

12. Field Investigations

Following the selection of a Preferred Alternative (Alternative 1), the development of the Preferred Solution as discussed in **Section 10**, and the determination of the applicable Schedule projects, detailed field work was conducted. This field work was undertaken to focus and expand on the initial desktop archaeological, geotechnical, and SUE assessment work that was completed as part of the investigation of Existing Conditions. The following sections summarize the purposes and results of these additional field work activities.

12.1 Stage 2 Archaeological Assessment

As discussed in **Section 4.3**, a Stage 1 Archaeological Assessment (AA) was completed for the study area to determine areas that may have the potential to contain archaeological resources. As an outcome of the Stage 1 AA, a Stage 2 AA was recommended for the Morrish Parkette, which is located at 28 Morrish Road, as part of the proposed changes to the transportation network in Highland Creek Village.

The Stage 2 assessment was triggered by the requirements of the Environmental Assessment Act and in accordance with subsection 11(1) was conducted during the planning stage of the project (Ontario Government 1990a). This study is also subject to the Ontario Heritage Act (Ontario Government 1990b).

The Stage 2 field investigation did not result in the identification of any archaeological sites or material. Due to the long history of urban development, the lands within the current study area limits have been demonstrated to be extensively and intensively previously disturbed. There are no concerns for impacts to archaeological resources for the Preferred Solution, and no further archaeological assessment is required for this area.

No archaeological sites or material were identified during the Stage 2 archaeological assessment conducted as part of the proposed changes to the transportation network infrastructure identified in the Preferred Solution. Therefore, archaeological concerns for the current study area lands are considered addressed and no further archaeological work is recommended. The full Stage 2AA report is provided in **Appendix C**.

12.2 Geotechnical Assessment

A preliminary geotechnical investigation has been conducted by Golder Associates to support the Preferred Solution. The assessment includes pavement recommendations as well as environmental testing.

As previously summarized in **Section 4.6**, Golder Associates conducted a desktop review of existing borehole information in the HCV study area and determined that the available information was not adequate for preliminary design purposes. Consequently, targeted borehole investigation was recommended to be undertaken as part of this study. The geotechnical investigation includes nine boreholes advanced at the locations shown in **Exhibit 12-1**.

Exhibit 12-1: Borehole Locations



The reasons for the advancement of each borehole are outlined below.

- **BH15-1:** Support of the rehabilitation of Old Kingston Road
- **BH 15-2:** Support of new construction of re-aligned Old Kingston Road – Kingston Road connection

- **BH 15-3:** Support of the new construction of laneway parallel to Old Kingston Road
- **BH 15-4 and BH 15-9:** Permeability and groundwater information
- **BH 15-5:** Support of the rehabilitation of Morrish Road
- **BH 15-8:** Support of the rehabilitation of Kingston Road
- **BH 15-6 and BH 15-7:** Support of new construction of “loop” road connection between Kingston Road and Morrish Road.

A limited chemical analysis was conducted on selected soil/fill material samples collected as part of the geotechnical field program. The results of analyses identified exceedances of Electrical Conductivity (EC) and Sodium Adsorption Ratio (SAR), both of which are typically associated with historical road salting practices. EC and SAR impacted soils are considered exempt when re-used within a highway (as defined by the *Highway Traffic Act*).

The soil/fill material should be re-tested once excavated and stockpiled to better characterize the material before its re-use. If excess material is generated, available analytical data pertaining to the material should be forwarded to the potential receiver for review prior to the removal of the excavated material. Written authorization, indicating that the data was received and reviewed, and that the receiver accepts the excavated material, should be provided to the site representative by the potential receiver. If excess soil fill and/or native materials vary from those tested as part of the geotechnical investigation, additional testing is recommended to determine suitability for disposal. A Toxicity Characteristic Leachate Procedure (TCLP) analysis completed in accordance with O.Reg. 558/00 may be required to determine the waste classification of the soil prior to disposal.

Pease refer to **Appendix E** for a copy of the Preliminary Pavement Design Report.

12.3 SUE Investigation

The field investigation was completed in October 2015. The field investigation for the SUE Mapping was completed and the preliminary drawings were prepared (see drawings in **Appendix F**). The following items were noted during the investigation:

- Telecomm plant (Bell and Rogers) was installed within close proximity to the watermain at the Northwest corner of Morrish Road and Old Kingston Road. In these areas T2ue was unable to designate the alignment of the watermain due to the signal interference of the other conductive utilities. In several areas the signal for the watermain was not able to designate the horizontal alignment. In most cases as iron becomes older and corroded it

becomes less conductive and the electromagnetic signal may become too weak to designate the alignment.

- The alignment of the 900 mm diameter trunk watermain along Morrish Road (north of Old Kingston Road) shown on the records indicates a straight section. Field investigations confirmed a different alignment than was indicated. Additional valves and tee connections were designated in the area. Additional investigation may be required to determine the configuration and interconnections in this area.

During detailed design additional test holes or additional investigations may be required. Please refer to **Appendix F** for the final SUE report which provides further details on the conduct and results of the SUE Investigation.