>
<td>Large yew</td>
</tr>
<tr>
<td>204</td>
<td>Merrett Drive</td>
<td>Cedar hedge on property limit with 202 Merrett Drive</td>
</tr>
<tr>
<td>205</td>
<td>Merrett Drive</td>
<td>Shrub bed on property limit with 207 Merrett Drive (lilac and Amur maple)</td>
</tr>
<tr>
<td>206</td>
<td>Merrett Drive</td>
<td>Stone and shrubs west of driveway</td>
</tr>
<tr>
<td>208</td>
<td>Merrett Drive</td>
<td>Mixed shrub hedge</td>
</tr>
<tr>
<td>210</td>
<td>Merrett Drive</td>
<td>Planting beds in front</td>
</tr>
<tr>
<td>214</td>
<td>Merrett Drive</td>
<td>Planting beds in front</td>
</tr>
<tr>
<td>218</td>
<td>Merrett Drive</td>
<td>Cedars and immature fruit trees planted around front yard</td>
</tr>
<tr>
<td>226</td>
<td>Merrett Drive</td>
<td>Grape vines on wood panel fence plus lilac shrub at northeast corner</td>
</tr>
<tr>
<td>229</td>
<td>Merrett Drive</td>
<td>Perennial bed at property limit (in planter), concrete driveway</td>
</tr>
<tr>
<td>202</td>
<td>Yeates Ave</td>
<td>Large lilac at property limit with 370 Little Ave</td>
</tr>
<tr>
<td>207</td>
<td>Yeates Ave</td>
<td>Boxwoods and daylilies along fence</td>
</tr>
<tr>
<td>208</td>
<td>Yeates Ave</td>
<td>2 white cedar shrubs</td>
</tr>
<tr>
<td>210</td>
<td>Yeates Ave</td>
<td>Privet hedge</td>
</tr>
</tbody>
</table>
Appendix 4

Tree Studies: Limitations
Tree Studies: Limitations

This report, drawings and data (i.e., qualitative and quantitative measurements) are intended to inform the recipient and reviewer(s) of the report of the tree(s) condition at the time of the assessment. The assessment may be limited by the following constraints:

1. Access – tree is located offsite, or the onsite location is not reasonably accessed.

2. Weather – accumulated snow around the base or in branch attachments may obscure defects.

3. Season – biotic indications (e.g., foliage chlorosis or fungal fruiting bodies) are only obvious for a portion of the year.

4. Visual obstructions – Elements such as other trees’ canopies can prevent the view of the entire tree.

The study is completed from the ground using a DBH tape or tree caliper. Non-invasive tools such as binoculars and a sounding hammer may be used to provide additional information about defects and characteristics. Excavation of the rootzone and other intensive analyses have not been completed unless stated.

It must be understood that trees may not manifest signs or symptoms (e.g., dieback) of some impacts (e.g., root compaction) immediately and so recent changes to the tree or its growing conditions prior to the assessment may not be apparent to the assessor. Also, changes to the tree condition resulting from damage, weather, infestations, defects, soil, decay, light, moisture, exposure, etc. may occur after the assessment.

No tree is without some level of risk, where a tree may fail and strike a target. Mitigation options, if provided, will not eliminate risk but are prescribed treatments to reduce risk based on the measured and assessed factors at the time of assessment, subject to site and assessment constraints.

Identification of the ownership of assessed trees (i.e., on-site or off-site) made in the report is based on the legal survey. The assessor of trees uses the point location of the tree provided on the survey and the limits of property to assign ownership in the report and associated materials.
<table>
<thead>
<tr>
<th>OBJECTID</th>
<th>Site Description</th>
<th>Scientific Name</th>
<th>Common Name</th>
<th>S Rank</th>
<th>COSEWIC</th>
<th>Element TY</th>
<th>FREQUENCY</th>
<th>MEAN LatitudeDD</th>
<th>MEAN LongitudeDD</th>
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<tbody>
<tr>
<td>1</td>
<td>Study Area</td>
<td>Chenopodium foggii</td>
<td>Fogg's Goosefoot</td>
<td>S2</td>
<td>SPECIES</td>
<td>1</td>
<td></td>
<td>44.36695714</td>
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<tr>
<td>2</td>
<td>Study Area</td>
<td>Somatochlorella ensigera</td>
<td>Plains Emerald</td>
<td>S1</td>
<td>SPECIES</td>
<td>2</td>
<td></td>
<td>44.36688338</td>
<td>-79.65710478</td>
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</table>
Atlas Data Summary

Select what type of data summary you would like to display and click the appropriate view button. You can use those pages to find out where the atlas regions and atlas squares are located.

What years do you want to display: [all years corrected] Which version of the atlas [Second (2001-2005)]

How do you want to view the results: [Tabular results]

Show me statistics on the number of species reported, the effort, etc.

1. View summary statistics: [Province]
2. View summary statistics: [By Square] within region [Select] View
3. View list of completed Point Counts in square: [Select] View

Show me the list of species, the highest breeding evidence and abundance

4. View species list for:
   - Province:
5. View species list for square or block no.: [Select] View

Show me the list of regions or squares reporting a species

6. View list of: [Select] View

<table>
<thead>
<tr>
<th>Species list for square 17PK01 (number of entries returned: 110)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region Square</strong></td>
</tr>
<tr>
<td>17PK01</td>
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<td>T17P01 Hairy Woodpecker</td>
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<tr>
<td>T17P01 Northern Flicker</td>
</tr>
<tr>
<td>T17P01 Piliated Woodpecker</td>
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<tr>
<td>T17P01 Eastern Wood-Pewee</td>
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<tr>
<td>T17P01 Alder Flycatcher</td>
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<tr>
<td>T17P01 Willow Flycatcher</td>
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<tr>
<td>T17P01 Least Flycatcher</td>
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<tr>
<td>T17P01 Eastern Phoebe</td>
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<tr>
<td>T17P01 Great Crested Flycatcher</td>
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<tr>
<td>T17P01 Eastern Kingbird</td>
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<tr>
<td>T17P01 Blue-headed Vireo</td>
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<tr>
<td>T17P01 Warbling Vireo</td>
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<tr>
<td>T17P01 Red-eyed Vireo</td>
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<tr>
<td>T17P01 Blue Jay</td>
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<tr>
<td>T17P01 American Crow</td>
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<tr>
<td>T17P01 Common Raven</td>
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<td>T17P01 Horned Lark</td>
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<tr>
<td>T17P01 Purple Martin</td>
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<td>T17P01 Tree Swallow</td>
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<tr>
<td>T17P01 Bank Swallow</td>
</tr>
<tr>
<td>T17P01 Cliff Swallow</td>
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<tr>
<td>T17P01 Barn Swallow</td>
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<tr>
<td>T17P01 Black-capped Chickadee</td>
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<td>T17P01 American Goldfinch</td>
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<td>T17P01 House Sparrow</td>
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Disclaimer: If you wish to use the data in a publication, research or for any purpose, or would like information concerning the accuracy and appropriate uses of these data, read the data use policy and request form. These data are current as of 18 Nov 2014.

<table>
<thead>
<tr>
<th>BREEDING EVIDENCE</th>
<th>POINT COUNTS</th>
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<tr>
<td>Max BR: Highest Breeding Evidence recorded</td>
<td>#PC: Number of Point Counts with</td>
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<tr>
<td>CatGr: Highest Breeding Category recorded</td>
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<tr>
<td>OBRS: Observed, PROF: probable, CON: confirmed</td>
<td>#PC: Percent of Point Counts with</td>
</tr>
<tr>
<td>#Sq: Number of squares with species (Breeding Evidence)</td>
<td>species</td>
</tr>
<tr>
<td>Atlasser name: Name of atlasser who reported the highest breeding evidence (if they accepted that their name be displayed). If more than one person provided the same breeding evidence code, then only the number of atlassers is listed.</td>
<td>#Sq: Number of squares with species (Point Counts)</td>
</tr>
</tbody>
</table>
FW: information request Foster Area EA, City of Barrie (300036021)
Benvenuti, Jodi (MNRF)
to:
Deanna.DeForest@rjburnside.com
01/14/2015 11:27 AM
Hide Details
From: "Benvenuti, Jodi (MNRF)" <jodi.benvenuti@ontario.ca>
To: "Deanna.DeForest@rjburnside.com" <Deanna.DeForest@rjburnside.com>,

1 Attachment

Barrie study area.pdf

Hi Deanna,

I have screened the study area and we have no additional species at risk information for this site. Given its urban context, and the fact that sanitary sewer improvements I'm assuming will take place within existing road corridors, species which could have the highest potential to be present would likely include Butternut (END), Snapping Turtle (SC) and Eastern Wood-Pewee (SC).

Jodi Benvenuti
Management Biologist
Ministry of Natural Resources and Forestry
Midhurst District

From: Deanna De Forest [mailto:Deanna.DeForest@rjburnside.com]
Sent: November-25-14 12:29 PM
To: Benvenuti, Jodi (MNRF)
Subject: information request Foster Area EA, City of Barrie (300036021)

Hi Jodi,

We are completing an EA for sanitary sewer improvements in the Foster Drive area in the City of Barrie. The study area includes Foster Drive, MacLaren Ave, Merrett Drive, Garson Street, Yeates Ave. I would like to inquire with the MNR for any information related to the potential presence of species at risk and/or protected habitat and any other information you feel would be valuable in our project planning in an effort to evaluate the impact of potential alternatives on the environment.

Please see the attached map for you reference. The black dashed line represents our study area.

The area of interest consists of the road right of way. The area consists of single dwelling residential properties, a municipal park (MacLaren Park) and an undeveloped parcel of land.

There are no ANSI, wetlands, greenlands or linkages in the study area. A "Forested Area", as per the County of Simcoe, is present to the east beyond MacLaren and the park.

Whiskey Creek approaches the study area at the intersection of Yonge St. and Foster Drive, but is not part of our study area. No Aquatic SAR segments identified within study area.

Background research using NHIC, SARA and OBBA for the area reveals the following sensitive species (critically imperilled to vulnerable (S1 to S3)) identified in the area and have the potential to be located and possibly impacted in the study area.
Natural Areas: None identified within study area
Species – Fogg’s Goosefoot (S2) (woodlands), Plain’s Emerald (S1) (streams, small rivers and ditches with pools and riffles in open areas)

The following species at risk birds have the potential to be located in the area based on the Ontario Breeding Bird Atlas squares.

- Barn Swallow (THR)
- Bobolink (THR)
- Chimney Swift (THR)
- Night Hawk (SC)
- Eastern Meadowlark (THR)
- Peregrine Falcon (SC)
- Red-headed Woodpecker (SC/THR)
- Whip-poor-will (THR)
- Wood Thrush (THR)

thanks for your help Jodi, I appreciate your response. Please let me know if you need any additional information.

Deanna

Burnside

Deanna De Forest

R.J. Burnside & Associates Limited
128 Wellington Street West, Suite 301
Barrie, Ontario L4N 8J6
Deanna.DeForest@rjburnside.com
Office: 705-797-2047
Direct Line: 705-797-4357
www.rjburnside.com

Please Note: Our company has a new direct dial telephone system. You can now reach me by calling our general office line or by calling my direct office telephone number. Refer to my email signature for updated contact information.

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If you have received this communication in error please notify the sender at the above email address and delete this email immediately.

Thank you.
### BIRDS

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>Provincial S-RANK</th>
<th>Provincial SARO Status</th>
<th>COSEWIC</th>
<th>Federal SARO Status</th>
<th>Federal SARO Schedule</th>
<th>Habitat Description</th>
<th>Species Observed During Field Surveys</th>
<th>Habitat Present Within Study Area?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barn Swallow (Source: OBBA)</td>
<td>Hirundo rustica</td>
<td>S4B</td>
<td>THR</td>
<td>THR</td>
<td>-</td>
<td>-</td>
<td>Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. Nests inside or on exterior of buildings; under bridges and in road culverts; less commonly on rock faces, and in caves. Possible foraging habitat present over open areas meadow areas within the Study Area. Moderate potential nesting habitat at culverts of Whiskey Creek adjacent to the study area.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Bobolink (Source: OBBA)</td>
<td>Dolichonyx oryzivorus</td>
<td>S4B</td>
<td>THR</td>
<td>THR</td>
<td>-</td>
<td>-</td>
<td>Generally prefers open grasslands and hay fields for nesting, typically featuring relatively tall vegetation. Sometimes uses large fields of winter wheat and rye in southwestern Ontario. Sensitive to vegetation structure and composition. Positively associated with high grass-to-fort ratios; moderate litter depth; tolerate wetter portions of fields and more likely to nest closer to field centres rather than field margins. Lower tolerance to presence of patches of bare ground. Appear to prefer larger fields. Low potential for nesting/foraging habitat present in the open field of the Study Area based on the small size of the open meadow/grassland areas.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Chimney Swift (Source: OBBA)</td>
<td>Chaetura pelagica</td>
<td>S4B, S4N</td>
<td>THR</td>
<td>THR</td>
<td>-</td>
<td>1</td>
<td>Historically nested/roosted in deciduous and coniferous, typically wet, forest types, with a well-developed, dense shrub layer. Currently, most are found in developed areas in large, uncapped chimneys. suitability of the study area is considered moderate, however the suitability of the right-of-way within the</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>COMMON NAME</td>
<td>SCIENTIFIC NAME</td>
<td>Provincial SARO Status</td>
<td>Provincial SARO Status</td>
<td>COSEWIC</td>
<td>Federal SARO Status</td>
<td>Federal SARO Schedule</td>
<td>Habitat Description</td>
<td>Habitat Present Within Study Area?</td>
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<tr>
<td><strong>Common Nighthawk</strong>&lt;br&gt; (Source: OBBA)</td>
<td><em>Chordeiles minor</em></td>
<td>S4B</td>
<td>SC</td>
<td>THR</td>
<td>THR</td>
<td>1</td>
<td>Nests in open habitats, in forests and in urban areas. It prefers rock outcrops, alvars, sand bars, bogs, fens, and in forests openings created by clearcuts and burns. In southern Ontario, grasslands, agricultural fields, gravel pits, prairies, and alvars and at airports. In cities, it nests mostly on flat, gravelled roofs but occasionally on railways and footpaths.</td>
<td>Study area = ROW limits, including the undeveloped areas of 225 Factor Ave and others within the study area limits as viewed from publicly accessible areas</td>
<td>1</td>
</tr>
<tr>
<td><strong>Eastern Meadowlark</strong>&lt;br&gt; (Source: OBBA)</td>
<td><em>Sturnella magna</em></td>
<td>S4B</td>
<td>THR</td>
<td>THR</td>
<td>-</td>
<td>-</td>
<td>Generally prefers grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins.</td>
<td>Suitable for the study area to provide direct and indirect suitable habitat for common nighthawks. The study area is considered to be moderate based on its proximity to urban areas</td>
<td>1</td>
</tr>
<tr>
<td><strong>Eastern Whip-poor-will</strong>&lt;br&gt; (Source: OBBA)</td>
<td><em>Caprimulgus vociferus</em></td>
<td>S4B</td>
<td>THR</td>
<td>THR</td>
<td>THR</td>
<td>1</td>
<td>Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred. In Ontario, its preferred habitats include rock or sand bars, with scattered trees, savannahs, old burns in state of early forest succession, and open conifer plantations.</td>
<td>Low suitability of the study area to provide direct and indirect habitat for whip-poor-will based on its proximity to human settlement</td>
<td>1</td>
</tr>
<tr>
<td>COMMON NAME <strong>(Source)</strong></td>
<td>SCIENTIFIC NAME</td>
<td>Provincial S-RANK¹</td>
<td>Provincial SARC Status²</td>
<td>COSEWIC³</td>
<td>Federal SARA Status³</td>
<td>Federal SARA Schedule⁴</td>
<td>Habitat Description⁵</td>
<td>Habitat Present Within Study Area?</td>
<td>Species Observed During Field Surveys?</td>
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<tr>
<td>Peregrine Falcon (Source: OBBA)</td>
<td>Falco peregrinus anomalohundus</td>
<td>S3B</td>
<td>SC</td>
<td>SC</td>
<td>SC</td>
<td>1</td>
<td>Nests on cliffs near water bodies, or at urban sites such as tall buildings, bridges, and smokestacks.</td>
<td>No nesting habitat present in the Study Area.</td>
<td>No</td>
</tr>
<tr>
<td>Red-headed Woodpecker (Source: OBBA)</td>
<td>Melanerpes erythrocephalus</td>
<td>S4B</td>
<td>SC</td>
<td>THR</td>
<td>THR</td>
<td>1</td>
<td>Breeds in open woodland and woodland edges, especially oak savannah and riparian forest. These habitats can occur in parks, golf courses, cemeteries, private woodlands, etc. Existence of large, dead, weathered trees or live trees with large dead branches important characteristic of habitat.</td>
<td>Low potential nesting habitat and lack of suitable interior forest areas present in the Study Area</td>
<td>No</td>
</tr>
<tr>
<td>Wood Thrush (Source: OBBA)</td>
<td>Hylocichla mustelina</td>
<td>S4B</td>
<td>SC</td>
<td>THR</td>
<td>-</td>
<td>-</td>
<td>Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understory are usually prerequisites for site occupancy.</td>
<td>Low potential for habitat within the study area based on lack of thick understory in wooded areas.</td>
<td>No</td>
</tr>
<tr>
<td>Eastern Wood-pewee (Source: MNRF)</td>
<td>Contopus virens</td>
<td>S4B</td>
<td>SC</td>
<td>SC</td>
<td>-</td>
<td>-</td>
<td>Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without.</td>
<td>Moderate potential for nesting habitat based on proximity of woodlots to development</td>
<td>No</td>
</tr>
</tbody>
</table>

**REPTILES**

<table>
<thead>
<tr>
<th>COMMON NAME <strong>(Source)</strong></th>
<th>SCIENTIFIC NAME</th>
<th>Provincial S-RANK¹</th>
<th>Provincial SARC Status²</th>
<th>COSEWIC³</th>
<th>Federal SARA Status³</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Snapping Turtle (Source: MNRF)</td>
<td>Chelydra serpentina</td>
<td>S3</td>
<td>SC</td>
<td>SC</td>
<td>SC</td>
<td>1</td>
<td>Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.</td>
<td>Low potential in the study area. Potential habitat for this species is likely limited to the vicinity of Whiskey Creek watercourse, if present.</td>
<td>No</td>
</tr>
<tr>
<td>COMMON NAME **(Source)</td>
<td>SCIENTIFIC NAME</td>
<td>Provincial S-RANK¹</td>
<td>Provincial SARO Status²</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plains Emerald</td>
<td>Somatochlora ensigera</td>
<td>S1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Slow-flowing streams and small rivers with pools and riffles, in wooded areas.</td>
<td>Low potential in the Study Area. Potential habitat for this species is likely limited to the vicinity of the Whiskey Creek watercourse, if present.</td>
<td>No.</td>
</tr>
<tr>
<td>PLANTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butternut</td>
<td>Juglans cinerea</td>
<td>S3?</td>
<td>END</td>
<td>END</td>
<td>END</td>
<td>1</td>
<td>Stream banks and swamps, as well as upland beech-maple, oak-hickory, and mixed hardwood stands.</td>
<td>Confirmed in the Study Area.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Fogg's Goosefoot</td>
<td>Chenopodium foggi</td>
<td>S2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Fogg's Goosefoot is found in woodlands, ledges, outcrops and cliff bases on high-pH bedrock [<a href="https://oehtools.newfoundlandwild.org/species/chenopodiumfoggi">https://oehtools.newfoundlandwild.org/species/chenopodiumfoggi</a> accessed December 19, 2014]</td>
<td>Low potential for habitat within the study area</td>
<td>No.</td>
</tr>
</tbody>
</table>

** Sources: Natural Heritage Information Centre (NHIC) database of records searched on February 28, 2015; Ontario Breeding Bird Atlas, Correspondence with MNRF Midhurst District, 2015.

¹S-Ranks (provincial) Provincial (or Subnational) 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. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.naturereserve.org/ranks.htm)

²S-Ranks (provincial) Provincial (or Subnational) 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. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: http://explorer.naturereserve.org/ranks.htm)

³Presumed Extirpated - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered. Its presence may not have been verified in the last 20–40 years. A species or community could become SH without such a 20–40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

⁴Critically Imperiled - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.

⁵Impaired - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.

⁶Vulnerable - Vulnerable in the province due to a restricted range, relatively few populations (often 60 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

⁷Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
SS — Secure - Common, widespread, and abundant in the province.
SNS — Unranked - Province conservation status not yet assessed.
SU — Unranked - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA — Not Applicable - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
SR# — Range Rank - A numeric range rank (e.g., S2R3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SIFS? - Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers
B — Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
N — Non-breeding Conservation status refers to the non-breeding population of the species in the province.
M — Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

1SARO Endangered Species Act, 2007
The provincial review process is implemented by the MNRF’s Committee on the Status of Species at Risk in Ontario (COSARO).

Extinct - A species that no longer exists anywhere
Endangered (E) - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
Endangered (EN) - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
Threatened (T) - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
Special Concern (S) - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
Not at Risk (NR) - A species that has been evaluated and found to be not at risk.
Data Deficient (DD) - A species for which there is insufficient information for a provincial status recommendation.

1SARA (Federal Species at Risk Act) Status and Schedule (includes COSEWIC Status)
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies these species as being either Extinct, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

Extinct - A wildlife species that no longer exists.
Endangered (E) - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
Endangered (EN) - A wildlife species facing imminent extinction or extirpation.
Threatened (T) - A wildlife species that is likely to become extinct if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (S) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD) - A category that applies when there is insufficient information to either (a) resolve a wildlife species’ eligibility for assessment or (b) permit an assessment of the wildlife species’ risk of extinction.
Not at Risk (NR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

1SARA Schedule
Schedule 1: the official list of species that are classified as extinct, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that were designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that have been designated as special concern, and have yet to be reassessed by COSEWIC using revised criteria. Once these species have been reassessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, note that while Schedule 1 lists species that are extinct, endangered, threatened, and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1990 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been reassessed, the Governor in Council may call the recommendation of the Minister, on whether or not they should be added to the list of Wildlife Species at Risk.

