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Volume 1

Environmental Assessment of the Township of North Dundas Waste Management Plan

GOLDER
MEMBER OF WSP

TOWNSHIP OF
North Dundas

9.4.2.2 Fish Habitat

The watercourse/perimeter ditch on the landfill site is considered fish habitat, as it connects downstream with fish-bearing waters (Black Creek via Volks Municipal Drain) (Figure 9-10). Black Creek is described as a drain of unknown thermal regime, and containing fish including Banded Killifish (*Fundulus diaphanus*), Blacknose Shiner (*Notropis heterolepis*), Central Mudminnow (*Umbra limi*), Creek Chub (*Semotilus atromaculatus*), Fallfish (*Semotilus corporalis*), Pumpkinseed (*Lepomis gibbosus*), Rock Bass (*Ambloplites rupestris*), Spottail Shiner (*Notropis hudsonius*), Tadpole Madtom (*Noturus gyrinus*), and White Sucker (*Catostomus commersonii*) (MNRF, 2021b). On most visits, several schools of small-bodied fish were observed in Volks Municipal Drain, north of Boyne Road in the Site-vicinity Study Area. No barriers to fish passage between Volks Municipal Drain and the watercourse/perimeter ditch on the landfill site were seen during periods of high water; however no fish were observed or captured in the watercourse/perimeter ditch on the landfill site. The Quart Municipal Drain does not appear to represent fish habitat as it has historically been observed to be dry and does not connect to the perimeter ditch on the Site Study Area.

9.4.2.3 Aquatic Endangered and Threatened Species

No aquatic endangered or threatened species were identified as being potentially present in the watercourse/perimeter ditch at the Site Study Area, or the Volks Municipal Drain, during the desktop review of published information, or through the field surveys performed for this study.

9.4.3 Terrestrial Ecosystems

9.4.3.1 Ecological Land Classification

The Site Study Area consists of deciduous and thicket swamp, thicket, open woodland, agricultural fields, and the existing active landfill. The Site-vicinity Study Area includes the landfill site, plus additional forest, agricultural fields, and disturbed areas.

During the field surveys conducted on the Site Study Area, nine upland and wetland plant communities were identified based on the ELC system (Lee et al., 1998), including disturbed areas. Plant communities are shown on Figure 9-10 and are described in Table 9-15.

Table 9-15: Plant Communities on the Site and Site-vicinity Study Areas

Plant Community	Description	SRANK[a]
TERRESTRIAL		
CUT/CUW Deciduous Thicket/Open Woodland	This community includes areas with varying levels of disturbance, immediately surrounding the active landfill. It is a mix of early successional trees such as poplar (*Populus* spp.), shrubs such as buckthorns (*Rhamnus* spp.), and willows (Salix spp.), interspersed with small weedy meadows and disturbed areas. This also includes the vegetated berm that surrounds the landfill.	N/A
FOM Mixed Forest	This community is a forest outside of the landfill site, north of Boyne Road. It was not accessed as part of the survey but appears to be a mix of immature trees including trembling aspen (*Populus tremuloides)* and eastern white cedar (*Thuja occidentalis*). Based on imagery, there appear to be some trails and other areas of disturbance throughout.	N/A
WETLAND		
SWD 2-2 Green Ash – Maple Mineral Deciduous Swamp	This community makes up the majority of the natural area on the Site and Site-vicinity Study Areas and is contiguous with a large forest to the south and east of the Site-vicinity Study Area. It is an immature to semi-mature forest on moist soils that consist of shallow to moderate organics over silty clay. The canopy is closed to partially open and is dominated by green ash (*Fraxinus pensylvanica*), with associates such as silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), and white elm (*Ulmus americana*). The understory and groundcover ranges from sparse to moderate with a mix of seedling trees as well as shrubs, graminoids forbs, and ferns; such as swamp red currant (*Ribes triste*), bladder sedge (*Carex intumescens*), spotted jewelweed (*Impatiens capensis*), and royal fern (*Osmunda regalis*). No signs of flooding occurs; however; the water table is at or close to the surface well into early summer. There are small upland inclusions within this community where species less tolerant of moisture such as sugar maple (*Acer saccharum)* occur. Downed woody debris is abundant, and snags and cavity trees are occasional.	N/A