1.0 PROJECT REPORT COVER PAGE

LICENSEE INFORMATION:
Licensee: Kayleigh MacKinnon
Archaeology Licence: P384
Contact Information: Lakelands District Office
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Port McNicoll, ON L0K 1R0
Phone: (705) 534-1546    Fax: (705) 534-7855
Email: kmackinnon@amick.ca
www.amick.ca

PROJECT INFORMATION:
AMICK Project Number: 14542-K
MTC Project Number: P384-0236-2014
Investigation Type: Stage 1 Archaeological Background Study
Project Name: Foster Drive Wastewater Servicing EA
Project Location: Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street and Yeates Avenue, MacLaren Avenue, Little Avenue and Yonge Street within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie.

APPROVAL AUTHORITY INFORMATION:
File Designation Number: Not Available at this Time.

REPORTING INFORMATION:
Site Record/Update Forms: N/A
Date of Report Filing: 18 March 2015
Type of Report: ORIGINAL
2.0 EXECUTIVE SUMMARY

This report describes the results of the 2014 Stage 1 Archaeological Background Study of the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of both sides along all of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie, conducted by AMICK Consultants Limited. This study was conducted under Archaeological Consulting License #P384 issued to Kayleigh MacKinnon by the Minister of Tourism and Culture for the Province of Ontario. This assessment was undertaken as a requirement under the Environmental Assessment Act (RSO 1990b) in order to support a Municipal Class EA as part of the pre-submission process. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a), and the Ontario Heritage Amendment Act (SO 2005).

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1 Archaeological Background Study of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological work on 08 October 2014. A detailed Stage 1 Property Inspection was conducted of the study on 23 October 2013. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

As a result of the Stage 1 Archaeological Background Study, the project area potentially impacted by the proposed undertaking has been identified as an area of archaeological potential. Stage 2 assessment of the study area is recommended in the form of high intensity test pit surveys at a 5m interval between transects within select areas. As a result of the property inspection component of the Stage 1 Archaeological Background Study, the areas of existing pavement, the roadside shoulders and the deep and wide drainage ditches were found to be areas of no or very low archaeological potential; consequently no further archaeological assessment of these areas is required. Therefore, no Stage 2 Property Assessment is recommended for Yeates Avenue, Merrett Drive Garson Street and MacLaren Avenue. It is also noteworthy that most of study area along these roadways is also not in proximity to any cultural or natural features that indicate archaeological potential. Yonge Street has been subject to extensive reworking over time and has been widened and new commercial properties line this major arterial roadway. Most of the road allowance along this roadway is within a recently redeveloped boulevard in which numerous services are buried. Little Avenue has also been subject to repeated modernization and consists predominantly of slope. However, Foster Drive has unimproved shoulders and relatively shallow ditches when present. This road allowance also is an early settlement road in close proximity to numerous features suggesting archaeological potential.
No cultural heritage features of any description were observed within any portion of the study area or within visual range of the study area such that the proposed undertaking could potentially impact possible heritage features. There are no properties that are designated under the Heritage Act or Listed within the Municipal Register of Heritage Properties. Therefore, there no areas within the study area with potential for archaeological resources associated with possible cultural heritage features such as buildings, or other structures such as bridges.

Stage 2 Property Assessment is recommended within the road allowance of Foster Drive.

Should the proposed improvements necessitate impacts to land outside of the existing road allowances, Stage 2 Property Assessment of any such affected areas must be undertaken by test pit survey at an interval of 5 metres between individual test pits wherever it is viable to do so.

Areas identified within this report as having low potential for archaeological resources should be excluded from any requirement for Stage 2 Property Assessment.
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4.0 PROJECT PERSONNEL

Consulting Archaeologist
Kayleigh MacKinnon (MTCS Professional Archaeologist Licence #P384)

Project Archaeologist
Michael Henry (MTCS Professional Archaeologist Licence #P058)

Project Coordinator
Melissa Maclean

Field Assistants
Marilyn Cornies (MTCS Professional Archaeologist Licence #P038)

Report Preparation
Michael Henry (MTCS Professional Archaeologist Licence #P058)

Draughting
Kristina Kostuk

Photography
Michael Henry (MTCS Professional Archaeologist Licence #P058)
5.0 PROJECT BACKGROUND

5.1 DEVELOPMENT CONTEXT

This report describes the results of the 2014 Stage 1 Archaeological Background Study of the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of both sides along all of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie, conducted by AMICK Consultants Limited. This study was conducted under Archaeological Consulting License #P384 issued to Kayleigh MacKinnon by the Minister of Tourism and Culture for the Province of Ontario. This assessment was undertaken as a requirement under the Environmental Assessment Act (RSO 1990b) in order to support a Municipal Class EA as part of the pre-submission process. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a), and the Ontario Heritage Amendment Act (SO 2005).

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1 Archaeological Background Study of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological work on 08 October 2014. A detailed Stage 1 Property Inspection was conducted of the study on 23 October 2013. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

5.2 HISTORICAL CONTEXT

As part of the present study, background research was conducted in order to determine the archaeological potential of the proposed project area.

"A Stage 1 background study provides the consulting archaeologist and Ministry report reviewer with information about the known and potential cultural heritage resources within a particular study area, prior to the start of the field assessment." (OMCzCR 1993)

The evaluation of potential is further elaborated Section 1.3 of the Standards and Guidelines for Consultant Archaeologist (2011) prepared by the Ontario Ministry of Tourism and Culture:

"The Stage 1 background study (and, where undertaken, property inspection) leads to an evaluation of the property’s archaeological potential. If the evaluation indicates that there is archaeological potential anywhere on the property, the next step is a Stage 2 assessment."
Features or characteristics that indicate archaeological potential where found anywhere on the property include:

"- previously identified archaeological sites
  - water sources (It is important to distinguish types of water and shoreline, and to distinguish natural from artificial water sources, as these features affect site locations and types to varying degrees.):
    o primary water sources (lakes, rivers, streams, creeks)
    o secondary water sources (intermittent streams and creeks, springs, marshes, swamps)
    o features indicating past water sources (e.g., glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches)
    o accessible or inaccessible shoreline (e.g., high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh)
  - elevated topography (e.g., eskers, drumlins, large knolls, plateaux)
  - pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground
  - distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings.
  - resource areas, including:
    o food or medicinal plants (e.g., migratory routes, spawning areas, prairie)
    o scarce raw materials (e.g., quartz, copper, ochre or outcrops of chert)
    o early Euro-Canadian industry (e.g., fur trade, logging, prospecting, mining)
  - areas of early Euro-Canadian settlement. These include places of early military or pioneer settlement (e.g., pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches and early cemeteries. There may be commemorative markers of their history, such as local, provincial, or federal monuments or heritage parks.
  - Early historical transportation routes (e.g., trails, passes, roads, railways, portage routes)
  - property listed on a municipal register or designated under the Ontario Heritage Act that is a federal, provincial or municipal historic landmark or site
  - property that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations"

(MTC 2011: 17-18)

The evaluation of potential does not indicate that sites are present within areas affected by proposed development. Evaluation of potential considers the possibility for as yet undocumented sites to be found in areas that have not been subject to systematic
archaeological investigation in the past. Potential for archaeological resources is used to determine if physical assessment of a property or portions of a property is required.

"Archaeological resources not previously documented may also be present in the affected area. If the alternative areas being considered, or the preferred alternative selected, exhibit either high or medium potential for the discovery of archaeological remains an archaeological assessment will be required."

(MCC & MOE 1992: 6-7)

"The Stage 1 background study (and, where undertaken, property inspection) leads to an evaluation of the property’s archaeological potential. If the evaluation indicates that there is archaeological potential anywhere on the property, the next step is a Stage 2 assessment."

(MTC 2011: 17)

In addition, the collected data is also used to determine if any archaeological resources had been formerly documented within or in close proximity to the study area and if these same resources might be subject to impacts from the proposed undertaking. This data was also collected in order to establish the significance of any resources that might be encountered during the conduct of the present study. The requisite archaeological sites data was collected from the Programs and Services Branch, Culture Programs Unit, MTCS and the corporate research library of AMICK Consultants Limited.

5.2.1 CURRENT CONDITIONS

The study area is within the City of Barrie and includes the Existing Road Allowances of both sides along all of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west. Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

The City of Barrie is considering upgrades to wastewater servicing for the area of Foster Drive in Barrie. The residential dwellings are currently on septic systems and the EA is to consider options to have them connected to wastewater services. Accordingly, this assessment was undertaken as a requirement under the Environmental Assessment Act (RSA 1990b) in order to support a Municipal Class EA as part of the pre-submission process. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSA 1990a), and the Ontario Heritage Amendment Act (SO 2005).

The study area consists of an existing road allowance network within an existing residential neighbourhood. The interior road allowances can be described generally as existing asphalt paved roadways with adjacent deep and wide drainage ditches on both sides of the existing travelled roads. This general description applies to Yeates Avenue, Merrett Drive, Garson Street and MacLaren Avenue. It is also noteworthy that most of study area along these roadways is also not in proximity to any cultural or natural features that indicate
archaeological potential. The east side of Yonge Street within the study area has been subject to extensive reworking over time and has been widened and new commercial properties line this major arterial roadway. Most of the road allowance along this roadway is within a recently redeveloped boulevard in which numerous services are buried. The north side of Little Avenue within the study area has also been subject to repeated modernization. However, Foster Drive has unimproved shoulders and relatively shallow ditches when present. This road allowance also is an early settlement road in close proximity to numerous features suggesting archaeological potential. A plan of the study area is included within this report as Figure 3.

5.2.2 General Historical Outline

Three First Nations trails known as the Rouge Trail, Don Trail and Humber Trail began on the shore of Lake Ontario in the Toronto area and terminated on the two branches of the Holland River (Myers 1977: 2). These trails form part of a long established trade and communications network that linked the upper and lower Great Lakes. The route followed the Holland River into the southern end of Lake Simcoe. Also, the route followed the western shore of Lake Simcoe northward to Kempenfelt Bay, and then westward to the end of the bay. A portage was then undertaken to the Nottawasaga River and this river was followed into Georgian Bay at the present location of the Town of Wasaga Beach. This network of trade and communication had been lost established by the time Europeans began to operate in the area. The presence of artifacts dating to the Early Archaic Period in close proximity to the upper and lower landings on the Holland River East Branch suggests that the use of this system most likely dates back to at least that period.

In the seventeenth century Simcoe County was home to the Huron. With the arrival of French priests and Jesuits, missions were established near Georgian Bay. After the destruction of the missions by the Iroquois and the British, Algonquin speaking peoples occupied the area. After the war of 1812, the government began to invest in the military defences of Upper Canada, through the extension of Simcoe’s Yonge Street from Lake Simcoe to Penetanguishene on Georgian Bay (Garbutt, 2010).

The township of Innisfil originally included Allendale, Tollendal, Painswick, Minets Point and Holly. The township was incorporated in 1850. The first settlers were the Hewson Family who settled on what was called Hewson’s Point and was later renamed Big Bay Point in March of 1820. George McMullan of Tollendal built the first sawmill in 1823. In 1825 due to the steadily increasing number of settlers, it became important to have accessible roadways; this lead to the clearing of brush between Barrie and Churchville. This became an overland route known as the Penetanguishene Road, which later became Hwy 11, and is now known as Yonge Street. (Lemon 1951)

The development of Innisfil township relied heavily upon settlers clearing purchased land and establishing self-sustaining farms. As the population increased, so did the amount services (post office, schools and church) available to settlers. The township even had its own form of local government; commissioners were appointed by the provincial legislature who would oversee the political issues of the community. By 1835, there was a strong need for a
gristmill, which was a direct result of the progress of the agricultural community. In 1853, the Allandale train station began operating which fuelled the continuing growth of the community. By the late 1800’s the township began to lose land to the more rapidly growing urban area nearby. In 1891 500 acres were annexed to the Village of Allandale which was soon swallowed up by the growth of Barrie. The City of Barrie annexed an additional 500 acres from Innisfil in 1897. (Lemon 1951)

In Smith’s Canadian Gazetter (1846), it is said of Barrie that it was first settled in 1832 and had 28 families resident there by 1837. In 1843, the District of Simcoe was created and Barrie named as the seat of the District government. By 1846, the population of Barrie was estimated to be approximately 500 persons of predominantly English, Irish and Scotch origins. Barrie had three churches by 1846: two Methodist and one Episcopal. In addition, an excellent private school had been established, as had a mechanics’ institute and a cricket club. The professions of Barrie included one physician, one lawyer, six stores, three tanneries, one surveyor, three taverns, four blacksmiths, one wagon maker, one baker, one saddler, one cabinet maker, one watchmaker, six shoemakers, three tailors, two butchers, and one Bank of Upper Canada branch (Smith 1846: 9).

Figure 2 illustrates the location of the study area and environs as of 1881. None of the original rural lots through which this roadway passes are shown to belong to anyone. No structures are shown along the roadways. The area generally shows very little settlement. However, the current Metrolinx railway corridor is depicted, indicating that this is a historic railway corridor. Whiskey Creek is also depicted on this map demonstrating that there is a source of potable water nearby and anywhere within the study area within 300 metres of Whiskey Creek is deemed to have potential for archaeological resources of First Nations origins. As well, Yonge Street, Little Avenue, and Foster Drive are all depicted on this map as early settlement roads. Accordingly, it has been determined that there is potential for archaeological resources related to Euro-Canadian settlement to be found within the study area. Any part of the study area within 100 metres of these early transportation corridors is deemed to have potential for archaeological resources related to early Euro-Canadian settlement. In addition, a house is depicted on the west side of Yonge Street and on the west bank of Whiskey Creek. Although this house is not within the study area, it represents a documented location that may represent an archaeological site and historic occupation. Therefore, any part of the study area within 300 metres of this early settlement location is deemed to have potential for archaeological resources related to early Euro-Canadian settlement.

However, it must be borne in mind that inclusion of names of property owners and depictions of structures within properties were sold by subscription. While information included within these maps may provide information about occupation of the property at a specific point in time, the absence of such information does not indicate that the property was not occupied.

5.2.3 SUMMARY OF HISTORICAL CONTEXT

The brief overview of documentary evidence readily available indicates that the study area is adjacent to an early settlement road situated within an area that was settled in the middle of
the nineteenth century and as such has potential for sites relating to early Euro-Canadian settlement in the region.

In addition, it should also be noted that the study area is situated approximately 250 metres from the shore of Georgian Bay. Proximity to water indicates potential for archaeological resources of First Nations origins.

5.3 ARCHAEOLOGICAL CONTEXT

The Archaeological Sites Database administered by the Ministry of Tourism, Culture and Sport (MTCS) indicates that there is one (1) previously registered archaeological sites within 1 kilometre of the study area. However, it must be noted that this is based on the assumption of the accuracy of information compiled from numerous researchers using different methodologies over many years. AMICK Consultants Limited assumes no responsibility for the accuracy of site descriptions, interpretations such as cultural affiliation, or location information derived from the Archaeological Sites Database administered by MTCS. In addition, it must also be noted that a lack of formerly documented sites does not indicate that there are no sites present as the documentation of any archaeological site is contingent upon prior research having been conducted within the study area.

Data contained in previous archaeological reports in close proximity to the study area that is relevant to Stage 1 Background Study is defined within the Standards and Guidelines for Consultant Archaeologists in Section 7.5.8 Standard 4 as follows:

"Provide descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the project area, as documented by all available reports that include archaeological fieldwork carried out on the lands to be impacted by this project, or where reports document archaeological sites immediately adjacent (i.e., within 50 m) to those lands."

(MTCS 2011: 126 Emphasis Added)

Background research shows that five (5) previous studies have taken place relevant to a property within 50m of the study area, all of which document investigations of the Tollendale Creek Site (BcGv-9) which is almost 300 metres distant from the study area. The property addressed in these earlier reports is on the opposite side of the Metrolinx corridor and therefore, the studies undertaken on that property have no relevance to the proposed undertaking. Three of these previous studies are archaeological consultant reports and two are unpublished private research projects. For further information see:


We have provided as much information as we have been able to locate on these reports. Given their age, we have not been able to confirm MTCS file numbers for most of the above-cited reports and manuscripts. However, none of the above noted reports include archaeological fieldwork carried out on the lands to be impacted by this project, or document archaeological sites immediately adjacent (i.e., within 50 m) to those lands.

### 5.3.1 First Nations Registered Archaeological Sites

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MTCS. As a result it was determined that one (1) archaeological sites relating directly to First Nations habitation/activity had been formally documented within the immediate vicinity of the study area. All previously registered First Nations sites are briefly described below in Table 1:

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Borden #</th>
<th>Site Type</th>
<th>Cultural Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tollendale Creek</td>
<td>BcGv-9</td>
<td>Campsite</td>
<td>Palaeo-Indian to Late Woodland</td>
</tr>
</tbody>
</table>

The Tollendale Creek Site (BcGv-9) is situated just within 300 metres of the study area. The location of this site within 300 metres of the study area indicates potential for further archaeological resources to be encountered within the study area. The Tollendale Creek Site (BcGv-9) is a multi-component campsite that has yielded artifacts dating from the Palaeo-Indian Period roughly 10,000 years ago up to the Late Woodland Period before Europeans arrived in the area (probably around 1400-1500 A.D.). For a detailed summary of all research undertaken at this site that makes use of all of the previous studies see the AMICK Consultants Limited report from 1998.
The distance to water criteria used to establish potential for archaeological sites suggests potential for First Nations occupation and land use in the area in the past. Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

Table 1 illustrates the chronological development of cultures within southern Ontario prior to the arrival of European cultures to the area at the beginning of the 17th century. This general cultural outline is based on archaeological data and represents a synthesis and summary of research over a long period of time. It is necessarily generalizing and is not necessarily representative of the point of view of all researchers or stakeholders. It is offered here as a rough guideline and outline to illustrate the relationships of broad cultural groups and time periods.

Table 2  Cultural Chronology for South-Central Ontario

<table>
<thead>
<tr>
<th>Years ago</th>
<th>Period</th>
<th>Southern Ontario</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
<td>Terminal Woodland</td>
<td>Ontario Iroquois and St. Lawrence Iroquois Cultures</td>
</tr>
<tr>
<td>1000</td>
<td>Initial Woodland</td>
<td>Princess Point Culture</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td>Saugeen-Point Peninsula-Meadowood Cultures</td>
</tr>
<tr>
<td>3000</td>
<td>Archaic</td>
<td>Laurentian Culture</td>
</tr>
<tr>
<td>4000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7000</td>
<td>Palaeo-Indian</td>
<td>Plano Culture</td>
</tr>
<tr>
<td>8000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10000</td>
<td></td>
<td>Clovis Culture</td>
</tr>
<tr>
<td>11000</td>
<td></td>
<td>(Wright 1972)</td>
</tr>
</tbody>
</table>

5.3.2 Euro-Canadian Registered Archaeological Sites

A summary of registered and/or known archaeological sites within a 1-kilometre radius of the study area was gathered from the Archaeological Sites Database, administered by MTCS. As a result it was determined that no (0) archaeological sites relating directly to Euro-Canadian habitation/activity had been formally documented within the immediate vicinity of the study area.
5.3.3 LOCATION AND CURRENT CONDITIONS

The study area is within the City of Barrie and includes the Existing Road Allowances of both sides along all of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west. Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

The City of Barrie is considering upgrades to wastewater servicing for the area of Foster Drive in Barrie. The residential dwellings are currently on septic systems and the EA is to consider options to have them connected to wastewater services. Accordingly, this assessment was undertaken as a requirement under the Environmental Assessment Act (RSO 1990b) in order to support a Municipal Class EA as part of the pre-submission process. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a), and the Ontario Heritage Amendment Act (SO 2005).

The study area consists of an existing road allowance network within an existing residential neighbourhood. The interior road allowances can be described generally as existing asphalt paved roadways with adjacent deep and wide drainage ditches on both sides of the existing travelled roads. This general description applies to Yeates Avenue, Merrett Drive, Garson Street and MacLaren Avenue. It is also noteworthy that most of study area along these roadways is also not in proximity to any cultural or natural features that indicate archaeological potential. The east side of Yonge Street within the study area has been subject to extensive reworking over time and has been widened and new commercial properties line this major arterial roadway. Most of the road allowance along this roadway is within a recently redeveloped boulevard in which numerous services are buried. The north side of Little Avenue within the study area has also been subject to repeated modernization. However, Foster Drive has unimproved shoulders and relatively shallow ditches when present. This road allowance also is an early settlement road in close proximity to numerous features suggesting archaeological potential. A plan of the study area is included within this report as Figure 3.

5.3.4 PHYSIOGRAPHIC REGION

The study area is situated within the Simcoe Lowlands physiographic region. For the most part, at one time, this restricted basin was part of the floor of Lake Algonquin, and its surface beds are deposits of deltaic and lacustrine origin, and not glacial outwash. As a small basin shut in by the Edenvale Moraine, the Minesing flats represent an annex of the Nipissing lake plains. Although the study area lies on the north side of the Minesing flats, noticeable properties such as calcareous clays and overlying sands comprising the soils are similar (Chapman and Putnam, 1984: 177-182).

5.3.5 SURFACE WATER

AMICK Consultants Limited
Sources of potable water, access to waterborne transportation routes, and resources associated with watersheds are each considered, both individually and collectively to be the highest criteria for determination of the potential of any location to support extended human activity, land use, or occupation. Accordingly, proximity to water is regarded as the primary indicator of archaeological site potential. The Standards and Guidelines for Consultant Archaeologists stipulates that undisturbed lands within 300 metres of a water source are considered to have archaeological potential (MTC 2011: 21).

Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

5.3.6 CURRENT PROPERTY CONDITIONS CONTEXT

Current characteristics encountered within an archaeological research study area determine if physical assessment of specific portions of the study area will be necessary and in what manner a Stage 2 Property Assessment should be conducted, if necessary. Conventional assessment methodologies include pedestrian survey on ploughable lands and test pit methodology within areas that cannot be ploughed. For the purpose of determining where physical assessment is necessary and feasible, general categories of current landscape conditions have been established as archaeological conventions. These include:

5.3.6.1 BUILDINGS AND STRUCTURAL FOOTPRINTS

A building, in archaeological terms, is a structure that exists currently or has existed in the past in a given location. The footprint of a building is the area of the building formed by the perimeter of the foundation. Although the interior area of building foundations would often be subject to physical assessment when the foundation may represent a potentially significant historic archaeological site, the footprints of existing structures are not typically assessed. Existing structures commonly encountered during archaeological assessments are often residential-associated buildings (houses, garages, sheds), and/or component buildings of farm complexes (barns, silos, greenhouses). In many cases, even though the disturbance to the land may be relatively shallow and archaeological resources may be situated below the disturbed layer (e.g. a concrete garage pad), there is no practical means of assessing the area beneath the disturbed layer. However, if there were evidence to suggest that there are likely archaeological resources situated beneath the disturbance, alternative methodologies may be recommended to study such areas.

The study area contains a large number of houses. The development of this residential neighbourhood appears to have occurred in the late 20th century. No cultural heritage features of any description were observed within any portion of the study area or within visual range of the study area such that the proposed undertaking could potentially impact possible heritage features. There are no properties that are designated under the Heritage Act or Listed within the Municipal Register of Heritage Properties. Therefore, there are no areas within the study area with potential for archaeological resources associated with possible cultural heritage features such as buildings, or other structures such as bridges.
5.3.6.2 DISTURBANCE

Areas that have been subjected to extensive and deep land alteration that has severely damaged the integrity of archaeological resources are known as land disturbances. Examples of land disturbances are areas of “past quarrying, major landscaping, recent built and industrial uses, sewage and infrastructure development, etc.” (MCL 2005: 15), as well as driveways made of either gravel or concrete, in-ground pools, and wells or cisterns. Utility lines are conduits that provide services such as water, natural gas, hydro, communications, sewage, and others. Areas containing below ground utilities are considered areas of disturbance, and are excluded from Stage 2 Physical Assessment. Disturbed areas are excluded from Stage 2 Physical Assessment due to no or low archaeological potential or because they are not assessable using conventional methodology.

The study area does contain previous disturbances. The existing surface of the roadways constitutes an area of disturbance that cannot be assessed using conventional methodology. Some areas along more significant roadways such as Little Avenue and Yonge Street also have concrete sidewalks that cannot be assessed using conventional methodology. Most of the interior roadways of the neighbourhood also have deep roadside ditches where archaeological potential has been removed.

5.3.6.3 LOW-LYING AND WET AREAS

Landscape features that are covered by permanently wet areas, such as marshes, swamps, or bodies of water like streams or lakes, are known as low-lying and wet areas. Low-lying and wet areas are excluded from Stage 2 Physical Assessment due to inaccessibility.

The study area does contain a low-lying and wet area. Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

5.3.6.4 STEEP SLOPE

Landscape which slopes at a greater than (> ) 20 degree change in elevation, is known as steep slope. Areas of steep slope are considered uninhabitable, and are excluded from Stage 2 Physical Assessment.

The study area does not contain areas of steep slope.

5.3.6.5 WOODED AREAS

Areas of the property that cannot be ploughed, such as natural forest or woodlot, are known as wooded areas. These wooded areas qualify for Stage 2 Physical Assessment, and are required to be assessed using test pit survey methodology.
There are areas within the study area that are woodlot areas. However, none of these areas are within or in close proximity to any of the road allowances where potential impacts may occur.

5.3.6.6 Ploughable Agricultural Lands

Areas of current or former agricultural lands that have been ploughed in the past are considered ploughable agricultural lands. Ploughing these lands regularly moves the soil around, which brings covered artifacts to the surface, easily identifiable during visual inspection. Furthermore, by allowing the ploughed area to weather sufficiently through rainfall washing soil off any artifacts, the visibility of artifacts at the surface of recently worked field areas increases significantly. Pedestrian survey of ploughed agricultural lands is the preferred method of physical assessment because of the greater potential for finding evidence of archaeological resources if present.

The study area contains no ploughable lands.

5.3.6.7 Lawn, Pasture, Meadow

Landscape features consisting of former agricultural land covered in low growth, such as lawns, pastures, meadows, shrubbery, and immature trees. These are areas that may be considered too small to warrant ploughing, (i.e. less than one hectare in area), such as yard areas surrounding existing structures, and land-locked open areas that are technically workable by a plough but inaccessible to agricultural machinery. These areas may also include open area within urban contexts that do not allow agricultural tillage within municipal or city limits or the use of urban roadways by agricultural machinery. These areas are required to be assessed using test pit survey methodology.

The study area does contain some areas of lawn. There are small patches of law area adjacent to the study area associated with existing residences along all of the road allowances. The study area also contains a park and a large parcel of vacant land adjacent to Yonge Street that is presently an overgrown meadow area.

5.3.7 Summary

Background research indicates the vicinity of the study area has potential for archaeological resources of Native origins based on proximity to water. Background research also suggests potential for archaeological resources of Euro-Canadian origins based on proximity to historic transportation corridors and nearby settlement.

Archaeological potential does not indicate that there are necessarily sites present, but that environmental and historical factors suggest that there may be as yet undocumented archaeological sites within lands that have not been subject to systematic archaeological research in the past.
6.0 PROPERTY INSPECTION

A property inspection is not required as part of a Stage 1 Archaeological Background Study unless there is reason to believe that portions of the study area may be excluded from physical assessment on the basis of the conditions of the property or portions thereof.

This report confirms that the entirety of the study area was subject to visual inspection, and that the fieldwork was conducted according to the archaeological fieldwork standards and guidelines, including weather and lighting conditions. The property inspection was completed in ideal conditions under sunny skies on 23 October 2014. The temperature at the time of the inspection was 21°C. The locations from which photographs were taken and the directions toward which the camera was aimed for each photograph are illustrated in Figures 4 & 5 of this report. Upon completion of the field inspection of the study area, it was determined that most areas potentially impacted by the proposed undertaking would require Stage 2 archaeological assessment.

6.1 PHOTO DOCUMENTATION

A detailed examination and photo documentation was carried out on the study area in order to document the existing conditions of the study area to facilitate Stage 2 assessment. All areas of the study area were visually inspected and photographed. The locations from which photographs were taken and the directions toward which the camera was aimed for each photograph are illustrated in Figures 4 & 5 of this report.

6.2 FIELD WORK WEATHER CONDITIONS

The property inspection was completed in ideal conditions 23 October 2014. Weather conditions were appropriate for the conduct of archaeological fieldwork.

6.3 ARCHAEOLOGICAL FIELDWORK DOCUMENTATION

The documentation produced during the field investigation conducted in support of this report includes: one sketch map, one page of photo log, one page of field notes, and 33 digital photographs.

7.0 ANALYSIS AND CONCLUSIONS

AMICK Consultants Limited was engaged by the proponent to undertake a Stage 1 Archaeological Background Study of lands potentially affected by the proposed undertaking and was granted permission to carry out archaeological work on 08 October 2014. A detailed Stage 1 Property Inspection was conducted of the study on 23 October 2013. All records, documentation, field notes, photographs and artifacts (as applicable) related to the conduct and findings of these investigations are held at the Lakelands District corporate offices of AMICK Consultants Limited until such time that they can be transferred to an agency or
institution approved by the Ontario Ministry of Tourism, Culture and Sport (MTCS) on behalf of the government and citizens of Ontario.

Section 7.7.3 of the Standards and Guidelines for Consultant Archaeologists (MTC 2011: 132) outlines the requirements of the Analysis and Conclusions component of a Stage 1 Background Study.

1) “Identify and describe areas of archaeological potential within the project area.
2) Identify and describe areas that have been subject to extensive and deep land alterations. Describe the nature of alterations (e.g., development or other activity) that have severely damaged the integrity of archaeological resources and have removed archaeological potential.”

7.1 CHARACTERISTICS INDICATING ARCHAEOLOGICAL POTENTIAL

Section 1.3.1 of the Standards and Guidelines for Consultant Archaeologists specifies the property characteristics that indicate archaeological potential (MTC 2011: 17-18). Factors that indicate archaeological potential are features of the local landscape and environment that may have attracted people to either occupy the land or to conduct activities within the study area. One or more of these characteristics found to apply to a study area would necessitate a Stage 2 Property Assessment to determine if archaeological resources are present. These characteristics are listed below together with considerations derived from the conduct of this study.

1) Previously Identified Archaeological Sites
   Previously documented archaeological sites related to First Nations activity and occupations have not been documented in the vicinity of the study area.

2) Water Sources
   Primary water sources are describes as including lakes, rivers, streams and creeks. Close proximity to primary water sources (300 metres) indicates that people had access to readily available sources of potable water and routes of waterborne trade and communication should the study area have been used or occupied in the past.

   Whiskey Creek constitutes a primary water source within 300 metres of the study area.

   Secondary water sources are described as including intermittent streams and creeks, springs, marshes, and swamps. Close proximity (300 metres) to secondary water sources indicates that people had access to readily available sources of potable water, at least on a seasonal basis, and in some cases seasonal access to routes of waterborne trade and communication should the study area have been used or occupied in the past.

   There are no identified secondary water sources within 300 metres of the study area.
3) **Features Indicating Past Water Sources**
Features indicating past water resources are described as including glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, and cobble beaches. Close proximity (300 metres) to features indicating past water sources indicates that people had access to readily available sources of potable water, at least on a seasonal basis, and in some cases seasonal access to routes of waterborne trade and communication should the study area have been used or occupied in the past.

There are no identified features indicating past water sources within 300 metres of the study area.

4) **Accessible or Inaccessible Shoreline**
This form of landscape feature would include high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.

There is no shoreline within 300 metres of the study area.

5) **Elevated Topography**
Features of elevated topography that indicate archaeological potential include eskers, drumlins, large knolls, and plateaux.

There is no elevated topography within the study area.

6) **Pockets of Well-drained Sandy Soil**
Pockets of sandy soil are considered to be especially important near areas of heavy soil or rocky ground.

The topsoil throughout the study area is very dark brown sand loam. This is typical for most of Simcoe County and does not suggest a heightened potential for archaeological resources in this instance.

7) **Distinctive Land Formations**
These are landscape features that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings.

There are no identified distinctive land formations within the study area.

8) **Resource Areas**
Resource areas that indicate archaeological potential include food or medicinal plants (e.g., migratory routes, spawning areas, and prairie), scarce raw materials (e.g., quartz, copper, ochre or outcrops of chert) and resources of importance to early Euro-Canadian industry (e.g., logging, prospecting, and mining).
There are no identified resource areas within the study area.

9) *Areas of Early Euro-Canadian Settlement*
These include places of early military or pioneer settlement (e.g., pioneer homesteads, isolated cabins, and farmstead complexes), early wharf or dock complexes, pioneer churches and early cemeteries. There may be commemorative markers of their history, such as local, provincial, or federal monuments or heritage parks.

The study area is situated within an area settled late in the middle of the 19th century and a historic homestead is depicted on the historic atlas map within 300 metres of the study area.

10) *Early Historical Transportation Routes*
This includes evidence of trails, passes, roads, railways, portage routes.

The study area includes identified early transportation routes. Yonge Street, Little Avenue, and Foster Drive are historic roadways. The Metrolinx railway corridor immediately north of the study area is a historic railway corridor.

11) *Heritage Property*
Property listed on a municipal register or designated under the *Ontario Heritage Act* or is a federal, provincial or municipal historic landmark or site.

There are no listed or designated heritage buildings or properties that form a part of the study area.

12) *Documented Historical or Archaeological Sites*
This includes property that local histories or informants have identified with possible archaeological sites, historical events, activities, or occupations. These are properties which have not necessarily been formally recognized or for which there is additional evidence identifying possible archaeological resources associated with historic properties in addition to the rationale for formal recognition.

There are no documented heritage features, or historic sites, or archaeological sites, in addition to the registered sites already noted, within the study area.

### 7.2 Characteristics Indicating Removal of Archaeological Potential

Section 1.3.2 of the *Standards and Guidelines for Consultant Archaeologists* specifies the property characteristics which indicate no archaeological potential or for which archaeological potential has been removed (MTC 2011: 18-19). These characteristics are listed below together with considerations derived from the conduct of this study.
The introduction of Section 1.3.2 (MTC 2011: 18) notes that "Archaeological potential can be determined not to be present for either the entire property or a part(s) of it when the area under consideration has been subject to extensive and deep land alterations that have severely damaged the integrity of any archaeological resources. This is commonly referred to as 'disturbed' or 'disturbance', and may include:"

1) **Quarrying**
   There is no evidence to suggest that quarrying operations were ever carried out within the study area.

2) **Major Landscaping Involving Grading Below Topsoil**
   Unless there is evidence to suggest the presence of buried archaeological deposits, such deeply disturbed areas are considered to have lost their archaeological potential. Properties that do not have a long history of Euro-Canadian occupation can have archaeological potential removed through extensive landscape alterations that penetrate below the topsoil layer. This is because most archaeological sites originate at grade with relatively shallow associated excavations into the soil. First Nations sites and early historic sites are vulnerable to extensive damage and complete removal due to landscape modification activities. In urban contexts where a lengthy history of occupation has occurred, properties may have deeply buried archaeological deposits covered over and sealed through redevelopment activities that do not include the deep excavation of the entire property for subsequent uses. Buildings are often erected directly over older foundations preserving archaeological deposits associated with the earlier occupation.

   The construction of roadways within the study area are major landscaping operations that would necessitate grading below topsoil.

3) **Building Footprints**
   Typically, the construction of buildings involves the deep excavation of foundations, footings and cellars that often obliterate archaeological deposits situated close to the surface.

   The study area is a late 20th century residential neighbourhood.

4) **Sewage and Infrastructure Development**
   Installation of sewer lines and other below ground services associated with infrastructure development often involves deep excavation that can remove archaeological potential.

   There are deep and wide roadside ditches and buried services to support the neighbourhood within the road allowance.

   "Activities such as agricultural cultivation, gardening, minor grading and landscaping do not necessarily affect archaeological potential."

   (MTC 2011: 18)
"Archaeological potential is not removed where there is documented potential for deeply buried intact archaeological resources beneath land alterations, or where it cannot be clearly demonstrated through background research and property inspection that there has been complete and intensive disturbance of an area. Where complete disturbance cannot be demonstrated in Stage 1, it will be necessary to undertake Stage 2 assessment."

(MTC 2011: 18)

Table 4 below summarizes the evaluation criteria of the Ministry of Tourism and Culture together with the results of the Stage 1 Background Study for the proposed undertaking. Based on the criteria, the study area is deemed to have archaeological potential on the basis of proximity to a previously documented archaeological site, proximity to Whiskey Creek, proximity to a historic homestead, proximity to a historic railway corridor, and the presence of historic settlement roads within the study area.
<table>
<thead>
<tr>
<th>FEATURE OF ARCHAEOLOGICAL POTENTIAL</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Known archaeological sites within 300m</td>
<td>Y</td>
<td></td>
<td>N/A</td>
<td>If Yes, potential determined</td>
</tr>
</tbody>
</table>

**PHYSICAL FEATURES**

| 2 Is there water on or near the property? | Y   |    |     | If Yes, what kind of water? |
| 2a Primary water source within 300 m. (lakeshore, river, large creek, etc.) | Y   |    |     | If Yes, potential determined |
| 2b Secondary water source within 300 m. (stream, spring, marsh, swamp, etc.) | N   |    |     | If Yes, potential determined |
| 2c Past water source within 300 m. (beach ridge, river bed, relic creek, etc.) | N   |    |     | If Yes, potential determined |
| 2d Accessible or Inaccessible shoreline within 300 m. (high bluffs, marsh, swamp, sand bar, etc.) | N   |    |     | If Yes, potential determined |

| 3 Elevated topography (knolls, drumlins, eskers, plateaus, etc.) | N   |    |     | If Yes, and Yes for any of 4-9, potential determined |
| 4 Pockets of sandy soil in a clay or rocky area | N   |    |     | If Yes and Yes for any of 3, 5-9, potential determined |
| 5 Distinctive land formations (mounds, caverns, waterfalls, peninsulas, etc.) | N   |    |     | If Yes and Yes for any of 3-4, 6-9, potential determined |

**HISTORIC/PREHISTORIC USE FEATURES**

| 6 Associated with food or scarce resource harvest areas (traditional fishing locations, agricultural/berry extraction areas, etc.) | N   |    |     | If Yes, and Yes for any of 3-5, 7-9, potential determined. |
| 7 Early Euro-Canadian settlement area within 300 m. | Y   |    |     | If Yes, and Yes for any of 3-6, 8-9, potential determined |
| 8 Historic Transportation route within 100 m. (historic road, trail, portage, rail corridors, etc.) | Y   |    |     | If Yes, and Yes for any 3-7 or 9, potential determined |
| 9 Contains property designated and/or listed under the Ontario Heritage Act (municipal heritage committee, municipal register, etc.) | N   |    |     | If Yes and, Yes to any of 3-8, potential determined |

**APPLICATION-SPECIFIC INFORMATION**

| 10 Local knowledge (local heritage organizations, First Nations, etc.) | N   |    |     | If Yes, potential determined |
| 11 Recent disturbance not including agricultural cultivation (post-1960-confirmed extensive and intensive including industrial sites, aggregate areas, etc.) | Y   |    |     | If Yes, no potential or low potential in affected part(s) of the study area. |

*If YES to any of 1, 2a-c, or 10 Archaeological Potential is confirmed*
*If YES to 2 or more of 3-9, Archaeological Potential is confirmed*
*If YES to 11 or No to 1-10 Low Archaeological Potential is confirmed for at least a portion of the study area.*
7.3 **Stage 1 Results**

As a result of the Stage 1 portion of the study it was determined that the study area the study area is deemed to have archaeological potential on the basis of proximity to a previously documented archaeological site, proximity to Whiskey Creek, proximity to a historic homestead, proximity to a historic railway corridor, and the presence of historic settlement roads within the study area.

8.0 **Recommendations**

8.1 **Stage 1 Recommendations**

Under Section 7.7.4 of the *Standards and Guidelines for Consultant Archaeologists* (MTC 2011: 133) the recommendations to be made as a result of a Stage 1 Background Study are described.

1) **Make recommendations regarding the potential for the property, as follows:**
   a. if some or all of the property has archaeological potential, identify areas recommended for further assessment (Stage 2) and areas not recommended for further assessment. Any exemptions from further assessment must be consistent with the archaeological fieldwork standards and guidelines.
   b. if no part of the property has archaeological potential, recommend that the property does not require further archaeological assessment.

2) **Recommend appropriate Stage 2 assessment strategies.**

As a result of the Stage 1 Archaeological Background Study, the project area potentially impacted by the proposed undertaking has been identified as an area of archaeological potential. Stage 2 assessment of the study area is recommended in the form of high intensity test pit survey at a 5m interval between transects within select areas. As a result of the property inspection component of the Stage 1 Archaeological Background Study, the areas of existing pavement, the roadside shoulders and the deep and wide drainage ditches were found to be areas of no or very low archaeological potential; consequently no further archaeological assessment of these areas is required. Therefore, no Stage 2 Property Assessment is recommended for Yeates Avenue, Merrett Drive Garson Street and MacLaren Avenue. It is also noteworthy that most of study area along these roadways is also not in proximity to any cultural or natural features that indicate archaeological potential. Yonge Street has been subject to extensive reworking over time and has been widened and new commercial properties line this major arterial roadway. Most of the road allowance along this roadway is within a recently redeveloped boulevard in which numerous services are buried. Little Avenue has also been subject to repeated modernization and consists predominantly of slope. However, Foster Drive has unimproved shoulders and relatively shallow ditches when present. This road allowance also is an early settlement road in close proximity to numerous features suggesting archaeological potential.
No cultural heritage features of any description were observed within any portion of the study area or within visual range of the study area such that the proposed undertaking could potentially impact possible heritage features. There are no properties that are designated under the Heritage Act or Listed within the Municipal Register of Heritage Properties. Therefore, there no areas within the study area with potential for archaeological resources associated with possible cultural heritage features such as buildings, or other structures such as bridges.

Stage 2 Property Assessment is recommended within the road allowance of Foster Drive.

Should the proposed improvements necessitate impacts to land outside of the existing road allowances, Stage 2 Property Assessment of any such affected areas must be undertaken by test pit survey at an interval of 5 metres between individual test pits wherever it is viable to do so.

Areas identified within this report as having low potential for archaeological resources (depicted in Figures 4 & 5) should be excluded from any requirement for Stage 2 Property Assessment.
9.0 **ADVICE ON COMPLIANCE WITH LEGISLATION**

While not part of the archaeological record, this report must include the following standard advisory statements for the benefit of the proponent and the approval authority in the land use planning and development process:

a. *This report is submitted to the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c. 0.18. The report is reviewed to ensure that it complies with the standards and guidelines issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism and Culture, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.*

b. *It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the Ontario Heritage Act.*

c. *Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.*

d. *The Funeral, Burial and Cremation Services Act, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.*

e. *Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.*
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Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie

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Corporate Project Number 14543-P

24 March 2015
EXECUTIVE SUMMARY

This report describes the results of the 2014 Cultural Heritage Assessment of the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie, conducted by AMICK Consultants Limited. Michael Henry, partner of AMICK Consultants Limited, conducted this study. This investigation was undertaken as a component study of the Class Environmental Assessment (E.A.) process under the Environmental Assessment Act (R.S.O. 1990) for approval from the Ministry of the Environment (MOE). This report will address whether there are protected heritage properties abutting the project location.

AMICK Consultants Limited was engaged by the proponent to undertake a Cultural Heritage Resources Assessment of lands potentially affected by the proposed undertaking and was granted permission to enter the property for the purposes of completing necessary fieldwork on 08 October 2014. The study area was subject to reconnaissance and photographic documentation on 23 October 2014. The Stage 1 Archaeological Background Study has been completed under separate cover (AMICK 2015).

The cultural heritage evaluation of the proposed undertaking was conducted in order to identify cultural heritage resources including built heritage resources and cultural heritage landscapes. The anticipated development impacts to cultural heritage landscapes and built heritage resources are displacement and disruption. Displacement occurs when cultural heritage features are removed as part of the development of the proposed undertaking. Disruption, or indirect impact, occurs through the introduction of physical, visual, audible or atmospheric elements that are not consistent with the setting or the character of the cultural heritage features.

The criteria for determination of cultural heritage value or interest suggest that the study area contains features of potential cultural value or interest: Yonge Street, Foster Drive and Little Avenue. The Metrolinx rail corridor is not situated within the study area but is adjacent to it and therefore this heritage feature can potentially face indirect impacts from development activity within the study area.