Plant Community	Description	SRANK[a]
SWD 3-1 Red Maple Mineral Deciduous Swamp	This community is in the northeastern corner of the Site and Site-vicinity Study Areas. It is similar to SWD 2-2 but it is less mature with a higher component of red maple with a more open canopy. The understory and ground cover are dense to moderate, and there are areas where spring pooling occurs. There are pockets of deeper organic substrates in this community, although overall it is dominated by mineral clay soils. Downed woody debris is occasional, and snags and cavity trees are rare.	N/A
SWD 3-2 Silver Maple Mineral Deciduous Swamp	This community is small piece of degraded swamp along the western edge of the landfill site. It is immature on moist soils that consist of shallow organics over clay. The canopy is partially open and is dominated by silver maple with associates such as green ash and trembling aspen. The understory and groundcover are moderate to dense with a very dense forb and fern layer that includes species such as stinging nettle (*Utrica dioica*) and sensitive fern (*Onaclea sensibilis*). This area may have undergone flooding historically, however; anthropogenic drainage features in the area appear to have diverted spring run off, at least in part. Downed woody debris, snags, and cavity trees are occasional.	N/A
SWT 2-2 Willow Mineral Thicket Swamp	This community is a small thicket swamp south of the existing landfill. It is a mosaic of thickets and open meadow marsh on moderately deep organic substrates over clay. It is dominated by shrubs such as slender willow (*Salix petiolaris*), and speckled alder (*Alnus incana*), interspersed with dense and tall grasses and forbs such as reed canary grass (*Phalaris arundinacea),* stinging nettle, and Canada goldenrod (*Solidago canadensis*). There are no signs of flooding in recent years, however; the water table is at or close to the surface well into early summer.	N/A

Plant Community	Description	SRANK[a]
ANTHROPOGENIC		
AGRC-H Agricultural Hayfield	This community includes a hayfield along the western boundary of the Site-vicinity Study Area. Hayfields were not accessed but appear to be dominated by graminoid hay such as Timothy (*Phleum pratense*) and smooth brome (*Bromus inermis*).	N/A
AGRC-R Agricultural Row Crop	This community includes a portion of an agricultural field that overlaps with the southern portion of the Site Study Area, and another along the western edge of the Site-vicinity Study Area. It is used for a crop rotation of cash crops such as soya and corn.	N/A
DIST – Anthropogenic Disturbance	This community includes the active landfill and a snow storage area north of Boyne Road. Plants in these areas are primarily early successional and “waste species” typical of heavily disturbed landscapes.	N/A

Notes:

[a] SRANK is a provincial –level rank indicating the conservation status of a species or plant community and is assigned by the NHIC in Ontario (NHIC, 2015). SRANKs are not legal designations but are used to prioritize protection efforts in the Province. SRANKs for plant communities in Ontario are defined in the Significant Wildlife Habitat Technical Guide (MNRF, 2000). Ranks 1-3 are considered extremely rare to uncommon in Ontario; Ranks 4 and 5 are considered to be common and widespread. N/A indicates a community that has not been ranked.

No rare plant communities were identified on the Site or the Site-vicinity Study Areas.

9.4.3.2 Vascular Plants

A total of 160 vascular plants were identified on the Site Study Area during the field surveys. For a list of plants identified within the Site Study Area refer to Volume 2 Appendix F-2. No provincially rare plants, or plant SAR, as designated under the ESA or SARA, were observed on the Site Study Area.

9.4.4 Wildlife

A list of all wildlife encountered on the Site Study Area during field surveys is provided in Volume 2 Appendix F-3.

9.4.4.1 Bumblebees, Dragonflies, and Butterflies

A total of 10 insect species were identified during the field surveys. This included common species such as hobomok skipper (*Poanes hobomok*), common eastern bumblebee (*Bombus impatiens*), and white-faced meadowhawk (*Sympetrum obtrusum*). No SAR or provincially rare insects were identified on the Site Study Area, and no unusual concentrations were noted.

9.4.4.2 Herpetiles

A total of six herpetile species were identified in the Site-vicinity Study Area. All anurans were either individuals on the Site Study Area or associated with wetlands to the north of the landfill site. No breeding frog habitat was identified on the Site Study Area, or in the Site-vicinity Study Area. A single individual eastern garter snake (*Thamnophis sirtalis)* was observed. No turtles or notable turtle habitat was observed during surveys. No SAR or provincially rare herpetiles were observed on Site or the Site-vicinity Study Areas.