The assessment of the effects of the proposed undertaking to these cultural heritage landscape features determined that there are no potential adverse impacts. Mitigation of impacted heritage values is not warranted.
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1.0 INTRODUCTION

This report describes the results of the 2014 Cultural Heritage Assessment of the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie, conducted by AMICK Consultants Limited. Michael Henry, partner of AMICK Consultants Limited, conducted this study. This investigation was undertaken as a component study of the Class Environmental Assessment (E.A.) process under the Environmental Assessment Act (R.S.O. 1990) for approval from the Ministry of the Environment (MOE). This report will address whether there are protected heritage properties abutting the project location.

AMICK Consultants Limited was engaged by the proponent to undertake a Cultural Heritage Resources Assessment of lands potentially affected by the proposed undertaking and was granted permission to enter the property for the purposes of completing necessary fieldwork on 08 October 2014. The study area was subject to reconnaissance and photographic documentation on 23 October 2014. The Stage 1 Archaeological Background Study has been completed under separate cover (AMICK 2015).

Figure 1 Location of the Study Area
1.1 Project Description

The City of Barrie is considering upgrades to wastewater servicing for the area of Foster Drive in Barrie. The residential dwellings are currently on septic systems and the EA is to consider options to have them connected to wastewater services. Accordingly, this assessment was undertaken as a requirement under the Environmental Assessment Act (RSO 1990b) in order to support a Municipal Class EA as part of the pre-submission process. All work was conducted in conformity with Ontario Ministry of Tourism and Culture (MTC) Standards and Guidelines for Consultant Archaeologists (MTC 2011), the Ontario Heritage Act (RSO 1990a), and the Ontario Heritage Amendment Act (SO 2005).

A Cultural Heritage Evaluation Report was deemed a necessary component of the Municipal Class EA to ensure that adverse impacts to potentially significant cultural heritage features are identified and addressed as part of the overall project.

![Study Area Plan](image)

Figure 2 Study Area Plan (RJB 2014)

The likely locations of direct development impacts associated with the proposed undertaking are within the proposed road allowances associated with existing road allowances illustrated above in Figure 2, which is a facsimile of the plan prepared by R. J. Burnside & Associates Limited (RJB 2014).
2.0 REGULATORY CONTEXT

2.1 Environmental Assessment Act

Ontario's Environmental Assessment Act (R.S.O. 1990) requires an environmental assessment of any major public sector undertaking that has the potential for significant environmental effects. This includes public roads, transit, wastewater and stormwater installations. Environmental assessments determine the ecological, cultural, economic and social impact of the project. Environmental assessment is a key part of the planning process and must be completed before decisions are made to proceed on a project. The Environmental Assessment Act also establishes a "Class Environmental Assessment" process to streamline the planning of municipal projects — including some road, water, and sewage and storm water projects.

2.2 Planning Act

The Planning Act (R.S.O. 1990) and the Provincial Policy Statement (P.P.S. 2005) also address heritage resources from the perspective of the provincial interest. Section 2 of the Planning Act provides a list of matters of provincial interest. Planning authorities regulated under the Planning Act must have regard for matters of provincial interest in the conduct of their responsibilities.

"The Minister, the council of a municipality, a local board, a planning board and the Municipal Board, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as, ...

... (d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;"

(Planning Act R.S.O. 1990, Part 1, s. 2)

2.3 Provincial Policy Statement

The current Provincial Policy Statement (PPS 2014) provides direction on provincial expectations with respect to how provisions under the Planning Act are interpreted and implemented. This Provincial Policy Statement was issued under Section 3 of the Planning Act (R.S.O. 1990) and came into effect on April 30, 2014. It replaces the Provincial Policy Statement of 2005.

"The Provincial Policy Statement provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario’s policy-led planning system, the Provincial Policy Statement sets the policy foundation for regulating the development and use of land."

(P.P.S. 2014: 1)
“In respect of the exercise of any authority that affects a planning matter, Section 3 of the Planning Act requires that decisions affecting planning matters ‘shall be consistent with’ policy statements issued under the Act.”

(P.P.S. 2014: 1)

Part V: Policies (P.P.S. 2014) provides direction for the appropriate management of resources of provincial interest. Section 2 of Part V entitled Wise Use and Management of Resources includes sub-Section 2.6 Cultural Heritage and Archaeology.

“2.6 Cultural Heritage and Archaeology

2.6.1 Significant built heritage resources and significant cultural heritage landscapes shall be conserved.

2.6.2 Development and site alteration shall not be permitted on lands containing archaeological resources or areas of archaeological potential unless significant archaeological resources have been conserved.

2.6.3 Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.

2.6.4 Planning authorities should consider and promote archaeological management plans and cultural plans in conserving cultural heritage and archaeological resources.

2.6.5 Planning authorities shall consider the interests of Aboriginal communities in conserving cultural heritage and archaeological resources.”

(P.P.S. 2014: 29)

Part V, Section 6 of the PPS includes an alphabetical listing of definitions for the terms employed in the PPS. The following are of particular relevance to the cultural heritage assessment undertaken in support of the proposed undertaking:

“Built heritage resource: means a building, structure, monument, installation or any manufactured remnant that contributes to a property’s cultural heritage value or interest as identified by a community, including an Aboriginal community. Built heritage resources are generally located on property that has been designated under Parts IV or V of the Ontario Heritage Act, or included on local, provincial and/or federal registers.” (P.P.S. 2014: 39)

“Conserved: means the identification, protection, management and use of built heritage resources, cultural heritage landscapes and archaeological resources in a manner that ensures their cultural heritage value or interest is retained under the Ontario Heritage Act. This may be achieved by the implementation of
recommendations set out in a conservation plan, archaeological assessment, and/or heritage impact assessment. Mitigative measures and/or alternative development approaches can be included in these plans and assessments.” (P.P.S. 2014: 40)

“Cultural heritage landscape: means a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. The area may involve features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act; villages, parks, gardens, battlefields, mainstreets and neighbourhoods; cemeteries; trailways, viewsheds, natural areas and industrial complexes of heritage significance; and areas recognized by federal or international designation authorities (e.g. a National Historic Site or District designation, or a UNESCO World Heritage Site).” (P.P.S. 2014: 40)

“Heritage attributes: means the principal features or elements that contribute to a protected heritage property’s cultural heritage value or interest, and may include the property’s built or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (including significant views or vistas to or from a protected heritage property).” (P.P.S. 2014: 43)

“Protected heritage property: means property designated under Parts IV, V or VI of the Ontario Heritage Act; property subject to a heritage conservation easement under Parts II or IV of the Ontario Heritage Act; property identified by the Province and prescribed public bodies as provincial heritage property under the Standards and Guidelines for Conservation of Provincial Heritage Properties; property protected under federal legislation, and UNESCO World Heritage Sites.” (P.P.S. 2014: 47)

“Significant: means...e) in regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest for the important contribution they make to our understanding of the history of a place, an event, or a people.” (P.P.S. 2014: 49)

HERITAGE RESOURCES IN THE LAND USE PLANNING PROCESS: Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005 published in 2006 by the Ontario Ministry of Culture (now the Ministry of Tourism, Culture and Sport), provides further details on the policies of the Ministry of Tourism, Culture and Sport (MTCS) who are mandated to regulate the provincial interest with respect to heritage under the Ontario Heritage Act (R.S.O. 1990) and the Ontario Heritage Amendment Act (S.O. 2005).

This document largely reviews the information discussed previously with respect to the provincial interest in heritage matters. However, additional information is provided with
respect to forms of cultural heritage landscapes. Three types of cultural heritage landscapes are defined:

"There are generally three main types of cultural heritage landscapes. The following are taken from the Operational Guidelines adopted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Committee in 1992, and are widely accepted as the three primary landscape types:

• **Designed landscapes**: those which have been intentionally designed e.g. a planned garden or in a more urban setting, a downtown square.

• **Evolved landscapes**: those which have evolved through the use by people and whose activities have directly shaped the landscape or area. This can include a ‘continuing’ landscape where human activities and uses are still on-going or evolving e.g. residential neighbourhood or mainstreet; or in a ‘relict’ landscape, where even though an evolutionary process may have come to an end, the landscape remains historically significant e.g. an abandoned mine site or settlement area.

• **Associative landscapes**: those with powerful religious, artistic or cultural associations of the natural element, as well as with material cultural evidence e.g. a sacred site within a natural environment or a historic battlefield.

(MTC 2006: 10)

### 2.4 Heritage Act

The criteria to define local cultural heritage significance is prescribed in O. Reg. 9/06 made pursuant to section 29(1) (a) of the Ontario Heritage Act. The criteria set forth are reproduced below from sub-Section 2:

"A property may be designated under section 29 of the Act if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest:

1. The property has design value or physical value because it,
   i. is a rare, unique, representative or early example of a style, type, expression, material or construction method,
   ii. displays a high degree of craftsmanship or artistic merit, or
   iii. demonstrates a high degree of technical or scientific achievement.

2. The property has historical value or associative value because it,
   i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,
   ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or
   iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.

3. The property has contextual value because it,
i. is important in defining, maintaining or supporting the character of an area,
ii. is physically, functionally, visually or historically linked to its surroundings,
or
iii. is a landmark.  

(O. Reg. 9/06, s. 1 (2))

2.5 Project Context

In consideration of the above-described definitions of terminology related to heritage conservation, the proposed undertaking has the potential to adversely impact cultural heritage resources through displacement or disruption. Displacement occurs when cultural heritage features are removed as part of the development of the proposed undertaking. Disruption, or indirect impact, occurs through the introduction of physical, visual, audible or atmospheric elements that are not consistent with the setting or the character of the cultural heritage features.

This assessment report addresses above ground cultural heritage resources. These heritage resources fall into two broad categories: built heritage resources and cultural heritage landscapes. Cultural landscapes are related sets of individual artificial features or modifications to the environment and associated with forms of settlement and land use tied to historically defined time periods and cultural groups. Built heritage features are individual buildings or structures associated with changes over time in architectural design and building technology or with historic patterns of settlement. A third category of cultural heritage resources, archaeological deposits, has been addressed under separate cover specific to the nature of those forms of cultural heritage resource.

2.6 Project Assessment

The purpose of this study is to identify and evaluate cultural heritage resources that may be impacted through proposed land use changes or landscape modifications. Within the HERITAGE RESOURCES IN THE LAND USE PLANNING PROCESS: Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005 published in 2006 by the Ontario Ministry of Culture (now MTCS) the means of identifying cultural heritage resources during an assessment is described:

- **Historical Research**
  Consulting maps, land records, photographs, publications, primary and other sources.
- **Site Survey and Analysis**
  Windshield surveys, intensive surveys, site surveys and analysis of the various features and characteristics which make up the cultural heritage landscape as well as delineation of landscape boundaries.
- **Evaluation**
  Applying criteria for evaluating design, history, and context of the entire subject area.
A heritage feature documented during the course of the assessment that meets one or more of the criteria noted in Section 2.4 above may require more detailed evaluation in order to determine the level of significance and appropriate measures to mitigate potential adverse impacts once the preferred alternative for the proposed undertaking is selected.

The identification of cultural heritage landscapes typically falls within one of a number of conventionally used classifications. It should be noted as well that classes of heritage landscapes could overlap.

**Historic Settlement:** groupings of two or more structures identified with a commonly applied name;

**Historic Agricultural Landscape:** a historically established agricultural land use with defined land use areas such as fields or pastures and often associated with built features such as barns, outbuildings, fences, vehicle lanes, etc.

**Farm Complex:** consisting of at least two buildings including at least a farm house or a barn and often associated with tree lines, lanes, orchards, gardens, wells, silos, various forms of outbuildings, etc.

**Streetscapes:** usually refers to a paved roadway that is bounded on either side by urban density historically rooted development.

**Roadscapes:** are typically rural equivalents to streetscapes that are no more than two lanes in width with associated narrow shoulders, ditches, tree lines, bridges etc. that typify historically developed rural roads.

**Railscapes:** both active and inactive railway lines and railway rights-of-way and associated features such as artificial embankments, cuts, retaining walls, culverts, bridges, etc.

**Waterscapes:** water features that contribute to the overall character of a cultural heritage landscape and may have had a significant impact on the development of historically rooted settlement.

**Cemeteries:** land set aside for the purpose of burying human remains.

### 3.0 HISTORICAL CONTEXT

This section provides an outline and summary of historic research and identified cultural heritage resources above ground that may be adversely impacted by the proposed undertaking.

### 3.1 General Historical Outline

Three First Nations trails known as the Rouge Trail, Don Trail and Humber Trail began on the shore of Lake Ontario in the Toronto area and terminated on the two branches of the Holland River (Myers 1977: 2). These trails form part of a long established trade and communications network that linked the upper and lower Great Lakes. The route followed the Holland River into the southern end of Lake Simcoe. Also, the route followed the western shore of Lake Simcoe northward to Kempenfelt Bay, and then westward to the end of the...
bay. A portage was then undertaken to the Nottawasaga River and this river was followed into Georgian Bay at the present location of the Town of Wasaga Beach. This network of trade and communication had been long established by the time Europeans began to operate in the area. The presence of artifacts dating to the Early Archaic Period in close proximity to the upper and lower landings on the Holland River East Branch suggests that the use of this system most likely dates back to at least that period.

In the seventeenth century Simcoe County was home to the Huron. With the arrival of French priests and Jesuits, missions were established near Georgian Bay. After the destruction of the missions by the Iroquois and the British, Algonquin speaking peoples occupied the area. After the war of 1812, the government began to invest in the military defences of Upper Canada, through the extension of Simcoe’s Yonge Street from Lake Simcoe to Penetanguishene on Georgian Bay (Garbutt, 2010).

The township of Innisfil originally included Allendale, Tollendal, Painswick, Minets Point and Holly. The township was incorporated in 1850. The first settlers were the Hewson Family who settled on what was called Hewson’s Point and was later renamed Big Bay Point in March of 1820. George McMullan of Tollendal built the first sawmill in 1823. In 1825 due to the steadily increasing number of settlers, it became important to have accessible roadways; this lead to the clearing of brush between Barrie and Churchville. This became an overland route known as the Penetanguishene Road, which later became Hwy 11, and is now known as Yonge Street. (Lemon 1951)

The development of Innisfil township relied heavily upon settlers clearing purchased land and establishing self-sustaining farms. As the population increased, so did the amount services (post office, schools and church) available to settlers. The township even had its own form of local government; commissioners were appointed by the provincial legislature who would oversee the political issues of the community. By 1835, there was a strong need for a gristmill, which was a direct result of the progress of the agricultural community. In 1853, the Allandale train station began operating which fuelled the continuing growth of the community. By the late 1800’s the township began to lose land to the more rapidly growing urban area nearby. In 1891 500 acres were annexed to the Village of Allandale which was soon swallowed up by the growth of Barrie. The City of Barrie annexed an additional 500 acres from Innisfil in 1897. (Lemon 1951)

In Smith’s Canadian Gazetteer (1846), it is said of Barrie that it was first settled in 1832 and had 28 families resident there by 1837. In 1843, the District of Simcoe was created and Barrie named as the seat of the District government. By 1846, the population of Barrie was estimated to be approximately 500 persons of predominantly English, Irish and Scotch origins. Barrie had three churches by 1846: two Methodist and one Episcopal. In addition, an excellent private school had been established, as had a mechanics’ institute and a cricket club. The professions of Barrie included one physician, one lawyer, six stores, three tanneries, one surveyor, three taverns, four blacksmiths, one wagon maker, one baker, one saddler, one cabinet maker, one watchmaker, six shoemakers, three tailors, two butchers, and one Bank of Upper Canada branch (Smith 1846: 9).
However, it must be borne in mind that inclusion of names of property owners and depictions of structures within properties were sold by subscription. While information included within these maps may provide information about occupation of the property at a specific point in time, the absence of such information does not indicate that the property was not occupied.

3.2 Historic Maps

![Map of Innisfil Township 1881 (Belden 1881)](image)

Figure 3  Segment of a Map of Innisfil Township 1881 (Belden 1881)

Figure 3 illustrates the location of the study area and environs as of 1881. None of the original rural lots through which this roadway passes are shown to belong to anyone. No structures are shown along the roadways. The area generally shows very little settlement. However, the current Metrolinx railway corridor is depicted, indicating that this is a historic railway corridor. This corridor was originally constructed in 1852 and leads to the Allendale train station noted above that began operations in 1853. Whiskey Creek is also depicted on this map demonstrating that there is a source of potable water nearby and anywhere within the study area within 300 metres of Whiskey Creek is deemed to have potential for archaeological resources of First Nations origins. As well, Yonge Street, Little Avenue, and Foster Drive are all depicted on this map as early settlement roads. Accordingly, it has been determined that there is potential for archaeological resources related to Euro-Canadian settlement to be found within the study area. Any part of the study area within 100 metres of these early transportation corridors is deemed to have potential for archaeological resources related to early Euro-Canadian settlement. In addition, a house is depicted on the west side
of Yonge Street and on the west bank of Whiskey Creek. Although this house is not within the study area, it represents a documented location that may represent an archaeological site and historic occupation. Therefore, any part of the study area within 300 metres of this early settlement location is deemed to have potential for archaeological resources related to early Euro-Canadian settlement.

3.3 Summary of Historical Context

The brief overview of documentary evidence readily available indicates that the study area is situated within an area of early Euro-Canadian settlement for the County of Simcoe. This would suggest that the study area generally has potential to yield evidence of heritage features associated with the original Euro-Canadian settlement of the area as well as with the historic development of the rural community for this area of the Province of Ontario. In addition, the railway corridor originally built in 1852, and now repurposed for use as a Metrolinx commuter train route, is shown on the Historic Atlas map. This evidence contributes to an understanding of the historical context for the study area. The historic atlas map of 1881 illustrates the above-noted railway corridor and the road allowances of Foster Drive, Yonge Street and Little Avenue as built features of the landscape by that date. Each of these represents a potential landscape feature of heritage value that could be impacted by the proposed undertaking.

4.0 GEOGRAPHIC CONTEXT

The map of the project location below (Figure 4) shows that none of the protected properties listed in Appendix G: Protected Properties for which the Minister of Tourism and Culture Has Authority within the 2011 Protected Properties, Archaeological and Heritage Resources: An Information Bulletin for Applications Addressing the Cultural Heritage Component of Projects Subject to Ontario Regulation 359/09 Renewable Energy Approvals issued by the Ministry of Tourism and Culture are located at the project location as required by subsection 19(3) of O. Reg. 359/09. Although the proposed undertaking is not a Renewable Energy Application and is therefore not subject to O. Reg. 359/09, consideration of the protected properties listed in the above information bulletin is nevertheless appropriate.
4.1 Location and Current Conditions

The study area is illustrated in Figure 4 (above) and can be described as the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie. This investigation was undertaken as a component study of the Class Environmental Assessment (E.A.) process under the Environmental Assessment Act (R.S.O. 1990) for approval from the Ministry of the Environment (MOE). This report will address whether there are protected heritage properties abutting the project location.

The proposed improvements to wastewater servicing in this area may result in the below ground installation of sanitary sewer corridors beneath the existing road allowances of either side of Foster Drive, Merrett Drive, Garson Street and Yeates Avenue, MacLaren Avenue between Foster Drive and Little Avenue; the north side of Little Avenue between MacLaren Avenue and Yonge Street; and the east side of Yonge Street between Little Avenue and Foster Drive.

Most of the land surrounding the proposed improvements consists of existing Urban density residential development of the late 20th century, with commercial development of the late 20th century along Yonge Street and some vacant previously disturbed lands.
A detailed plan of the study area superimposed on an aerial image is included as Figure 5 below.

4.2 Physiographic Region

The study area is situated within the Simcoe Lowlands physiographic region. For the most part, at one time, this restricted basin was part of the floor of Lake Algonquin, and its surface beds are deposits of deltaic and lacustrine origin, and not glacial outwash. As a small basin shut in by the Edenvale Moraine, the Minesing flats represent an annex of the Nipissing lake plains. Although the study area lies on the north side of the Minesing flats, noticeable properties such as calcareous clays and overlying sands comprising the soils are similar (Chapman and Putnam, 1984: 177-182).

4.3 Surface Water

Whiskey Creek flows from south to north through the extreme west edge of the study area and empties into Kempenfelt Bay on Lake Simcoe.

5.0 STUDY AREA INSPECTION

The descriptions of conditions within the study area included within this section were informed by a field reconnaissance carried out on 08 October 2014. Figure 5 illustrates the current study area conditions with field reconnaissance photograph locations superimposed over an aerial photograph from the Stage 1 Archaeological Background study reconnaissance carried out on 23 October 2014. A Stage 1 Archaeological Background Study has been prepared under separate cover (AMICK 2015). The field reconnaissance photographs referenced in Figure 5 are included at the end of this report.
Figure 5  Study Area Reconnaissance (RJB 2014)

These descriptive categories have been employed as a heritage based classificatory scheme to document landscape conditions relevant to the heritage assessment for the study area.

5.1  Built Heritage Resources

The study area is located within a residential area developed in the late 20\textsuperscript{th} century. There is commercial development along the east side of Yonge Street, which is also the result of late 20\textsuperscript{th} century development. The proposed undertaking will have no direct impact on any of the recently constructed structures. Each of the properties to be linked to the proposed new sanitary servicing will be impacted within their yard areas to connect to the new services. However, the direct impacts will not affect any potential heritage features, as they will be restricted to existing road allowances or yard areas. There will also be no indirect impacts through changes to sight lines, or noise levels, etc. The potential impacts to the study area will be visually temporary above ground, and permanent alterations will be restricted to below ground displacement of soil. The potential impacts to heritage features will therefore be entirely of an archaeological nature (addressed under a separate study). Once the proposed undertaking is built there should be no perceived changes to any cultural heritage landscape features (historic roads or railway corridors) or to any adjacent structures through either direct or indirect impacts.
5.2 Cultural Heritage Resources

The Metrolinx commuter train corridor is established on an artificially raised former railway bed constructed in 1852. Substantial trees, shrubs and undergrowth have grown up along the embankments adjacent to the surface of the trail. It has served for more than 160 years as a significant transportation corridor linking the communities of Barrie and Toronto. Given these considerations, the existing Metrolinx corridor should be considered a Cultural Heritage Landscape under the classification of a Heritage Railscape and a feature of Cultural Heritage Value or Interest as outlined by O. Reg. 9/06. However, the proposed undertaking will impact no part of the Metrolinx corridor. Yonge Street, Foster Drive and Little Avenue are all early settlement roads. However, all of these road allowances have been built up by recent development and the roads themselves have undergone substantial reconstruction and redevelopment throughout the 20th century. They do not currently preserve any of their heritage character from the date of their original construction, of the late 19th century or of the early 20th century.

6.0 HERITAGE IMPACT ASSESSMENT

The criteria to define local cultural heritage significance is prescribed in Ontario Regulation (O. Reg.) 9/06 made pursuant to section 29(1) (a) of the Ontario Heritage Act. The criteria set forth are reproduced below from sub-Section 2:

"A property may be designated under section 29 of the Act if it meets one or more of the following criteria for determining whether it is of cultural heritage value or interest:

1. The property has design value or physical value because it,
   i. is a rare, unique, representative or early example of a style, type, expression, material or construction method,
   ii. displays a high degree of craftsmanship or artistic merit, or
   iii. demonstrates a high degree of technical or scientific achievement.

2. The property has historical value or associative value because it,
   i. has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,
   ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or
   iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.

3. The property has contextual value because it,
   i. is important in defining, maintaining or supporting the character of an area,
   ii. is physically, functionally, visually or historically linked to its surroundings, or
   iii. is a landmark.

(O. Reg. 9/06, s. 1 (2))
The criteria for determination of cultural heritage value or interest suggest that the study area contains features of potential cultural value or interest: Yonge Street, Foster Drive and Little Avenue. The Metrolinx rail corridor is not situated within the study area but is adjacent to it and therefore this heritage feature can potentially face indirect impacts from development activity within the study area.

Background research was conducted using historic sources about the area, historic atlas of the county, and the 2011 Protected Properties, Archaeological and Heritage Resources: An Information Bulletin for Applications Addressing the Cultural Heritage Component of Projects Subject to Ontario Regulation 359/09 Renewable Energy Approvals issued by the Ministry of Tourism and Culture. Although this project does not fall under O. Reg. 359/09, it was considered appropriate to consult this document to ensure that there were no protected properties affected by the proposed undertaking. Full references for all background research can be found in section 8.0 of this report. A property reconnaissance was conducted which included a site visit and visual inspection of the study area. Table 1 below provides a listing of the results of the study.
## Table 1: Potential Cultural Heritage Resources Checklist

<table>
<thead>
<tr>
<th>Step 1 - Screening Potential Resources</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Built Heritage Resources</strong></td>
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<td></td>
</tr>
<tr>
<td>Does the property contain any built structures, such as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Structures (e.g. House, apartment building, trap line shelter)</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Agricultural (e.g. Barns, outbuildings, silos, windmills)</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Industrial (e.g. Factories, complexes)</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Engineering Works (e.g. Bridges, roads, water/sewer systems)</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td><strong>Cultural Heritage Landscapes</strong></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Does the property contain landscapes such as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burial sites and/or cemeteries</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Parks</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Quarries or mining operations</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Canals</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Other human-made alterations to the natural landscape</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
### Step 2 - Screening for Potential Significance

A property's heritage significance may be identified through the following:

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is it designated or adjacent to a property designated under the Ontario Heritage Act?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>2. Is it listed on the municipal heritage register or provincial register (e.g. Ontario Heritage Bridge List)?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>3. Is it within or adjacent to a Heritage Conservation District?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>4. Does it have an Ontario Heritage Trust easement or is it adjacent to such a property?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>5. Is there a provincial or federal plaque?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>6. Is it a National Historic Site?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>7. Does documentation exist to suggest built heritage or cultural heritage landscape potential (e.g. Research studies, heritage impact assessment reports, etc.)</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>8. Was the municipality contacted regarding potential cultural heritage value?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>9. What are the dates of construction?</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Are the buildings and/or structures over 40 years old?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is it within a Canadian Heritage River watershed?</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>10. Is a renowned architect or builder associated with the property?</td>
<td></td>
<td>N</td>
</tr>
</tbody>
</table>

**Note:** If you answer "yes" to any of the questions in Step 2, a Heritage Impact Assessment is Required.
Step 3 - Screening for Potential Impacts

| Destruction of any, or part of any, significant heritage attribute or feature | YES | NO |
| Alteration that is not sympathetic, or is incompatible, with the historic fabric or appearance | N |
| Shadows created that alter the appearance of a heritage attribute or change the visibility of a natural feature or plantings, such as a garden | N |
| Isolation of a heritage attribute from its surrounding environment, context or a significant relationship | N |
| Direct or indirect obstruction of significant views or vistas from, within, or to a built and natural feature | N |
| A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open space | N |
| Land disturbances such as a change in grade that alters soils and drainage patterns that adversely affect an archaeological resource | N |

The Metrolinx commuter train corridor is established on an artificially raised former railway bed constructed in 1852. Substantial trees, shrubs and undergrowth have grown up along the embankments adjacent to the surface of the trail. It has served for more than 160 years as a significant transportation corridor linking the communities of Barrie and Toronto. Given these considerations, the existing Metrolinx corridor should be considered a Cultural Heritage Landscape under the classification of a Heritage Railscape and a feature of Cultural Heritage Value or Interest as outlined by O. Reg. 9/06. However, the proposed undertaking will impact no part of the Metrolinx corridor. Yonge Street, Foster Drive and Little Avenue are all early settlement roads. However, all of these road allowances have been built up by recent development and the roads themselves have undergone substantial reconstruction and redevelopment throughout the 20th century. They do not currently preserve any of their heritage character from the date of their original construction, of the late 19th century or of the early 20th century.

7.0 RECOMMENDATIONS

The criteria for determination of cultural heritage value or interest suggest that the study area contains features of potential cultural value or interest: Yonge Street, Foster Drive and Little Avenue. The Metrolinx rail corridor is not situated within the study area but is adjacent to it and therefore this heritage feature can potentially face indirect impacts from development activity within the study area.
The assessment of the effects of the proposed undertaking to these cultural heritage landscape features determined that there are no potential adverse impacts. Each of the properties to be linked to the proposed new sanitary servicing will be impacted within their yard areas to connect to the new services. However, the direct impacts will not affect any potential heritage features, as they will be restricted to existing road allowances or yard areas. There will also be no indirect impacts through changes to sight lines, or noise levels, etc. The potential impacts to the study area will be visually temporary above ground, and permanent alterations will be restricted to below ground displacement of soil. The potential impacts to heritage features will therefore be entirely of an archaeological nature (addressed under a separate study). Once the proposed undertaking is built there should be no perceived changes to any cultural heritage landscape features (historic roads or railway corridors) or to any adjacent structures through either direct or indirect impacts. Given these considerations, mitigation of impacted heritage values is not warranted.
8.0 BIBLIOGRAPHY AND SOURCES

AMICK Consultants Limited
2015 Stage I Archaeological Background Study of the Proposed Foster Drive Wastewater Servicing, Existing Road Allowances of Foster Drive, Merrett Drive, Garson Street Yeates Avenue and MacLaren Avenue in the area bounded by Foster Drive to the north, the Metrolinx corridor to the east, Little Avenue to the south and Yonge Street to the west within Part of Lots 11 and 12, Concession 14 (Geographic Township of Innisfil, County of Simcoe), City of Barrie. AMICK Consultants Limited, Port McNicoll. Archaeological Licence report on file with the Ontario Ministry of Tourism, Culture and Sport, Toronto.


2006 Ontario Regulation 9/06. Queen’s Printer, Toronto.
2009 Ontario Regulation 359/09. Queen’s Printer, Toronto.


Ontario Ministry of Culture


Ontario Ministry of Tourism and Culture


STUDY AREA RECONNAISSANCE PHOTOS

Plate 1 Large Meadow Area
Plate 2 Large Meadow Area
Plate 3 Merret Drive from the Northwest Edge
Plate 4 Merret Drive from Yeates Avenue to the West
Plate 5 Yeates Avenue from Merret Drive to the South
Plate 6 Merret Drive from Yeates Avenue to the East
Appendix B

PCSWMM Sanitary Modelling
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<th>DESCRIPTION</th>
<th>FROM MH</th>
<th>TO MH</th>
<th>TOTAL FLOW (L/s)</th>
<th>TOTAL FLOW m³/h</th>
<th>Flow Entered m³/s</th>
<th>CHECK</th>
<th>Flow Entered at</th>
<th>SLOPE</th>
<th>PIPE DIAMETER</th>
<th>FULL FLOW CAPACITY (L/s)</th>
<th>FULL FLOW VELOCITY (m/s)</th>
<th>ACTUAL VELOCITY (m/s)</th>
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036021_PIPEBASE

Element Count

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Number of subcatchments ... 0
Number of nodes .......... 24
Number of links .......... 22
Number of pollutants ...... 0
Number of land uses ...... 0

Node Summary

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<th>Type</th>
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<th>Max. Depth</th>
<th>Ponded Area</th>
<th>External Inflow</th>
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******************************************************************************

NOTE: The summary statistics displayed in this report are based on results found at every computational time step, not just on results from each reporting time step.
******************************************************************************

***************
Analysis Options
***************
Flow Units ......... CMS
Process Models:
  Rainfall/Runoff ...... NO
  RDII .............. NO
  Snowmelt .......... NO
  Groundwater ......... NO
Flow Routing .......... YES
Ponding Allowed ...... NO
Water Quality ...... NO
Flow Routing Method ...... DYNWAVE
Starting Date ......... AUG-19-2015 15:17:58
Ending Date ......... AUG-20-2015 15:17:58
Antecedent Dzy Days ...... 0.0
Report Time Step ......... 00:01:00
Routing Time Step ........ 5.00 sec
Variable Time Step ...... YES
Maximum Trials ........ 8
Number of Threads ...... 1
Head Tolerance .......... 0.001500 m

******************************************************************************

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<th>Volume (10^6 ltr)</th>
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Initial Stored Volume .... 0.000  0.000
Final Stored Volume ...... 0.002  0.019
Continuity Error (%) ..... 0.050

*****************************
Time-Step Critical Elements
*****************************

Highest Flow Instability Indexes
*******************************
All links are stable.

*****************************
Routing Time Step Summary
*****************************
Minimum Time Step : 4.50 sec
Average Time Step : 5.00 sec
Maximum Time Step : 5.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 2.00
Percent Not Converging : 0.02

*****************************
Node Depth Summary
*****************************

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Node Inflow Summary

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Node Surcharge Summary
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Surcharging occurs when water rises above the top of the highest conduit.

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***************
Node Flooding Summary
***************

No nodes were flooded.

***************
Outfall Loading Summary
***************

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Appendix C
Public Information Centre
CITY OF BARRIE
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
FOSTER DRIVE AREA SANITARY SERVICING
NOTICE OF STUDY COMMENCEMENT

The Corporation of the City of Barrie hereby notifies all interested individuals and parties that a Municipal Class Environmental Assessment (Class EA) has been initiated for sanitary servicing on Foster Drive, Merrill Drive, Yeates Avenue, Carson Street and Maclean Avenue (between Foster Drive and Linda Avenue). The study area is shown on the map below.

The purpose of this study is to examine sanitary servicing alternatives as well as assessing rehabilitation/repairs, replacement needs for existing municipal infrastructure including the street surface. The study will examine the potential physical, social, economic, heritage and environmental effects of various alternatives and ensure they are considered and incorporated in the public consultation process and ultimate preferred alternative in conformance with Phases 1 and 2 of the Municipal Class EA process.

There are approximately 97 residences along these streets. Currently, homes are serviced by individual private septic systems and are not currently serviced by municipal sanitary sewers. Prior to planning for potential future road rehabilitation in this area, this study is being undertaken to determine the potential for sanitary servicing. This is to ensure that the scope of the required underground infrastructure is known prior to commencing future road rehabilitation works.

The study will evaluate potential sanitary servicing alternatives and develop cost estimates for each alternative.

The purpose of this notice is to invite public input and comment early in the Class EA process so it can be incorporated into the development of alternatives. Further opportunity for public input and comment will be provided at a Public Information Centre (open house) during which time the sanitary servicing alternatives and assessment of costs will be presented. Notice for the Public Information Centre will be provided in advance of the session. It is anticipated to occur during the Winter of 2016.

The Foster Drive Sanitary Servicing Class EA is currently planned as a Schedule B Municipal Class Environmental Assessment, in compliance with the Municipal Engineers Association document, Municipal Class Environmental Assessment (dated October 2000 and as amended in 2007 and 2010). The Class EA process includes public and review agency consultation, an evaluation of alternatives, an assessment of potential environmental effects of the proposed improvements, and identification of reasonable measures to mitigate any potential adverse impacts.

Should additional information be required or to be added to the project mailing list, please contact:

Mr. Brett Granka P.Eng.
Infrastructure Planning Engineer
City of Barrie
70 Collar Street 6th Floor
Barrie, ON L4M 4J5
Tel: 705-739-4228 Ext. 917, Fax: 705-739-4347
Email: brett.granka@barrie.ca

Sue McAuliffe
City Clerk
J. Weston, M.A.Sc., P.Eng., PMP
Director of Engineering
CITY OF BARRIE
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
FOSTER DRIVE AREA SANITARY SERVICING
NOTICE OF STUDY COMMENCEMENT

The Corporation of the City of Barrie hereby notifies all interested individuals and parties, that a Municipal Class Environmental Assessment (Class EA) has been initiated for sanitary servicing on Foster Drive, Norret Drive, Yeates Avenue, Garson Street and MacLaren Avenue (between Foster Drive and Little Avenue). The study area is shown on the key map below.

The purpose of this study is to examine sanitary servicing alternatives as well as assessing rehabilitation/replace needs for existing municipal infrastructure including the street surface. The study will examine the potential physical, social, economic, heritage and environmental effects of various alternatives and ensure they are considered and incorporated in the public consultation process and ultimate preferred alternative in conformance with Phases 1 and 2 of the Municipal Class EA process.

There are approximately 97 residences along these streets. Currently, homes are serviced by individual private septic systems and are not currently serviced by municipal sanitary sewers. Prior to planning for potential future road rehabilitation in this area, this study is being undertaken to determine the potential for sanitary servicing. This is to ensure that the scope of the required underground infrastructure are known prior to commencing future road rehabilitation works.

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The Foster Drive Sanitary Servicing Class EA is currently planned as a Schedule B Municipal Class Environmental Assessment in compliance with the Municipal Engineers Association document, Municipal Class Environmental Assessment (dated October 2000 and as amended in 2002 and 2011). The Class EA process includes public and review agency consultation, an evaluation of alternatives, an assessment of potential environmental effects of the proposed improvements, and identification of reasonable measures to mitigate any potential adverse impacts.

Should additional information be required or to be added to the project mailing list, please contact:

Mr. Brett Gratin, P.Eng.
Infrastructure Planning Engineer
City of Barrie
70 Coller Street, 6th Floor
Barrie, ON L4M 4T5
Tel: 705-739-4220 Ext. 5117, Fax: 705-738-4247
Email: brett.gratin@barrie.ca

Dawn McAlpine
City Clerk

J. Weston, M.A.Sc., P.Eng., PMP
Director of Engineering
CITY OF BARRIE

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT - PHASE 1 AND 2

Notice of Public Information Centre

The Corporation of the City of Barrie (City) is undertaking a Schedule B Municipal Class Environmental Assessment (MCEA) to determine the potential for sanitary servicing and to assess the opportunity to implement stormwater management improvements in the Foster Drive area (including Gibson Street, Maclean Avenue, Morrell Drive and Zaytov Avenue) pursuant to the approved procedure, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011. The figure below outlines the study area. This letter is to advise you of the upcoming activities for this Class EA.

The City is proceeding with Phases 1 and 2 of the Class EA. The City has retained the consulting firm R.J. Bumsfield and Associates Ltd. to develop and evaluate various sanitary servicing alternative designs and to complete the Project File Report (PFIR).

As part of the City's commitment to the health and safety of Lake Simcoe and its tributaries, the City is completing an assessment of alternatives to provide stormwater management to the study area. The study area currently does not have stormwater management. The development of the area requires appropriate stormwater regulations. Currently, stormwater runoff flows untreated and uncontrolled to Whitby Creek and Lower Creek.

The City has developed alternative solutions to provide sanitary servicing and stormwater management and is hosting a Public Information Centre (PIC) to solicit feedback and comments from the public.

A PIC is scheduled for Wednesday, April 30th, 2015, 4:30pm to 7:00pm, in the Main Conference Room at the Penetanguishene Public Library. The public is invited to attend the PIC to view project information panels and provide comments regarding the proposed alternative solutions outlined in the draft Foster Drive Area Sanitary Servicing and Stormwater Management Class EA report. City staff will be available to discuss issues and concerns with members of the public. The PIC will be held at the City until May 13, 2015. Comments and responses received during the PIC will be considered in the development of the preferred alternative solution.

A PDF version of the draft Phases 1 and 2 Report is available online by doing a keyword search on the City of Barrie website (www.barrie.ca) for "class EA" and clicking on the first check marked result then scrolling down to the Foster Drive Area Sanitary Servicing and Stormwater Management Class EA section. A hard copy is available for review at the following locations:

City of Barrie

City of Barrie

City Hall

City Hall

Engineering Dept.

Engineering Dept.

2nd Floor City Hall

2nd Floor City Hall

70 Coller Street

70 Coller Street

Barron Public Library

Barron Public Library

Downtown Branch

Downtown Branch

Information Desk

Information Desk

80 Wesley Street

49 Dean Avenue

5444 4th St.

5444 4th St.

Should additional information be required or to be added to the project mailing list, please contact:

Mr. Brett Gratzke, P. Eng.
Innovation Planning Engineer, City of Barrie
70 Coller Street, 6th Floor, Barrie, ON L4M 4T5
Tel: (705) 739-4200, Ext. 5117 Fax: (705) 739-4347 Email: Brett.Gratzke@barrie.ca

Doreen McDermott J. Weston, M.A.Sc., P.Eng., PWP
City Clerk
Director of Engineering

Notice is given on April 10 and April 16, 2015.
CITY OF BARRIE

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT - PHASE 1 AND 2

Notice of Public Information Centre

The Corporation of the City of Barrie (City) is undertaking a Schedule B Municipal Class Environmental Assessment (MCEA) to determine the potential for sanitary servicing and stormwater management improvements in the Foster Drive area (including 5556-5558, 5563-5565, 5570, 5571, and 5572 Foster Drive and 5580 Foster Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment (MCEA) by the Ministry of Environment and Climate Change (MOECC) on June 22, 2010, as amended in 2007 and 2011. The figure below outlines the study area. This letter is to advise you of the upcoming activities for the MCEA.

The City is proceeding with Phases 1 and 2 of the MCEA. The City has retained the consulting firm R.J. Barrie and Associates Ltd. to develop and evaluate various sanitary servicing alternatives and to complete the Project File Report (PFR).

As part of the City's commitment to the health of Lake Simcoe and its tributaries, the City is completing an assessment of alternatives to provide stormwater management to the study area. The study area currently does not have stormwater management, as the development of the area predates applicable regulations. Currently, stormwater runoff flows untreated and uncontrolled into Whiskey Creek and Lovers Creek.

The City has developed alternative solutions to provide sanitary servicing and stormwater management and is hosting a Public Information Centre (PIC) to solicit feedback and comments from the public.

A PIC is scheduled for Wednesday, April 29th, 2015, 4:00pm to 7:00pm, in the Massie Family Program Room at the Barrie Public Library. The public is invited to attend the PIC to view project information panels and provide comments regarding the proposed alternative solutions outlined in the draft Foster Drive Area Sanitary Servicing and Stormwater Management Class EA report. City staff will be available to discuss issues and concerns with members of the public. Written input and comments will be accepted by the City until May 13, 2015. Comments and responses received from the PIC will be considered in the development of the prefeasibility study.

A PDF version of the draft Phase 1 and 2 Report is available online by doing a keyword search on the City of Barrie website (www.barrrie.ca) for “class EA” and clicking on the first check marked result then scrolling down to the Foster Drive Area Sanitary Servicing and Stormwater Management Class EA section. A hard copy is available for review at the following locations:

City of Barrie
City of Barrie
1st Floor City Hall
1st Floor City Hall
70 Coller Street
70 Coller Street
Barrie Public Library
Downtown Branch
Barrie Public Library
Pawleys Branch
Information Desk
Information Desk
66 Mosley Street
66 Mosley Street
46 Dean Avenue
46 Dean Avenue

Should additional information be required or to be added to the project mailing list, please contact:

Mr. Brett Graham, P. Eng.
Infrastructure Planning, City of Barrie
70 Coller Street, 6th Floor, Barrie, ON L4N 4T5
Tel: (705) 739-4200, Ext. 517 Fax: (705) 739-4207 Email: Brett.Graham@barrie.ca

Dawn McAlpine
City Clerk

Barrie Environmental Reports

Notice issued on April 15 and April 18, 2015.
Foster Drive Class EA

Mail out area for Notice of Public Information Centre (all properties within the study area including properties partially located within the study area)
To All Area Residents / Business Owners / Tenants / Agencies:

Re: Foster Drive Area Sanitary Servicing and Stormwater Management Municipal Class Environmental Assessment (Class EA)
Presentation of Alternative Solutions

The Corporation of the City of Barrie (City) is undertaking a Schedule 'B' Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and to assess the opportunity to implement stormwater management improvements in the Foster Drive area (including Garson Street, MacLaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011. Please refer to figure 1 attached to this document. This letter is to advise you of the upcoming activities for this Class EA.

The City is proceeding with Phases 1 and 2 of the Class EA. The City has retained the consulting firm R.J. Burnside and Associates Ltd. to develop and evaluate various sanitary servicing alternative designs and to complete the Project File Report (PFR).

As part of the City’s commitment to the health of Lake Simcoe and its tributaries, the City is completing an assessment of alternatives to provide stormwater management to the study area. The study area currently does not have stormwater management as the development of the area predated applicable regulations. Currently, stormwater runoff flows untreated and uncontrolled to Whiskey Creek and Lovers Creek resulting in potential degradation of these watercourses and Lake Simcoe.

The City has developed alternative solutions to address the problem statement and is hosting a Public Information Centre (PIC) to solicit feedback and comments from the public.

A PIC is scheduled for Wednesday, April 29th, 2015, 4:00pm to 7:00pm, in the Massie Family Program Room at the Painswick Public Library. The public is invited to attend the PIC to view project information panels and provide comments regarding the proposed alternative solutions outlined in the draft Foster Drive Area Sanitary Servicing and Stormwater Management Class EA report. City staff will be available to discuss issues and concerns with members of the public. Thereafter, input and comments will be accepted by the City until May 13, 2015. Comments and responses received from the PIC will be considered in the development of the preferred alternative solution. The following alternatives will be presented at the PIC (please see Class EA report for additional information).