9.4.4.3 Birds

A total of 37 bird species were identified in the Site-vicinity Study Area. This includes a mix of open habitat, edge, wetland, and forest species such as song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus*), and red-eyed vireo (*Vireo olivaceus*). A single singing male of wood thrush (*Hylocichla mustelina*) and two singing eastern wood-pewee (*Contopus virens*) were observed within the Green Ash – Maple Mineral Deciduous Swamp (SWD 2-2) in the south-eastern corner of the Site and Site-vicinity Study Areas. Wood thrush is designated as threatened under the SARA, and special concern under the ESA. Eastern wood-pewee is designated as special concern under both the SARA and the ESA. No other SAR bird species were observed during the surveys.

For more information on eastern wood-pewee and wood thrush, refer to Section 9.4.4.5.4.

9.4.4.4 Mammals

A total of 10 species of mammals were identified on the Site Study Area. This included species that are common in the region such as white-tailed deer (*Odocoileus virginianus*) and red squirrel (*Tamiasciurus hudsonicus*). Many mammals appear to be attracted to the active landfill, and trails leading to and from were evident. Several species of bat were identified from acoustic data collected and are discussed below.

9.4.4.4.1 Bats

Acoustic bat data collected at BAT01 indicated a moderate to high level of overall bat activity at this station. A total of five species were recorded at this station, including (in order of abundance), big brown bat (*Eptesicus fuscus*), little brown myotis (*Myotis lucifugus*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*) and eastern red bat (*Lasiurus borealis*). Of the 1,629 bat passes recorded, 55 (approximately 3%) were determined to be little brown myotis, which is considered endangered under the SARA and ESA.

Acoustic data collected at BAT02 indicated a moderate level of overall bat activity at this station. A total of four species were recorded at this station, including (in order of abundance), big brown bat, little brown myotis, eastern small-footed myotis (*Myotis leibii*), and hoary bat. Of the 720 bat passes recorded, 69 (approximately 10%) were little brown myotis and 5 (approximately 0.7%) were eastern small-footed myotis, which is also considered endangered under the SARA and the ESA.

The winter bat maternity roost search identified several large trees that could be providing roost habitat to bats (Figure 9-10). The trees identified were mature and contained features that may provide suitable roost habitat for little brown myotis, including cavities, hollows, loose or peeling bark, etc.

For more information on little brown myotis and eastern small-footed myotis, refer to Section 9.4.4.5.6.

9.4.4.5 Significant Terrestrial Natural Features

9.4.4.5.1 Provincially Significant Wetlands

Significant wetlands are areas identified as provincially significant by the MNRF using evaluation procedures established by the province, as amended from time to time (MMAH, 2020). Wetlands are assessed based on a range of criteria, including biology, hydrology, societal value and special features (MNRF, 2014).

Based on the desktop assessment there are no Provincially Significant Wetlands (PSW) identified on the Site or the Site-vicinity Study Areas. The wetlands on the Site and in the Site-vicinity Study Areas are mapped by the province as unevaluated and evaluated non-significant (Melvin Swamp). Evaluated non-significant wetlands have been evaluated in accordance with the provincial evaluation system (MNRF, 2014) and found to not meet the criteria for provincial significance. The boundaries of these wetlands have been refined by Golder in the field, using standard ELC techniques, and are mapped on Figure 9-11.

Field surveys completed by Golder have not identified any features or functions associated with the wetlands on the Site or in the Site-vicinity Study Areas that would warrant a re-evaluation under OWES, or a designation as PSW.

9.4.4.5.2 Significant Woodlands

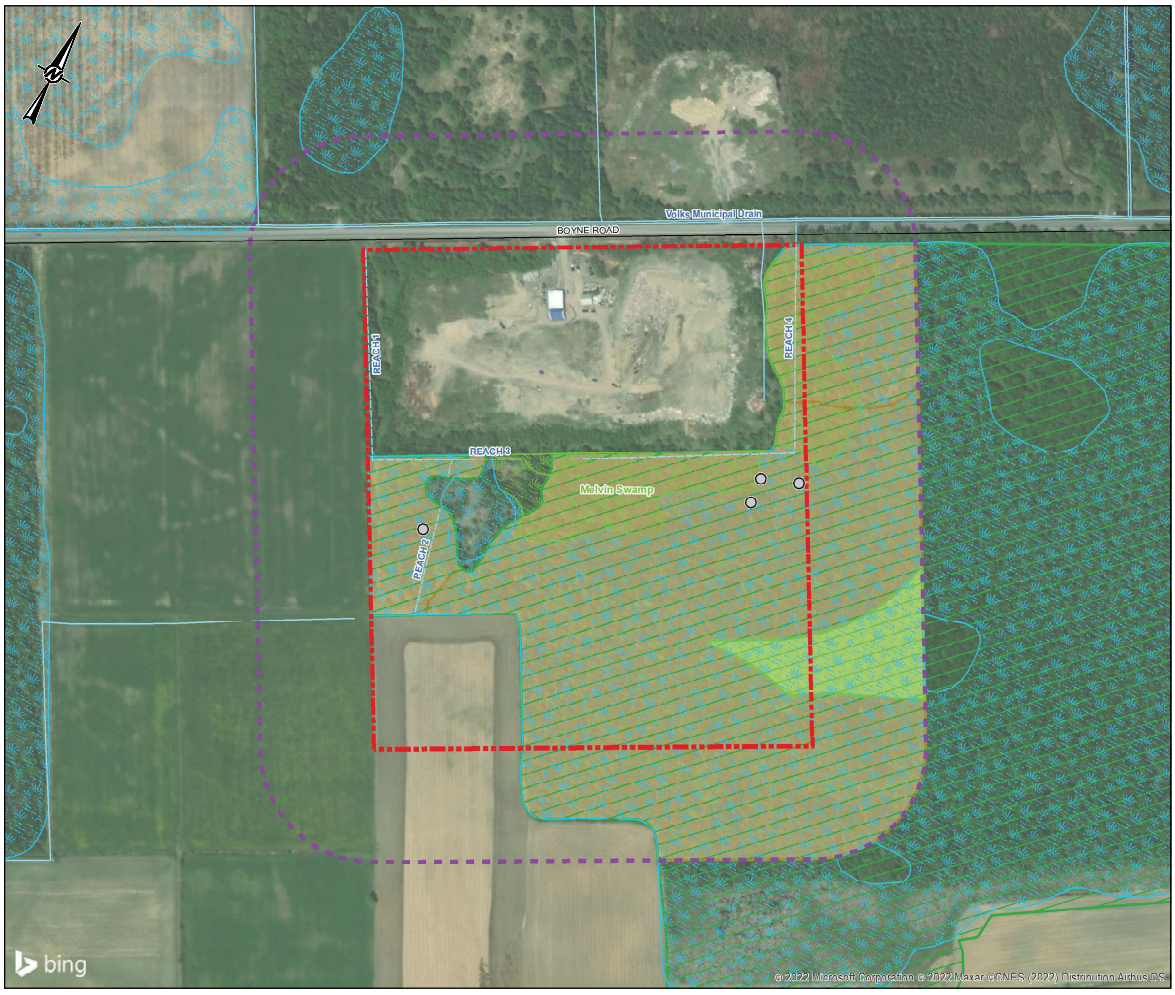
The responsibility for identifying significant woodlands is in transition from local municipalities to the Province (MMAH, 2020), but both authorities may be used for guidance. If the local planning authority has not undertaken to identify significant woodlands in their jurisdiction, then the NHRM (MNR, 2010) provides guidance on determining significance of woodlands.

The UCSDG has undertaken this exercise, and the County Official Plan (Schedule B1; 2018) indicates that the woodlands on the Site and in the Site-vicinity Study Areas are significant. The boundaries of the significant woodlands as mapped in UCSDG (2018) have been refined based on Golder's in-field observations (Figure 9-11).

9.4.4.5.3 Significant Valleylands

Significant valleylands should be defined and designated by the planning authority. General guidelines for determining significance of these features are presented in the NHRM (MNRF, 2010). Recommended criteria for designating significant valleylands under the Provincial Policy Statement (PPS) include prominence as a distinctive landform, degree of naturalness, importance of its ecological functions, restoration potential, and historical and cultural values.

No significant valleylands were identified on the Site or the Site-vicinity Study Areas, as topography in the vicinity is flat.



LEGEND

- SUITABLE MATERNITY ROOST TREES FOR LITTLE BROWN MYOTIS
- FISH HABITAT - PERMANENT
- FISH HABITAT - INTERMITTENT
- ROADWAY
- UNEVALUATED WETLAND
- EVALUATED NON-PSW WETLAND
- SIGNIFICANT WILDLIFE HABITAT - INTERIOR FOREST
- SIGNIFICANT WILDLIFE HABITAT - WOOD THRUSH AND EASTERN WOOD-PEWEE
- SIGNIFICANT WOODLAND
- SITE STUDY AREA
- 120 m STUDY AREA

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 40 80 160
1:4,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

TITLE
SIGNIFICANT NATURAL FEATURES

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-28
DESIGNED	---
PREPARED	JEM
REVIEWED	YJM
APPROVED	PLE

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-11**

20cm 0

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:

9.4.4.5.4 Significant Wildlife Habitat

Significant wildlife habitat (SWH) is one of the more complicated natural heritage features to identify and evaluate. The NHRM includes criteria and guidelines for designating SWH. There are two other documents, the SWHTG and the Significant Wildlife Habitat Mitigation Support Tool (SWHMiST) (MNR, 2000 and MNRF, 2014d), that can be used to help decide what areas and features should be considered significant wildlife habitat. These documents were used as reference material for this study.