Sanitary Servicing Alternatives:

Alternative 1 - "Do Nothing"
The "Do Nothing" alternative allows for the consideration of maintaining the use of septic systems.

Alternative 2 – Deep Sewer Alignment
This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area with the intent to service all existing basements by gravity. This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.
Alternative 3 - Shallow Sewer Alignment
This alternative consists of a shallower vertical alignment with the intent to service all first floors by gravity (some basements will require pumps to lift sanitary flows to the lateral). This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Yonge Street via 223 Foster Drive and 357 Yonge Street (aligned along south property boundary).

Stormwater Management Alternatives:

Alternative 1 - “Do Nothing”
The “Do Nothing” alternative allows for the consideration of allowing stormwater runoff to continue to discharge from the study area uncontrolled and untreated.

Alternative 2 - Stormwater Management Wet Pond
This alternative includes a Stormwater Management (SWM) wet pond to provide stormwater quality treatment. The optimal location for this pond is at 202 and 204 Foster Drive, requiring acquisition of these properties. A permanent easement would be required through 201 Mine’s Point Road to establish an outlet for the pond.

Alternative 3 - Low Impact Development (LID)
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment. LID is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

Alternative 4 - Low Impact Development (LID) and Stormwater Management Dry Pond
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

A PDF version of the draft Phases 1 and 2 Report is available online by doing a keyword search on the City of Barrie web page (www.barrie.ca) for “class EA” and clicking on the first check marked result then scrolling down to the Foster Drive Area Sanitary Servicing and Stormwater Management Class EA section.

A paper copy of the Draft Class EA is available for review at the following locations:

| City of Barrie Clerk’s Office | City of Barrie Engineering City Hall, 6th Floor | Barrie Public Library Downtown Information Desk | Barrie Public Library Painswick Branch Information Desk |
| City of Barrie Engineering City Hall, 6th Floor | 70 Collier Street | 70 Collier Street | 60 Worsley Street |
| 70 Collier Street | Barrie, ON L4M 4T5 | Barrie, ON L4M 4T5 | Barrie, ON L4M 1L6 |

If you have any questions and/or concerns, please feel free to contact Mr. Brett Gratrix at (705) 739-4220, extension 5117, or e-mail brett.gratrix@barrie.ca

Yours truly,

B. Gratrix, P. Eng.
Infrastructure Planning Engineer

BG/sm
Figure 1 – Map of Study Area
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT -
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Municipal Class Environmental Assessment. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

<table>
<thead>
<tr>
<th>Street Address</th>
<th>Unit/Apt</th>
<th>Postal Code</th>
<th>Telephone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Email:

The Corporation of the City of Barrie (City) is undertaking a Schedule 'B' Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and address the opportunity to implement stormwater management improvements in the Foster Drive area (including Garson Street, MacLaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011.

The draft Class EA document is available online at [www.barrie.ca](http://www.barrie.ca). A copy of the draft Class EA document outlining the planning, approval, problem identification and preliminary impact assessments of the various alternatives is available for review at the following locations:

<table>
<thead>
<tr>
<th>City of Barrie</th>
<th>City of Barrie</th>
<th>Barrie Public Library</th>
<th>Barrie Public Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clerk's Office</td>
<td>Engineering</td>
<td>Downtown</td>
<td>Painswick Branch</td>
</tr>
<tr>
<td>City Hall, 1st Floor</td>
<td>City Hall, 6th Floor</td>
<td>Information Desk</td>
<td>Information Desk</td>
</tr>
<tr>
<td>70 Collier Street</td>
<td>70 Collier Street</td>
<td>60 Worsley Street</td>
<td>48 Dean Avenue</td>
</tr>
<tr>
<td>Barrie, ON L4M 4T5</td>
<td>Barrie, ON L4M 4T5</td>
<td>Barrie, ON L4M 1L6</td>
<td>Barrie, ON L4N 0C2</td>
</tr>
</tbody>
</table>

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

**Sanitary Servicing Alternatives:**

- Alternative 1 - "Do Nothing"
  The "Do Nothing" alternative allows for the consideration of maintaining the use of septic systems.

- Alternative 2 – Deep Sewer Alignment
  This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area with the intent to service all existing basements by gravity. This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.
Foster Drive Sanitary Servicing and Stormwater Management Class EA

- Alternative 3 – Shallow Sewer Alignment
  This alternative consists of a shallower vertical alignment with the intent to service all first floors by gravity (some basements will require pumps to lift sanitary flows to the lateral). This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Yonge Street via 223 Foster Drive and 357 Yonge Street (aligned along south property boundary).

- Stormwater Management Alternatives:

  - Alternative 1 – “Do Nothing”
    The “Do Nothing” alternative allows for the consideration of allowing stormwater runoff to continue to discharge from the study area uncontrolled and untreated.

  - Alternative 2 – Stormwater Management Wet Pond
    This alternative includes a SWM wet pond to provide stormwater quality treatment. The optimal location for this pond is at 202 and 204 Foster Drive, requiring acquisition of these properties. A permanent easement would be required through 201 Minet’s Point Road to establish an outlet for the pond.

  - Alternative 3 – Low Impact Development (LID)
    This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment. LID is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

  - Alternative 4 – Low Impact Development (LID) and Stormwater Management Dry Pond
    This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

- Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

- Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?
  □ Yes  □ No

- Signature: ___________________________  Date: _______________________

- Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?
  □ Poor (Much Improvement Required)  □ Marginal (Some Improvement Required)  □ Good  □ Very Good  □ Excellent

- Please add a comment in support of your level of satisfaction below:

- Please submit this comment sheet by Wednesday, May 13, 2015 to:
  
  Mr. Brett Gratrix, P. Eng.
  City of Barrie
  Engineering Department
  70 Collier Street, P.O. Box 400
  Barrie, ON L4M 4T5
  Tel: (705) 739-4220, Ext. 5117
  Fax: (705) 739-4247
  E-mail: brett.gratrix@barrie.ca

  Thank you for your comments.
A Channel Barrie
Station Manager
3 Beacon Road
Barrie, ON L4N 8J9

ACDC
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Secretary c/o City Clerk's Office
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Barrie Land Developer's Association pdf via email only
c/o Esther Tunstall
Lawton Realities Group
67 Barre Drive
Barrie, ON L4N 7P1

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Brett Shaw
Manager, Access Network Facilities
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City of Barrie
David Lalonde
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Manager of Revenue
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Engineering Clerk  
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Simcoe County District School Board  
Holly Sapek  
Senior Planner  
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c/o K. J. Beamish Construction Co. Ltd.  
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Simcoe Muskoka Catholic District School Board  
Jennifer Sharpe  
Planner  
46 Alliance Blvd.  
Barrie, ON L4M 5K3

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Medical Officer of Health  
Barrie Office  
15 Sperling Drive  
Barrie, ON L4M 6K9
Simcoe Muskoka District Health Unit  
Sherry Diaz  
Public Health Nurse  
Barrie Office  
15 Sperling Drive  
Barrie, ON L4M 6K9

Springwater Township  
John Daley  
Clerk  
2231 Nursery Road  
Minesing ON L0L 1Y2
Springwater Township  
Brad Sokach  
Planning & Works  
2231 Nursery Road  
Minesing ON L0L 1Y2
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Director of Infrastructure
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Innisfil ON L9S 1A1

Town of Innisfil
Tim Cane
Manager of Land Use Planning
Town of Innisfil
2101 Innisfil Beach Road
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2664 Muskoka Road 38
Bala, ON P0C 1A0

William Treaties First Nation
Karry Sandy McKenzie
Barrister & Solicitor
8 Creswick Court
Barrie, ON L4M 2J7
Foster Drive Area Sanitary Servicing and Stormwater Management Class EA
Public Information Centre

Welcome

Please sign in

Take a comment sheet

Staff are here for your questions, comments or concerns

Complete the comment sheet. Public input is an important part of the Class EA process
Project Purpose:
- The purpose of this project is to review sanitary servicing options for the study area and to identify associated infrastructure improvements. Currently, existing residences are served by individual private septic systems.
- As the existing area currently has no stormwater management; stormwater generated from this area flows untreated and uncontrolled, potentially degrading water quality of Whiskey Creek, Lovers Creek and Lake Simcoe. Stormwater management options will be identified and evaluated.

Purpose of this PIC is to:
- Provide a summary of the project
- Present an evaluation of the various alternative solutions based on physical, natural, social, cultural/heritage and economic environment factors
- Obtain public input on the alternative solutions
**Municipal Class EA Process**

This project is being considered as a Schedule 'B' Project (Phases 1 to 2), as defined in the Municipal Engineers Association Class EA document.

---

**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) are generally approaching the end of their life expectancy and will eventually need to be replaced by property owners. The existing rural road cross section 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 any 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 sustainable manner. This will include examining opportunities to provide stormwater management.
Alternative 1 – Do Nothing

The option of do nothing is a mandatory consideration within the Municipal Class Environmental Assessment process.

Residents within the study area would remain on septic systems and would be responsible for ongoing maintenance costs associated with inspections, pump-outs, repairs and septic system replacements as required.

Based on the age of development in this area, many septic systems are likely approaching or at the end of their service life.
Sewers will be installed within existing right of ways and the proposed utility corridor.

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), to the proposed sewer on Foster Drive.

The sewer is located at a depth intended to service all existing basements by gravity.
Sewers will be installed within the right of way and the proposed utility corridor.

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 sewer is located at a depth intended to provide servicing of all first floors and most basements by gravity. However, due to the relative low elevation of some basements relative to their respective street, a sewage sump and pump would be required to lift flows to the lateral for homes with plumbing fixtures in their basement.
<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 Sewer Alignment</th>
<th>Alternative 3: Shallow Sewer Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary Sewing</td>
<td>Opportunity to provide municipal servicing to residents within Study Area</td>
<td></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>Street/Road Condition</td>
<td>Opportunity for improvement to overall road structure</td>
<td></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.</td>
<td>Road improvements can be completed in conjunction with sanitary servicing.</td>
</tr>
<tr>
<td>Stormwater Management</td>
<td>Assessment of existing stormwater management and opportunity for improvement</td>
<td></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 Lover 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 Lover Creek.</td>
</tr>
<tr>
<td>Water Extrusion System</td>
<td>Assessment of existing water distribution system and opportunity for improvement</td>
<td></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. Improved system connections can be implemented (potential to eliminate system dead-end on Merriam Drive).</td>
<td>Water distribution replacements can be completed in conjunction with sanitary servicing. Improved system connections can be implemented (potential to eliminate system dead-end on Merriam Drive).</td>
</tr>
<tr>
<td>Private Utilities (gas/communications, cable, natural gas)</td>
<td>Potential impacts and degree of such to overhead and underground utilities</td>
<td></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>Relocation Improvement Opportunities</td>
<td>Potential impact availability of rear yard space to construct in addition to garage/pool/patio/office</td>
<td></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>Natural Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetation</td>
<td>Terrestrial Impacts — woodlots, wetlands, vegetative corridors, etc.</td>
<td></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></td>
<td>Potential impacts on Species At Risk and sensitive species. Diversity of species.</td>
<td></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. Possible impact resulting from developing during construction. Opportunity to improve water balance as part of SWM implementation.</td>
</tr>
<tr>
<td></td>
<td>Potential impacts and degree of such to fisheries and aquatic habitat</td>
<td></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 developing during construction. Opportunity to improve water balance as part of SWM implementation.</td>
<td>No impact anticipated. Wastewater is treated at WWTF. Possible impact resulting from developing during construction. Opportunity to improve water balance as part of SWM implementation.</td>
</tr>
<tr>
<td>Groundwater Resources</td>
<td>Potential impacts to groundwater resources</td>
<td></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>Water Quality</td>
<td>Opportunity to improve water quality as part of road reconstruction/renewal efforts</td>
<td></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>
</tbody>
</table>
Evaluation Table

Foster Drive Area Sanitary Servicing and Stormwater Management Class EA
Public Information Centre

<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 Sewer Aligment</th>
<th>Alternative 3 - Shallow Sewer Aligment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Potential temporary construction impacts (noise, visual impacts, disruption during construction)</td>
<td></td>
<td>Potential temporary 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>Air Quality</td>
<td>Potential impacts to air quality after construction.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Safety</td>
<td>Improvement to Public Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contiguity to Municipal Land Use, Pockets and Planning</td>
<td>Compliance with Lake Simcoe Protection Plan (LSPPP), Provincial Policy Statement (PPS)</td>
<td></td>
<td>Individual septic systems are not the preferred sanitary treatment method within urban boundaries.</td>
<td>Conforms to municipal policy and planning, LSPPP and PPS.</td>
<td>Conforms to municipal policy and planning, LSPPP and PPS.</td>
</tr>
<tr>
<td><strong>Cultural Heritage Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Archaeological Impact</td>
<td>Potential Impacts to Archaeological Features</td>
<td></td>
<td>No impacts anticipated.</td>
<td>Positive 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>Positive impact with earthworks located on Foster Drive, easement through 223 Foster Drive and 357 Yonge Street, and areas outside of the road right-of-way. A Stage 2 archaeological assessment is required.</td>
</tr>
<tr>
<td>Cultural Heritage Impact</td>
<td>Potential Impacts to Community identity and Character</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Nations Impact</td>
<td>Potential Impacts to First Nations lands and Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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></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 - Overall</td>
<td>Overall project cost to implement the alternative (this will be borne by residents under Section 129(f) of the Municipal Act for Local Sewering Improvements) This includes the installation of the sanitary sewer and sanitary lateral to property line</td>
<td></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 install building sewer from home to lateral at property line (private property plumbing = cost is directly borne by property owner)</td>
<td></td>
<td>No connection cost. Future repair and replacement costs of septic systems are responsibility of resident.</td>
<td>Cost to construct building sewer from residence to municipal lateral located at property line.</td>
<td>Cost to construct 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></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 costs to maintain and operate sanitary systems/sewerage components located on private property</td>
<td></td>
<td>Cost to maintain system borne by resident.</td>
<td>Responsible to maintain building sewer and sanitary lateral (from home to sanitary sewer).</td>
<td>Responsible to maintain building sewer and sanitary lateral (from home to sanitary sewer).</td>
</tr>
</tbody>
</table>

The City of Barrie
The following preliminary capital cost estimate includes the cost to fully implement the alternatives.

For Alternative 2 or 3, the proposed sanitary servicing works would be constructed under the authority of Section 326 of the Municipal Act. Section 326 allows the recovery of all costs associated with infrastructure improvements that are of local benefit. The cost of sanitary servicing will be assessed by frontage to the benefiting property owners, based on actual construction costs. The costs presented as part of this EA are preliminary estimates based on historical data.

Frontage is typically the width of your property where it abuts the municipal right-of-way. The City uses the “Local Improvement and Section 326 Servicing Cost Apportionment Policy” to determine frontage charges. For irregular shaped lots, the front and rear widths are added and divided by 2 to establish an average width that is used as the frontage. For corner lots, frontage is determined based on the municipal street address and the direction the home faces. For all cases, the maximum assessed frontage is limited to 30m unless the property will derive additional benefit.

For Alternatives 2 and 3, property owners are required to pay their frontage cost and lateral costs to the City (either as lump sum or financed over 10 years). Property owners would be responsible to install their own building sewer to the property line to connect to the sanitary lateral. Property owners may defer connecting to the municipal system as long as their current septic is in good working order. The City will not issue permits to repair/re-construct/replace an existing septic system when the opportunity to connect to the municipal system exists.

**Cost Estimate Elements:**

**Lateral and Sewer** – this work is organized by the City and paid for by property owners based on frontage costs.

**Building Sewer** – sewer connection between home and property line – this work is organized and paid for directly by property owner.
<table>
<thead>
<tr>
<th>Alternative</th>
<th>Total Project Cost</th>
<th>Frontage Cost</th>
<th>Building Sewer</th>
<th>Sewage Ejector Pump (See Alternative 3 Figure)</th>
<th>Total Individual Property Cost (assuming 18.5m frontage)</th>
<th>Approx. Annual Maintenance Cost or Utility Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Do Nothing</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>$20,000</td>
<td>$133 (based on pump out every 3 years)</td>
</tr>
<tr>
<td>2 – Deep Sewer Alignment - Foster Drive Only</td>
<td>$600,000</td>
<td>$480 to $560/m</td>
<td>$3500</td>
<td>NA</td>
<td>$12,400 to $13,900</td>
<td>$365</td>
</tr>
<tr>
<td>2 – Deep Sewer Alignment – Maclaren, Garson, Yeates, Merrett</td>
<td>$795,000</td>
<td>$400 to $480/m</td>
<td>$3500</td>
<td>NA</td>
<td>$10,900 to $12,400</td>
<td>$365</td>
</tr>
<tr>
<td>3 – Shallow Sewer Alignment</td>
<td>$1,225,000</td>
<td>$400 to $480/m</td>
<td>$3500</td>
<td>$2000</td>
<td>No Pump: $10,900 to $12,400</td>
<td>No Pump: $365</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>With Pump: $12,900 to $14,400</td>
<td>With Pump: $485</td>
</tr>
</tbody>
</table>
Sanitary servicing of the study area is considered in timing with required life cycle renewal efforts of roads within the study area. The most cost effective approach is to complete this work as part of the sanitary servicing project.

Road improvements typically consist of urbanizing the existing cross-section including full curb and gutter, sidewalk and storm sewer system. Alternative cross-sections may be considered (where swales may be maintained) as the City moves toward implementation of Low Impact Development practices as an important component of an overall stormwater management strategy.

Property acquisition will likely be required on streets with right-of-way widths less than 20m. Detailed property requirements will be determined during the detailed design process at which point property impacts will be confirmed. The City will directly communicate with affected residents/property owners.

As per the City’s Sidewalk Policy, the location of sidewalks will be determined during detailed design and will be assessed as per the City’s Sidewalk Policy.

The cost to urbanize the road is paid for by the City and is not factored into the sanitary sewer frontage costs.

<table>
<thead>
<tr>
<th>Street</th>
<th>Ex. ROW Width</th>
<th>Proposed ROW Width</th>
<th>Property Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster Drive</td>
<td>14-17m</td>
<td>18-20m</td>
<td>Potential</td>
</tr>
<tr>
<td>MacLaren Drive</td>
<td>17-18m</td>
<td>18-20m</td>
<td>Potential</td>
</tr>
<tr>
<td>Merrett Drive</td>
<td>20m</td>
<td>No Change</td>
<td>No</td>
</tr>
<tr>
<td>Yeates Avenue</td>
<td>20m</td>
<td>No Change</td>
<td>No</td>
</tr>
<tr>
<td>Garson Street</td>
<td>20m</td>
<td>No Change</td>
<td>No</td>
</tr>
</tbody>
</table>
Currently, there is no stormwater management (SWM) for the study area. Stormwater flows uncontrolled and untreated to Whiskey Creek and Lovers Creek.

In accordance with the goals of the Lake Simcoe Protection Plan, municipalities shall identify (and develop an implementation plan) for SWM retrofit opportunities to address treatment deficiencies and quantity/erosion control where possible.

Problem Statement:
The Foster Area including Foster Drive, Merrett Drive, Yeates Avenue, Garson Street and MacLaren Avenue does not have stormwater infrastructure; runoff generated from this area flows uncontrolled and untreated to Kempenfelt Bay via Whiskey Creek and Lovers Creek. The release of uncontrolled stormwater may be contributing to erosion occurring on Whiskey Creek downstream of Yonge Street.

Opportunity Statement:
The City of Barrie is committed to improving the water quality in creeks flowing to Lake Simcoe and implementation of the Lake Simcoe Protection Plan. Where possible and subject to available budgets, the City implements stormwater management retrofits in areas currently not served by a stormwater management system/facility.

As part of the preferred sanitary servicing alternative; the opportunity exists to implement stormwater management within the study area.
The Do-Nothing alternative allows for the consideration of allowing stormwater runoff to discharge from the study area uncontrolled and untreated potentially resulting in negative impacts to the natural and aquatic environment.

Uncontrolled flows from urban areas without stormwater management are likely contributing to erosion issues occurring on Whiskey Creek.
This alternative includes a SWM wet pond to provide stormwater quality treatment.

The optimal location for this pond is at 202 and 204 Foster Drive, requiring acquisition of these properties.

A permanent easement would be required through 201 Minet's Point Road to establish an outlet for the pond.
This alternative includes the implementation of low impact development (LID) practices within the municipal right-of-way providing stormwater quality treatment.

LID is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.
This alternative includes the implementation of LID practices within the municipal right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.
# SWM Evaluation Table and Cost Estimate

## Foster Drive Area Sanitary Servicing and Stormwater Management Class EA

### Public Information Centre

## Criteria

<table>
<thead>
<tr>
<th>Physical and Natural Environment</th>
<th>How the Criteria is Being Assessed</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment Area &amp; Drainage Network</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Soil Quality/Drainage Transport Control</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ecosystems &amp; Aquatic Habitat</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Groundwater Recharge</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Advanced &amp; Public Utilities Impact, Costs, Design &amp; Construction Cost Net &amp; RWA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Private Property Impacts</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Social Environment

<table>
<thead>
<tr>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required property to implement stormwater management alternative</td>
</tr>
<tr>
<td>No property required.</td>
</tr>
</tbody>
</table>

### Cultural/Historical Resources

<table>
<thead>
<tr>
<th>Archaeological / Heritage Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential impacts to Archaeological Resources</td>
</tr>
<tr>
<td>No impacts.</td>
</tr>
</tbody>
</table>

### Economic Environment

<table>
<thead>
<tr>
<th>Construction Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated capital costs to implement the alternative</td>
</tr>
<tr>
<td>No capital construction cost.</td>
</tr>
</tbody>
</table>

### Maintenance Cost

<table>
<thead>
<tr>
<th>Maintenance Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated maintenance costs to operate the alternative</td>
</tr>
<tr>
<td>No direct maintenance cost, but continued release of uncontrolled and untreated flows to Whiskey and Lovers Creeks resulting in erosion requiring capital repairs and phosphorus offset projects elsewhere.</td>
</tr>
</tbody>
</table>

## SWM Evaluation Table

### Alternative 1 - Do Nothing

- Limited treatment provided by ditches.