There are four general types of significant wildlife habitat: seasonal concentration areas, rare vegetation communities or specialized habitats for wildlife, species of conservation concern, and animal movement corridors. The specific habitats considered in this report are evaluated based on the criteria outlined in the SWHECS for ecoregion 6E (MNRF, 2015). All types of SWH are discussed below in relation to the Site and the Site-vicinity Study Areas.

Seasonal Concentration Areas

Seasonal concentration areas are those areas where large numbers of a species congregate at one particular time of the year. If a SAR, or if a large proportion of the population may be lost if significant portions of the habitat are altered, all examples of certain seasonal concentration areas may be designated.

The SWHTG for ecoregion 6E identifies the following types of seasonal concentrations of animals that may be considered significant wildlife habitat, and outlines means of identifying such habitat. They are:

- Waterfowl stopover and staging areas (aquatic and/or terrestrial)
- Shorebird migratory stopover areas
- Raptor wintering areas
- Bat hibernacula
- Bat maternity roost colonies
- Turtle wintering areas
- Snake hibernaculum
- Colonially nesting bird breeding habitat (bank and cliff)
- Colonially nesting bird breeding habitat (tree / shrub)
- Colonially nesting bird breeding habitat (ground)
- Migratory butterfly stopover areas
- Landbird migratory stopover areas
- Deer yarding and winter congregation areas

No areas suitable for supporting waterfowl during migration times (stopover and staging) were identified during field surveys. No terrestrial stopover or staging habitat was observed on the Site or the Site-vicinity Study Areas.

Shorebird stopover sites are typically well-known and have a long history of use. There are no areas of suitable shorebird foraging habitat on the Site or the Site-vicinity Study Areas. In addition, no concentrations of shorebirds or presence of the listed species was identified during the field surveys.

Ideal raptor wintering areas are generally located in mature mixed or coniferous woodlands that abut windswept fallow fields or pastures that do not get covered by deep snow. There are no suitable habitats on the Site or the Site-vicinity Study Areas for raptor winter feeding and roosting.

Although the Site and Site-vicinity Study Areas are mapped as potential karst topography (where caves may be more likely to occur) (MNDM, 2016) no suitable areas of bat hibernacula were observed in the Study Area. Based on the field surveys, no portions of the Site Study Area provide the necessary number (>10/ha) of large (>25cm diameter at breast height) wildlife trees to be considered significant maternity roost habitat; however, this habitat type may be present within the mature forests within the Site-vicinity Study Area (off-site).

No potential turtle over-wintering habitat was observed on the Site or the Site-vicinity Study Area, as no standing water of suitable depth or hydroperiod was present.

Snake hibernacula and evidence of snake congregations were searched for during field surveys on the Site Study Area. No evidence of snake congregation was observed during field surveys, and no structures in the Site-vicinity Study Area were deemed suitable for potential hibernacula.

There are no banks or cliffs suitable for colonial bird nesting habitat on the Site or the Site-vicinity Study Areas.

Colonially nesting tree / shrub breeding habitats consist of heronries, while colonially nesting ground bird breeding habitat consist of rocky islands and peninsulas where species such as gulls and terns nest. No such habitats are present on the Site or the Site-vicinity Study Areas, and no heronries were identified during the field surveys.

The Site and Site-vicinity Study Areas are not located within 5 km of Lake Ontario, and therefore does not meet the criteria for significant migratory butterfly stopover habitat.

The Site and Site-vicinity Study Areas are not located in close enough proximity (i.e., within 5 km) to the Great Lakes to provide suitable landbird migratory stopover areas.

Deer management is an MNRF responsibility. There are no deeryards mapped by the MNRF at the Site or the Site-vicinity Study Areas, and the habitat on the Site Study Area is not suitable for deer yards (i.e., lacking a conifer component).