### Alternative 2 - SWM Wet Pond

- Provides stormwater quality treatment for the Whiskey Creek catchment.
- 8.8 Ha - Organic pond.

### Alternative 3 - LID

- Provides stormwater quality treatment for the Whiskey and Lovers Creek catchments.
- Provides quality treatment only - potential enhanced level.
- 10.5 Ha - Quality via LID.

### Alternative 4 - LID and SWM Dry Pond

- LIDs will provide stormwater quality treatment to Whiskey and Lovers Creeks catchments. SWM dry pond will provide quantity and erosion control for Whiskey Creek and Yonge catchments.
- 10.8 Ha - Quality via LID
- 8.8 Ha + 6.7 Ha = 2.8 Ha - Quantity Control via Dry Pond

### Preliminary Cost Estimate

<table>
<thead>
<tr>
<th>Alternative 1 - Do Nothing</th>
<th>Alternative 2 - SWM Wet Pond</th>
<th>Alternative 3 - LID</th>
<th>Alternative 4 - LID and SWM Dry Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area Treated/Controlled (ha)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost per Hectare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The City of Barrie

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**Notes:**

- Criteria specific to the SWM Alternatives - For common criteria, please refer to the Evaluation Table for the Sanitary Servicing Alternative.
• Review public, stakeholder and Agency comments generated from the PIC (please submit all comments by **May 13, 2015**);
• Select Preferred Alternative;
• Present the preferred alternative to City Council for approval in Fall 2015. Those who want to be kept informed of this process will be advised when this will be considered by council;
• Issue Notice of Study Completion and provide Project File Report for final public review and comment – Fall 2015; and
• Detailed Design – Currently proposed for 2017 (as identified in capital budget, subject to change).

**Help Shape Decisions made in this Study**

• You can provide your comments by completing a comment sheet and drop it in the comment box, you may take it home and return it at a later date. Please submit this information by May 13, 2015.
• If you would like more information or if you have any questions or concerns please contact:

  Mr. Brett Gratrix, P.Eng.
  Infrastructure Planning Engineer
  City of Barrie, Engineering Department
  70 Collier Street, 6th Floor, Barrie, ON L4M 4T5
  Tel: (705) 739-4220 Ext. 5117, Fax: (705) 739-4247
  Email: brett.gratrix@barrie.ca

Comments and personal information regarding this project are collected under the authority of the Environmental Assessment Act to assist in decision making and to determine further public consultation needs relating to the project. Comments and opinions which do not constitute personal information, as defined by the Freedom of Information and Protection of Privacy Act, will be shared among the Ministry of the Environment and others as appropriate, and may be included in the study documentation which will be made available for public review. Personal information will remain confidential unless prior consent to disclose is obtained.
**Frontage/Section 326 Servicing Cost Policy**

**Regular Shaped Lots:**
Lots that do not have a front and rear yard width that differ by more than 6 metres are considered regular-shaped and will be assessed their share of the costs utilizing their actual frontage on the works.

**Triangular/irregular Shaped Lots:**
Triangular or irregularly-shaped lots defined as having front and rear width distances that differ by more than 6 metres are to be assessed their share of the costs by adding the front and rear width and dividing by two. This is to apportion costs on a "just and equitable basis having regard to the situation, value and area of the lot compared to other lots" as described in Ontario Regulation 586/05.

**Frontages in Excess of 30m:**
Lots with frontage in excess of 30 metres that will not derive any additional benefit as other lots will have their assessed frontage adjusted to 30m. In the event the lot is severed in the future the new lot will be assessed frontage costs at the same per metre rate as the original works and such costs will be payable in full as a condition of the granting of the severance.

**Corner Lots:**
For corner lots that are affected by works that abut both their frontage and side (flankage) yards the full amount of the flankage will be exempt from charges until such time that a severance is requested. In the event the lot is severed in the future the new lot will be assessed frontage costs at the same per metre rate as the original works and such costs will be payable in full as a condition of the granting of the severance.

If your frontage exceeds 30m refer to Frontages in Excess of 30m.

**Corner Lots: What side is my frontage?**
The side of your property that is considered your frontage is determined by the address of the home (your street address is the side that the frontage is assessed on). In this example, the address is 54 Long Street and the home faces Long Street, therefore the frontage is calculated based on the property length abutting Long Street. If your frontage exceeds 30m refer to Frontages in Excess of 30m.

The building sewer may be connected to the sewer located at the Frontage or Flankage. This is the homeowners decision and does not impact what is considered frontage/flankage.
<table>
<thead>
<tr>
<th>Stakeholder Comments and Responses following PIC</th>
<th>Stakeholder Comment</th>
</tr>
</thead>
<tbody>
<tr>
<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>
<td></td>
</tr>
<tr>
<td>The implementation of the Preferred Alternative will reduce the work associated with the existing sanitary system and will result in fewer road closures. Cost estimates indicate that the Preferred Alternative will be lower cost versus replacement of a septic system.</td>
<td></td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<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>
<td></td>
</tr>
<tr>
<td>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>
<td></td>
</tr>
<tr>
<td>Specific concerns for our property are less about the actual storm/sanitary connection to the Little Lorne, but more about the potential for storm/sanitary connection to the Little Lorne. The costs/issuues with selling house.</td>
<td></td>
</tr>
<tr>
<td>Find the money and get it done ASAP.</td>
<td></td>
</tr>
<tr>
<td>It's hard to make a decision without knowing the associated costs. Do you please send to the address ***.</td>
<td></td>
</tr>
<tr>
<td>Adding cost (estimated) to home owners would help in making decisions.</td>
<td></td>
</tr>
<tr>
<td>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td><strong>City Response</strong></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>- 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>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td><strong>City Response</strong></td>
</tr>
<tr>
<td>With respect to Alternative 2 Deep Sewer Alignment:</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>1) Foster Drive + 2 or 3 properties on MacLaren. Balance Standard Depth.</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>2) Not convinced that connection on Merrett + Foster via 223 is better than connection to Yonge Street.</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>3) Support retaining ditches with possible exception of Foster Dr. which needs more thought for alternatives.</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 procedures (and the associated labour and equipment). Additional allowances have been</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 needed here.</td>
<td></td>
</tr>
<tr>
<td>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td><strong>City Response</strong></td>
</tr>
<tr>
<td><strong>Include for dewatering operations due to anticipated groundwater interception.</strong></td>
<td>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><strong>Lack of information</strong></td>
<td>Contacted by phone. Voicemail left indicating location of Class EA reports.</td>
</tr>
<tr>
<td><strong>Cost factor for stormwater management alternatives.</strong></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><strong>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.</strong></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>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td><strong>City Response</strong></td>
</tr>
<tr>
<td>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>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>Unable to attend PIC.</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>I had no idea of those cost different in these chose so I cannot pick those.</td>
<td></td>
</tr>
<tr>
<td>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td></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><strong>No one could answer the questions presented here-in:</strong></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><strong>City Response</strong></td>
<td></td>
</tr>
<tr>
<td>3) The City has a standard due diligence protocol for real estate transactions that includes</td>
<td></td>
</tr>
<tr>
<td>Stakeholder Comments and Responses following PIC</td>
<td>City Response</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Stakeholder Comment</strong></td>
<td></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 natural watershed?</td>
<td>relevant investigations based on present and historic land use/activities.</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>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. 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 <em>Criteria for Infill Sidewalks included with Road Reconstruction</em> 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>
Sent by E-mail: brett.gratrix@barrie.ca

May 13, 2015

Mr. Brett Gratrix
Infrastructure Planning Engineer
City of Barrie
70 Collier Street, Box 400
Barrie, ON
L4M 4T5

Dear Mr. Gratrix:

Re: Foster Drive Area Sanitary Servicing and Stormwater Management
Municipal Class Environmental Assessment Study
Presentation of Alternative Solutions
City of Barrie

Thank you for circulating the Lake Simcoe Region Conservation Authority (LSRCA) on the status of this Schedule B Municipal Class Environmental Assessment (Class EA) Study. It is our understanding that the purpose of this Class EA is to determine the potential for sanitary servicing and to assess the opportunity to implement stormwater management improvements in the Foster Drive area.

This project is of interest to the LSRCA due to the fact that the western boundary of the study area borders on Whiskey Creek and includes its associated floodplain and erosion hazards. Lands within the study area are under the jurisdiction of Ontario Regulation 179/06 of the Conservation Authorities Act and lands in the northwestern portion of the study area are identified as a significant groundwater recharge area. We also note that lands within the affected area are designated Level 1 and 3 Natural Heritage Resources on Schedule H of the City of Barrie Official Plan. As such, we have undertaken our review of this project in the context of these Plans and their associated policies.

Based on our review of the draft Environmental Study Report (ESR), and Appendix G related to Stormwater Management, the following comments are provided for your consideration:

1. In Section 2.3.1.1 of the ESR reference should be made to Section 1.6.6.7 of the PPS which states that planning for stormwater management should among other things promote stormwater best management practices, including stormwater attenuation and re-use and low impact development.
2. As stated in Section 2.3.1.2 of the ESR, we agree that the LSPP identifies private on-site sewage systems as a significant source of phosphorus and any reduction in this source would contribute to achieving better water quality for Lake Simcoe and its contributing creeks, rivers and streams. As such we recommend a solution that would result in the reduction of private on-site sewage systems within the Lake Simcoe Watershed.

3. Section 4.6 of the ESR related to Impacts to the Natural Environment should include the following provisions:
   a) As part of the Hydrogeological Study completed as part of detailed design for the selected sanitary servicing option, short and long-term impacts to Whiskey Creek and the significant groundwater recharge area must be considered and mitigated.
   b) Mitigation measures should be identified for any work proposed in proximity to Whisky Creek including the requirement for a contingency plan.
   c) A restoration plan for any impacts sustained by the meadow habitat is recommended and renaturalization should be explored where appropriate.

4. The Ministry of Natural Resources and Forestry should be contacted to ensure all matters related to the Endangered Species Act, 2007 are addressed appropriately.

5. The proposed road reconstruction offers an excellent opportunity to implement Low Impact Development (LID) measures. We recommend Alternative 3 in Appendix G (Low Impact Development) as the preferred Stormwater Management (SWM) treatment alternative.

6. Appendix G should mention that the subject area is outside of the City of Barrie's Drinking Water Issues Contributing Areas for Chloride and Sodium and as such is suitable for road and driveway LID infiltration measures.

If you have any questions or comments, do not hesitate to contact the undersigned at 905-895-1281, extension 239, or by e-mail at l.bulford@lsrca.on.ca. Please reference the above file numbers in future correspondence.

Sincerely,

Lisa-Beth Bulford, M.Sc.
Development Planner

LBB/hh

c. Tom Hogenbirk, Manager of Engineering and Technical Services, LSRCA (email only)
   Charles Burgess, Planning Coordinator. LSRCA (email only)
The City of Barrie

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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NAME OF RESPONDENT:

______________________________________________________________

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

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Barrie Public Library Downtown
Barrie, ON L4M 1L5

Barrie Public Library Painswick Branch
48 Dean Avenue
Barrie, ON L4N 0C2

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

________________________________________________________________________________________

________________________________________________________________________________________

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☑ Yes ☐ No

Signature: ___________________________ Date: ___________________________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247

E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
The City of Barrie

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT: MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
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4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

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Please print all responses.

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Downtown
Information Desk
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Barrie, ON L4M 1L8

Barrie Public Library
Painswick Branch
Information Desk
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Barrie, ON L4N 0C2

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☑ Yes  ☐ No

Signature: __________________________
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Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required)  ☐ Marginal (Some Improvement Required)  ☑ ☐ Good  ☐ Very Good  ☐ Excellent

Please add a comment in support of your level of satisfaction below:

________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________

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________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

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 under.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signature: _______________________________ Date: April 29, 2015

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☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

Well-articulated information that clarified my position as being outside the study area. However, I still wish to be kept informed should anything regarding our outside status should change to include or impact our property and others on Little Ave.

Please submit this comment sheet by Wednesday, May 13, 2015 to

Mr. Brett Gratix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
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FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

The cost / issues with selling house

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes  ☐ No

Signature ____________________________ Date: April 29/15

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☐ Poor (Much Improvement Required)
☐ Marginal (Some Improvement Required)
☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

Good info / very knowledgeable

Please submit this comment sheet by Wednesday, May 13, 2015 to:

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Engineering Department
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Barrie, ON L4M 4T5

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<thead>
<tr>
<th>City of Barrie</th>
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<th>Barrie Public Library</th>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

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Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☑ Yes ☐ No

Signature ___________________________ Date: April 29, 2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required)
☐ Good
☐ Very Good
☑ Marginal (Some Improvement Required)
☐ Excellent

Please add a comment in support of your level of satisfaction below:

________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
The City of BARRIE

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT -
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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Please print all responses.

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Signature ________________________________ Date: April 29, 2015

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Find the best money and get it down ASAP!

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

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The City of Barrie
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MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

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☐ Yes  ☐ No

Signatur ___________________________ Date: _______________

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Please add a comment in support of your level of satisfaction below:

Please mail all communication regarding __________ to

(As the house has tenants and they do not forward me the mail)

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Engineering Department
70 Collier Street, P.O. Box 400
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Public Information Centre
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ADD ISE COST (ESTIMATED) TO HOME OWNERS

WOULD HELP IN MAKING DECISIONS.

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Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes  ☐ No

Signature: __________  Date: __________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required)  ☐ Marginal (Some Improvement Required)  ☑ Good  ☐ Very Good  ☐ Excellent

Please add a comment in support of your level of satisfaction below:

________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247

E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
The City of Barrie

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

Personal Information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Municipal Class Environmental Assessment. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

PROPERTY OWNER:

ADDRESS (Including Postal Code & Telephone Number):

Street A
Postal C

Email:

The Corporation of the City of Barrie (City) is undertaking a Schedule B Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and address the opportunity to implement stormwater management improvements in the Foster Drive area (Including Garaon Street, MacLaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011.

The draft Class EA document is available online at www.barrie.ca. A copy of the draft Class EA document outlining the planning, approval, problem identification and preliminary impact assessments of the various alternatives is available for review at the following locations:

<table>
<thead>
<tr>
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<td>Barrie, ON L4M 1L6</td>
<td>Barrie, ON L4N 0C2</td>
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Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

Sanitary Servicing Alternatives:

Alternative 1 - "Do Nothing"
The "Do Nothing" alternative allows for the consideration of maintaining the use of septic systems.

Alternative 2 - Deep Sewer Alignment
This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area with the intent to service all existing basements by gravity. This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.
Alternative 3 – Shallow Sewer Alignment
This alternative consists of a shallower vertical alignment with the intent to service all first floors by gravity (some basements will require pumps to lift sanitary flows to the lateral). This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Yonge Street via 223 Foster Drive and 357 Yonge Street (aligned along south property boundary).

Stormwater Management Alternatives:

☐ Alternative 1 – “Do Nothing”
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☐ Alternative 2 – Stormwater Management Wet Pond
This alternative includes a SWM wet pond to provide stormwater quality treatment. The optimal location for this pond is at 202 and 204 Foster Drive, requiring acquisition of these properties. A permanent easement would be required through 201 Minett’s Point Road to establish an outlet for the pond.

☐ Alternative 3 – Low Impact Development (LiD)
This alternative includes the implementation of LiD practices within the right-of-way providing stormwater quality treatment. LiD is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

☐ Alternative 4 – Low Impact Development (LiD) and Stormwater Management Dry Pond
This alternative includes the implementation of LiD practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes  ☐ No

Sign: ___________________________ Date: Apr 24/15

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrisa.ca)?

☐ Poor (Much Improvement Required)
☐ Marginal (Some Improvement Required)
☐ Good
☐ Very Good
☐ Excellent

Please add a comment in support of your level of satisfaction below:

________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Grafton, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T6
Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.grafton@barrie.ca

Thank you for your comments.
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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NAME OF RESPONDENT:


REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Addi
Postal Cod
Email:

The Corporation of the City of Barrie (City) is undertaking a Schedule 'B' Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and address the opportunity to implement stormwater management improvements in the Foster Drive area (including Garson Street, Maclaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011.

The draft Class EA document is available online at www.barric.ca. A copy of the draft Class EA document outlining the planning, approval, problem identification and preliminary impact assessments of the various alternatives is available for review at the following locations:

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Barrie, ON L4M 4T5

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Barrie, ON L4M 4T5

Barrie Public Library
Downtown
Information Desk
60 Worsley Street
Barrie, ON L4M 1L6

Barrie Public Library
Painswick Branch
Information Desk
48 Dean Avenue
Barrie, ON L4M 0C2

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

Sanitary Servicing Alternatives:

☐ Alternative 1 - “Do Nothing”

The “Do Nothing” alternative allows for the consideration of maintaining the use of septic systems.

☒ Alternative 2 – Deep Sewer Alignment

This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area with the intent to service all existing basements by gravity. This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.
Alternative 3 – Shallow Sewer Alignment
This alternative consists of a shallower vertical alignment with the intent to service all first floors by gravity (some basements will require pumps to lift sanitary flows to the lateral). This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Yonge Street via 223 Fosler Drive and 357 Yonge Street (aligned along south property boundary).

Stormwater Management Alternatives:

Alternative 1 – "Do Nothing"
The "Do Nothing" alternative allows for the consideration of allowing stormwater runoff to continue to discharge from the study area uncontrolled and untreated.

Alternative 2 – Stormwater Management Wet Pond
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Alternative 3 – Low Impact Development (LID)
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment. LID is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

Alternative 4 – Low Impact Development (LID) and Stormwater Management Dry Pond
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Doing nothing is **not** an alternative. There have been too many flooded basements in this neighborhood to do nothing.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☑ Yes  ☐ No

Signature

Date: 04-18-15

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☑ Poor (Much Improvement Required)  ☐ Marginal (Some Improvement Required)  ☐ Good  ☐ Very Good  ☐ Excellent

Please add a comment in support of your level of satisfaction below:

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__________________________________________________________

__________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

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Alternative 4 – Low Impact Development (LID) and Stormwater Management Dry Pond

This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

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 for we would of left old septic.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signature: ___________________________ Date: 04/29/2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required) ☑ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

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____________________________________________________________________________________

____________________________________________________________________________________

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City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gatrix@barrie.ca

Thank you for your comments.
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: ____________________________ Unit/Apt: ____________________________

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  - Barrie Public Library
  - Information Desk
  - 60 Worsley Street
  - Barrie, ON L4M 1L8
  - Painswick Branch
  - Information Desk
  - 48 Dean Avenue
  - Barrie, ON L4N 0C2

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

Sanitary Servicing Alternatives:

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Huge ditch exists on Macleaner side of my property. Created from sewer installation on Little Av in 2000. Safety factor when cutting lawn.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes  ☐ No

Signature: ___________________________ Date: _______ APR 13 30 2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

__________________________________________________________________________________________

__________________________________________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

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City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratix@barrie.ca

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FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
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NAME OF RESPONDENT:

__________________________________________________________________________

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

__________________________________________________________________________

ADDRESS (Including Postal Code & Telephone Number):

Street Address: ___________________________ Unit/Apt: ___________________________

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Stormwater Management Alternatives:

Alternative 1 – “Do Nothing”
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Alternative 2 – Stormwater Management Wet Pond
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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee...as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signature ______________________________ Date: April 29, 2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.baron.ca)?

☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

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NAME OF RESPONDENT:

__________________________________________________________

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

Property Owners

ADDRESS (Including Postal Code & Telephone Number):

Street Address: ________________________________________________ Unit/Apt: ____________________________
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Sanitary Servicing Alternatives:

☐ Alternative 1 - "Do Nothing"
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☐ Alternative 2 – Deep Sewer Alignment Foster Dr + 20 properties on MacLaren. This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area with the intent to service all existing basements by gravity. This alternative includes a utility corridor for the sanitary sewer to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.

Not convinced that connection Merrett + Foster via #3 is better than connection to Yonge St.
Alternative 1 – “Do Nothing”

The “Do Nothing” alternative allows for the consideration of allowing stormwater runoff to continue to discharge from the study area uncontrolled and untreated.

Alternative 2 – Stormwater Management Wet Pond

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Support retaining ditches with possible exception of Foster Dr.

which needs more thought re alternatives.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

Yes [ ] No [ ]

Signatur ____________________________ Date: ____________________________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

[ ] Poor (Much Improvement Required) [ ] Marginal (Some Improvement Required) [ ] Good [ ] Very Good [ ] Excellent

Please add a comment in support of your level of satisfaction below:

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 needed here.

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gatrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gatrix@barrie.ca

Thank you for your comments.
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Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signature: ___________________________ Date: ____________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

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Please add a comment in support of your level of satisfaction below:

Lack of Information

Please submit this comment sheet by Wednesday, May 13, 2015 to:

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City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
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E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
The City of Barrie

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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NAME OF RESPONDENT:

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

Property Owner

ADDRESS (Including Postal Code & Telephone Number):

Street Address:

Postal Code:

Unit/Apt:

Telephone Number:

Email:

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required).

I am concerned about 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...

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes  ☐ No

Signature: ___________________________ Date: May 10, 2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

__________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

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City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247

E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
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 than 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?
The City of Barrie
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT -
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
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COMMENT SHEET

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NAME OF RESPONDENT:

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Legal, Property Owner, Tenant, etc.):

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Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signature __________________________ Date: May 5, 2015

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required) ☐ Marginal (Some Improvement Required) ☐ Good ☐ Very Good ☐ Excellent

Please add a comment in support of your level of satisfaction below:

Unable to attend Pic.

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON LAM 4T5

Tel: (705) 739-4220, Ext. 5117
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I had no idea of these cost different in these chosen.
so I cannot judge these.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

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We would strongly oppose a shallow sewer alignment as it would almost certainly cause sewers back up into basements during heavy rains.

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ Yes ☐ No

Signatu

Date: April 17/15

Are you satisfied with the detail of the Information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required)
□ Marginal (Some Improvement Required)
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FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
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Please print all responses.

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REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.): ________________________________________________

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Alternative 2 – Stormwater Management Wet Pond
This alternative includes a SWM wet pond to provide stormwater quality treatment. The optimal location for this pond is at 202 and 204 Foster Drive, requiring acquisition of these properties. A permanent easement would be required through 201 Minett's Point Road to establish an outlet for the pond.

Alternative 3 – Low Impact Development (LID)
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment. LID is a stormwater management approach that consists of engineered elements that mimic natural hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

Alternative 4 – Low Impact Development (LID) and Stormwater Management Dry Pond
This alternative includes the implementation of LID practices within the right-of-way providing stormwater quality treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in Alternative 2.

Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Please see attached

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee as well as the publication of the Notice of Completion?

☐ Yes   ☐ No

Signature: ________________________________ Date: ______/____/____

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor (Much Improvement Required)  ☐ Marginal (Some Improvement Required)  ☐ Good  ☐ Very Good  ☐ Excellent

Please add a comment in support of your level of satisfaction below:

Dear Sir, I am quite pleased with the proposed flooding mitigation plans.

Please submit this comment sheet by Wednesday, May 13, 2016 to:

Mr. Brett Graitix, P.Eng.
City of Barrie
Engineering Department
70 Colliver Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 738-4220, Ext. 5117
Fax: (705) 730-4247

E-mail: brett.graitix@barrie.ca

Thank you for your comments.
Concerns:

1. 90% of Foster is on well water. Who will be responsible should our wells dry up in the process?

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?

3. Rents out a house to who over the passing of time have no doubt polluted the immediate ground and surrounding area. Do you really want to without cleaning up the surrounding area of toxics that are already feeding into Kempenfelt Bay through its natural watershed?

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 Ave, why did they not finish the job with said Assessment Area of Foster Drive? Anyone like to investigate?

Regards
Please see email below.
Thank you.

Begin forwarded message:

From:
Date: May 13, 2015 at 4:46:10 PM EDT
To: "brett.gratix@barrie.ca" <brett.gratix@barrie.ca>
Subject: Foster Drive Sanitary Servicing ...Class EA

Hi Brett,

With regards to the above Class EA, I support Alternative 2 or 3 with regards to Sanitary Servicing, and Alternative 3 for the Stormwater Management.

Please keep me informed of the staff recommendations for the Preferred Alternative Solution that will be presented to the General Committee, as well as the publication of the Notice of Completion.

With many thanks,
Dear Mr. Gatrix,

Please find attached as requested, a completed copy of the Comment sheet for the above project. Please note at this time that I would like to discuss the costs to the homeowners with corner lots that have large frontages. As these particular owners such as myself are not gaining any additional benefit or services from the City of Barrie we should therefore not pay any additional charge(s) over and above those homeowners with average sized lots. A fair and equitable cost sharing would be to have the costs borne equally by the number of homeowners within the study area. An average frontage for all would be the most cost effective for all homeowners. Please advise, if not yourself, whom would I have to contact to discuss this cost issue further.

Once again, please find attached a scanned copy of my comment sheet.

Your Truly
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - 
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E and will be used in the development of a Municipal Class Environmental Assessment. Questions about this collection are directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 726-4242.

Please print all responses.

NAME OF RESPONDENT:


REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: ___________________________________________ Unit/Apt: ________________________________
Postal Code: ____________________________________________ Telephone Number: __________________________

Email: __________________________________________________

The Corporation of the City of Barrie (City) is undertaking a Schedule 'B' Municipal Class Environmental Assessment to determine the potential for sanitary servicing and address the opportunity to implement stormwater improvements in the Foster Drive area (including Gerson Street, Maclaren Avenue, Merrett Drive and Yeates Ave) to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2007 and 2011.

The draft Class EA document is available online at www.barrie.ca. A copy of the draft Class EA document planning, approval, problem identification and preliminary impact assessments of the various alternatives is available at the following locations:

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- Clerk's Office
- City Hall, 1st Floor
- 70 Collier Street
- Barrie, ON L4M 4T5
- City of Barrie
- Engineering
- City Hall, 5th Floor
- 70 Collier Street
- Barrie, ON L4M 4T5
- Barrie Public Library
- Downtown
- Information Desk
- 50 Worsley Street
- Barrie, ON L4M 1L6
- Barrie Public Library
- Painswick Branch
- Information Desk
- 48 Dean Avenue
- Barrie, ON L4N 0C

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 preferred.

Sanitary Servicing Alternatives:

☐ Alternative 1 - "Do Nothing"
   The "Do Nothing" alternative allows for the consideration of maintaining the use of septic systems.

☑ Alternative 2 - Deep Sewer Alignment
   This alternative consists of sanitary servicing via deep gravity sewers on all streets within the study area to service all existing basements by gravity. This alternative includes a utility corridor for the same to continue beyond the current terminus of Merrett Drive to Foster Drive via 223 Foster Drive.
Alternative 3 – Shallow Sewer Alignment
This alternative consists of a shallower vertical alignment with the intent to service all first floors by basements will require pumps to lift sanitary flows to the lateral). This alternative includes a utility cost sanitary sewer to continue beyond the current terminus of Merrett Drive to Yonge Street via 223 Foster Dr. Yonge Street (aligned along south property boundary).

Stormwater Management Alternatives:

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Alternative 3 – Low Impact Development (LID)
This alternative includes the implementation of LID practices within the right-of-way providing storm treatment. LID is a stormwater management approach that consists of engineered elements that influence hydrology by infiltrating, filtering, evaporating and detaining runoff close to the source.

Alternative 4 – Low Impact Development (LID) and Stormwater Management Dry Pond
This alternative includes the implementation of LID practices within the right-of-way providing storm treatment and a SWM dry pond to provide quantity (flood) and erosion control in the location identified in.

Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page is required)

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to the General Committee, as well as the publication of the Notice of Completion?

☑ Yes □ No

Signature: ____________________________
Date: ____________________________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provide website (www.barrie.ca)?

☐ Poor □ Marginal ☑ Good □ Very Good □ Excellent

(Much Improvement Required) (Some Improvement Required)

Please add a comment in support of your level of satisfaction below:

All I could find was a draft – are these documents the latest available to the owners to review?

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5
Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT - MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

Personal information on this form is collected under the authority of the Environmental Assessment Act, Chap. E18, Section 7, and will be used in the development of a Municipal Class Environmental Assessment. Questions about this collection should be directed to the Director of Engineering, P.O. Box 400, 70 Collier Street, Barrie, Ontario, L4M 4T5, (705) 725-4242.

Please print all responses.

NAME OF RESPONDENT: ___________________________ 

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

ADDRESS (Including Postal Code & Telephone Number):

Street Address: ___________________________ 

Postal Code: ___________________________ Telephone Number: ___________________________

Email: ___________________________

The Corporation of the City of Barrie (City) is undertaking a Schedule ‘B’ Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and address the opportunity to implement stormwater management improvements in the Foster Drive area (including Garson Street, MacLaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011.

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- Barrie, ON L4M 4T5
- Barrie Public Library
- Downtown
- Information Desk
- 60 Worsley Street
- Barrie, ON L4M 1L8
- Barrie Public Library
- Painswick Branch
- Information Desk
- 48 Dean Avenue
- Barrie, ON L4N 0C2

Which of the following Alternatives do you feel best address the existing sanitary sewer and stormwater infrastructure deficiencies and generate the greatest positive impact? Please rank the following Alternatives from 1 to 3 with 1 being the most preferred. For the Stormwater Management Alternatives, please rank the Alternatives from 1 to 4 with 1 being the most preferred.

Sanitary Servicing Alternatives:

☐ Alternative 1 - “Do Nothing”

The "Do Nothing" alternative allows for the consideration of maintaining the use of septic systems.

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

Do NOT WANT SIDEWALKS!

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

☐ No

Signature: ____________________________
Date: ____________________________

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

☐ Poor
(Much Improvement Required)
☐ Marginal
(Some Improvement Required)
☑ Good
☐ Very Good
☐ Excellent

Please add a comment in support of your level of satisfaction below:

__________________________________________________________________________

__________________________________________________________________________

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON  L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
Good morning,

Please find attached a letter from Alderville First Nation’s Land and Resource Coordinator Dave Simpson.

 Regards,

Skye Anderson
Consultation Clerical Support
Alderville First Nation
11696 Second Line
Roseneath, ON
K0K 2X0
(905) 352-2011
Fax: (905) 352-3242
April 17, 2015

City of Barrie
70 Collier Street
P.O. Box 400
Barrie, ON
L4M 4T5

Attn: Brett Gratrix

Re: Foster Drive Area Sanitary Servicing and Stormwater Management
Municipal Class Environmental Assessment (Class EA)
Presentation of Alternative Solutions

Dear Brett,

Thank you for the information to Alderville First Nation regarding Foster Drive Area Sanitary Servicing and Stormwater Management. We appreciate the fact the City of Barrie recognizes the importance of First Nations Consultation and that your office is conforming to the requirements within the Duty to Consult Process.

Please keep us apprised of any further developments. I can be contacted at the mailing address above or electronically via email, at the email address below.

In good faith and respect,

Dave Simpson
Lands and Resources

Communications Officer
Alderville First Nation

dsimpson@aldervillefirstnation.ca

Tele: (905) 352-2662
Fax: (905) 352-3242
Hello Mr. Gratrix,

Attached are MSIFN comments regarding the project. My apologies on being a day late.

In Spirit of Kindness,

*Monica Sanford*

Consultation, Lands & Membership Admin Assistant
Mississaugas of Scugog Island First Nation
22521 Island Road
Port Perry, ON
L9L 1B6
Phone: (905) 985-3337 ext. 229
Fax: (905) 985-8828
Email: msanford@scugogfirstnation.com

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*Mississaugas of Scugog Island First Nation Notice & Disclaimer*
This e-mail, and any attachments thereto, is intended only for use by the addressee(s) named herein and may contain legally privileged and/or confidential information. If you are not the intended recipient of this e-mail, you are hereby notified that any dissemination, distribution or copying or this e-mail, and any attachments thereto is strictly prohibited. If you have received this e-mail in error, you are required to immediately notify me by telephone (above) and permanently delete the original and any copy of this e-mail and any printout thereof.
The City of
BARRE

FOSTER DRIVE AREA SANITARY SERVICING AND STORMWATER MANAGEMENT -
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (CLASS EA)

Public Information Centre
Wednesday, April 29, 2015
4:00 p.m. to 7:00 p.m.
Massie Family Program Room (Painswick Public Library, 48 Dean Avenue)

COMMENT SHEET

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Please print all responses.

NAME OF RESPONDENT:

DAVE MOWAT, CONSULTATION SPECIALIST

REPRESENTING (Agency, Municipality, Property Owner, Tenant, etc.):

MISSISSAUGAS OF SCUGOG ISLAND FIRST NATION

ADDRESS (Including Postal Code & Telephone Number):

Street Address: 22621 ISLAND ROAD PORT PERRY, ON
Postal Code: L9L-1B6 Telephone Number: 905 985 3337 Ext.263

Email: dmowat@scugogfirstnation.com

The Corporation of the City of Barrie (City) is undertaking a Schedule 'B' Municipal Class Environmental Assessment (Class EA) to determine the potential for sanitary servicing and address the opportunity to implement stormwater management improvements in the Foster Drive area (including Garson Street, Maclaren Avenue, Merrett Drive and Yeates Avenue) pursuant to the approved procedures, as defined in the Municipal Class Environmental Assessment dated June 2000, as amended in 2007 and 2011.

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  - 70 Collier Street
  - Barrie, ON L4M 4T5
- Barrie Public Library
  - North
  - Barrie Public Library
  - Downtown
  - Information Desk
  - 60 Worsley Street
  - Barrie, ON L4M 1L6
  - Barrie, ON L4N 0C2
- Barrie Public Library
  - Painswick Branch
  - Information Desk
  - 48 Dean Avenue

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Please list below any specific concerns you have with the alternatives: (Please feel free to add an additional page if more room is required)

The concern would be in: not pursuing a proactive alternative!

Do you wish to continue to be informed of the staff recommendations for the Preferred Alternative Solution that will be presented to General Committee, as well as the publication of the Notice of Completion?

Yes [ ]
No [x] Date: May 14/15

Are you satisfied with the detail of the information presented herein, at the Public Information Centre, and provided on the City website (www.barrie.ca)?

[ ] Poor
[ ] Marginal
[ ] Good
[ ] Very Good
[ ] Excellent

Please add a comment in support of your level of satisfaction below:

[ ] Map are always of concern with an area quality and putting project into context of surrounding due

Please submit this comment sheet by Wednesday, May 13, 2015 to:

Mr. Brett Gratrix, P. Eng.
City of Barrie
Engineering Department
70 Collier Street, P.O. Box 400
Barrie, ON L4M 4T5

Tel: (705) 739-4220, Ext. 5117
Fax: (705) 739-4247
E-mail: brett.gratrix@barrie.ca

Thank you for your comments.
Hi Brett,

Please update the contact information you have for Rama First Nation to Chief Rodney Noganosh.

Thank you,

Hollie Nolan  
*Executive Assistant to the Chief, Administration*  
Chippewas of Rama First Nation  
(ph) 705-325-3611, 1216  
(cell)  
(fax) 705-325-0879  
(url) [www.aramafirstnation.ca](http://www.aramafirstnation.ca)

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By submitting your or another individual's personal information to Chippewas of Rama First Nation, its service providers and agents, you agree and confirm your authority from such other individual, to our collection, use and disclosure of such personal information in accordance with our privacy policy.

---

Please consider the environment before printing this e-mail.
Hello,

Please find attached notification of the Foster Drive EA located in the City of Barrie near the intersection of Yonge Street and Foster Drive. Please let me know if you wish to be involved or if you have infrastructure in the area.

Thanks,

Brett Gratrix, P.Eng.
Infrastructure Planning Engineer
The City of Barrie

Engineering Department
6th Floor

Mailing Address:
70 Collier Street
P.O. Box 400, Barrie ON, L4M 4T5
Tel: 705-739-4220 ext. 5117
Fax: 705-739-4247

From: Claire.Zhang@HydroOne.com [mailto:Claire.Zhang@HydroOne.com]
Sent: Monday, May 11, 2015 2:54 PM
To: Brett Gratrix
Cc: zone5Scheduling@hydroOne.com; w.d.kloostra@hydroOne.com; ierullo@hydroOne.com
Subject: Foster Drive Area Sanitary Servicing and Stormwater Management Municipality Class EA

Dear Mr. Gratrix,

In our initial review, we can confirm that there are no Hydro One Transmission (above 115 kV) Facilities in the subject area. Please note there may also be Hydro One Distribution facilities in your study area (ie. Distribution wires operating below 115 kV). In order to cover off the impact to all Hydro One assets, please also forward your EA to the following email address:

Zone5Scheduling@HydroOne.com

Please be advised that this is only a preliminary assessment based on current information. No further consultation with Hydro One Networks Inc. is required if no changes are made to the current information.

If you have any further questions or concerns, please feel free to contact me.
Regards,

Claire Zhang
Tel: 647-896-8862

On behalf of

Secondary Land Use
Transmission Asset Management
Hydro One Networks

This email and any attached files are privileged and may contain confidential information intended only for the person or persons named above. Any other distribution, reproduction, copying, disclosure, or other dissemination is strictly prohibited. If you have received this email in error, please notify the sender immediately by reply email and delete the transmission received by you. This statement applies to the initial email as well as any and all copies (replies and/or forwards) of the initial email.
Appendix D
Detailed Cost Estimate
## Foster Drive Area Sanitary Sewer Servicing Class EA
### Estimated Frontage Costs for the Alternative Solutions

<table>
<thead>
<tr>
<th>Cost Breakdown - Foster Drive</th>
<th>Alternative 1 - Do Nothing</th>
<th>Alternative 2 - Deep Alignment</th>
<th>Alternative 3 - Shallow Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Costs</strong></td>
<td>Units</td>
<td>Unit Price</td>
<td>Quantity</td>
</tr>
<tr>
<td>Septic Field</td>
<td>Each</td>
<td>$20,000</td>
<td>35</td>
</tr>
<tr>
<td>Private Sewer System</td>
<td>Each</td>
<td>$2,000</td>
<td>0</td>
</tr>
<tr>
<td>Laterals (in ROW)</td>
<td>Each</td>
<td>$1,500</td>
<td>14</td>
</tr>
<tr>
<td>Manholes (&lt;5.0 m)</td>
<td>Each</td>
<td>$9,300</td>
<td>14</td>
</tr>
<tr>
<td>Manholes (5.0 - 8.0 m)</td>
<td>Each</td>
<td>$5,200</td>
<td>12</td>
</tr>
<tr>
<td>Manholes (&gt;8.0 m)</td>
<td>Each</td>
<td>$8,000</td>
<td>0</td>
</tr>
<tr>
<td>Gravity Sewer (&lt;5.0 m)</td>
<td>m</td>
<td>$300</td>
<td>14</td>
</tr>
<tr>
<td>Gravity Sewer (5.0 - 8.0 m)</td>
<td>m</td>
<td>$500</td>
<td>12</td>
</tr>
<tr>
<td>Trench Restoration - width x (Gran B + Gran A + Base Asphalt): 3 x ($17.60, $6.19, $12.15)</td>
<td>m</td>
<td>$114</td>
<td>507</td>
</tr>
<tr>
<td>Dewatering</td>
<td>LS</td>
<td>$50,000</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Capital Costs</strong></td>
<td></td>
<td>$770,000</td>
<td>0</td>
</tr>
</tbody>
</table>

### Annual Operation and Maintenance Costs

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1 - Do Nothing</th>
<th>Alternative 2 - Deep Alignment</th>
<th>Alternative 3 - Shallow Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Septic Pumpout</strong></td>
<td>Each</td>
<td>$133</td>
<td>20</td>
</tr>
<tr>
<td><strong>Sewer Billing</strong></td>
<td>Each</td>
<td>$365</td>
<td>35</td>
</tr>
<tr>
<td><strong>Pump Maintenance</strong></td>
<td>Each</td>
<td>$122,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Capital Costs</strong></td>
<td></td>
<td>$1,342,000</td>
<td>0</td>
</tr>
</tbody>
</table>

### Annual O&M Costs

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1 - Do Nothing</th>
<th>Alternative 2 - Deep Alignment</th>
<th>Alternative 3 - Shallow Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Capital Costs</strong></td>
<td></td>
<td>$7,112,000</td>
<td>$1,325,258</td>
</tr>
<tr>
<td><strong>Annual O&amp;M Costs</strong></td>
<td></td>
<td>$12,768</td>
<td>$35,040</td>
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</table>
### Foster Drive Area Sanitary Sewer Servicing Class EA

#### Life Cycle Cost Analysis - 100 years - Alternative Comparison

<table>
<thead>
<tr>
<th>Discount Rate</th>
<th>Alternative 1 - Septic Systems</th>
<th>Alternative 2 - Deep Sewer Alignment</th>
<th>Alternative 3 - Shallow Sewer Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected life</td>
<td>25 Years</td>
<td>100 Years</td>
<td>100 Years</td>
</tr>
<tr>
<td>Comparison Period</td>
<td>100 Years</td>
<td>100 Years</td>
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#### COSTS

<table>
<thead>
<tr>
<th></th>
<th>Create / Acquire</th>
<th>O&amp;M 1st Yr</th>
<th>NPV O &amp; M</th>
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<tr>
<td>Capital Works</td>
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<tr>
<td>@ yr 0</td>
<td>$2,112,000</td>
<td>$12,768</td>
<td>$6,079,639</td>
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<tr>
<td></td>
<td>$6,079,639</td>
<td>$824,176</td>
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<td>$1,325,258</td>
<td>$35,040</td>
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<tr>
<td>@ yr 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1,325,258</td>
<td>$2,261,837</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>$1,185,788</td>
<td></td>
<td>$16,950</td>
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<td>$3,570,915</td>
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#### RESULTS

<table>
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<th></th>
<th>NPV</th>
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<td>$6,903,815</td>
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<tr>
<td></td>
<td>$3,587,095</td>
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<td>$3,570,915</td>
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**Sanitary Servicing Alternatives**

**Lifecycle Cost Comparison (100 years)**

- **Alternative 1 - Septic Systems**: $6,079,639
- **Alternative 2 - Deep Sewer Alignment**: $2,261,837
- **Alternative 3 - Shallow Sewer Alignment**: $2,385,127
Appendix E
Frontage Costs
<table>
<thead>
<tr>
<th>Mainline Sewer Costs within Right-of-Way</th>
<th>Alternative 1 - Do Nothing</th>
<th>Alternative 2 - Deep Alignment Foster Drive</th>
<th>Alternative 2 - Deep Alignment Maclaren, Yeates, Garson, Merrett</th>
<th>Alternative 2 - Total</th>
<th>Alternative 3 - Shallow Alignment All Streets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Cost Estimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster</td>
<td>$ 520,088</td>
<td>$ 805,170</td>
<td></td>
<td>$ 1,325,258</td>
<td>$ 1,185,788</td>
</tr>
<tr>
<td>Maclaren, Garson, Yeates, Merrett</td>
<td>$ 2,112,000</td>
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<tr>
<td>Subtotal Construction Costs</td>
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<tr>
<td>Sewer Length (m)</td>
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<tr>
<td>Foster</td>
<td>597</td>
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<tr>
<td>Maclaren, Garson, Yeates, Merrett</td>
<td>1207</td>
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<tr>
<td>Total</td>
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<tr>
<td>Frontage (per m) Estimate Ranges</td>
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<td>-5% Low Range Estimate</td>
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<td>15% High Range Estimate</td>
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<tr>
<td>Private Sewer Costs (Sewer from Property Line to Residence)</td>
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<tr>
<td>Private Building Sewer Cost Estimate</td>
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<td>$ 3,500</td>
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<td>Private Pump Cost Estimate</td>
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<tr>
<td>Typical Frontage Costs (not including Private Sewer Costs)</td>
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<tr>
<td>18.5 m Wide Lot (Typical)</td>
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<tr>
<td>Low Range Estimate</td>
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<td>$ 5,900</td>
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<td>$ 6,100</td>
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<tr>
<td>High Range Estimate</td>
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<td>$ 7,000</td>
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<td>$ 7,400</td>
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<tr>
<td>Total Estimated Costs Per Residence Including Frontage and Private Sewer Costs</td>
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<tr>
<td>Septic System Replacement</td>
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<td>Total Low Range Estimate (no pump)</td>
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<td>$ 9,400</td>
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<td>$ 9,600</td>
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<tr>
<td>Total High Range Estimate (no pump)</td>
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<td>$ 10,500</td>
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<td>$ 10,900</td>
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<tr>
<td>Total Low Range Estimate (with Pump)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total High Range Estimate (with Pump)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>