Rare Vegetation Communities or Specialized Habitats for Wildlife

Rare Vegetation Communities

Rare vegetation communities are those that are considered rare in the province, such as sand barrens, alvars, savannah and tallgrass prairie. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Generally, communities assigned an SRANK of S1 to S3 (extremely rare to rare-uncommon) by the NHIC qualify as rare.

None of the plant communities identified on the Site Study Area are ranked S1 to S3 (i.e., rare) by the NHIC. In addition to those communities considered rare by the NHIC, old-growth forests are considered rare. No old growth forests were identified on the Site or the Site-vicinity Study Areas.

Specialized Habitats for Wildlife

Specialized habitats for wildlife are microhabitats that provide a critical resource to some groups of wildlife. The SWHTG for ecoregion 6E defines specialized habitats that may be considered significant wildlife habitat, and outlines means of identifying such habitats. They are:

- Waterfowl nesting areas
- Bald eagle and osprey nesting, foraging and perching habitat
- Woodland raptor nesting habitat
- Turtle nesting areas
- Seeps and springs
- Amphibian breeding habitat (woodland)
- Amphibian breeding habitat (wetland)
- Woodland area sensitive bird breeding habitat

Waterfowl nesting areas consist of upland habitats extending 120 m from swamp and marsh habitats where waterfowl nesting is known to occur. To qualify as SWH, the wetlands must meet size criteria and contain certain numbers of listed species of waterfowl. No such habitats are present on the Site or the Site-vicinity Study Areas.

Bald eagle and osprey nesting, foraging and perching habitat may be identified where an active nest is present, and includes the surrounding habitats. No active nests of either species were identified on the Site or Site-vicinity Study Areas.

Woodland raptor nesting habitat was not identified as no raptor nests were observed during field surveys. Further, to meet the SWHECS criteria for this habitat type, there must be > 10 ha of interior forest habitat (measured 200 m from any edge) present. This is not present on the Site or Site-vicinity Study Areas.

The SWHECS indicates that exposed mineral soils in open sunny areas must be present to support turtle nesting. While this habitat type is present on the Site and in the Site-vicinity Study Area (i.e., agricultural fields), there is no suitable turtle habitat on the Site or in the Site-vicinity Study Area. Surface water features on the Site and Site-vicinity Study Areas were seen to hold water only in early spring, and no evidence of turtle nesting was observed during field surveys.

No evidence of groundwater seepage or springs were observed on the Site or Site-vicinity Study Areas.

To be considered woodland or wetland amphibian breeding habitat according to the SWHECS, wetlands must be at least 500 m^2 in area and contain certain species richness and abundance. It was determined that wetlands on the Site and in the Site-vicinity Study Area are considered 'woodland' breeding habitat, according to the SWHECS. Wetlands on the Site and in the Site-vicinity Study Area were surveyed for breeding amphibians, and it was determined that none of these features meet the criteria for significant amphibian breeding habitat (woodland).

The forested habitats on the Site and in the Site-vicinity Study Area provide approximately 1.5 ha of significant wildlife habitat for area-sensitive breeding birds (measured 200 m from the edge) (Figure 9-11). Additional interior forest habitat is present outside the Site-vicinity Study Area, within the contiguous forest that extends to the east.

Habitat for Species of Conservation Concern

Habitat for species of conservation concern (SOCC) includes habitat for three groups of species:

- Species that are rare, those whose populations are significantly declining, or have a high percentage of their global population in Ontario.
- Species listed as special concern under the ESA.
- Species listed as threatened or endangered under SARA.

Rare species are considered at five levels: globally rare, nationally rare, provincially rare, regionally rare, and locally rare (i.e., in the municipality). This is also the order of priority that should be attached to the importance of maintaining species. Some species have been identified as being susceptible to certain practices, and their presence may result in an area being designated significant wildlife habitat. The final group of species of conservation concern includes species that have a high proportion of their global population in Ontario. Although they may be common in Ontario, they are found in low numbers in other jurisdictions.

Three SOCC were assessed as being present, or having the potential to be present, on the Site and in the Site-vicinity Study Area (Volume 2 Appendix F-4): monarch (*Danaus plexippus*); eastern wood-pewee and wood thrush. Although monarch has not been observed on the Site Study Area, suitable habitat is present in the form of flowering plants and trees for roosting. As suitable habitat, including roadsides, pastures and meadows being abundant in

the planning area, the Site and Site-vicinity Study Areas are not considered SWH for this species. Both eastern wood-pewee and wood thrush were observed using the forested habitats on the Site Study Area. As the woodland associated with these observations is large and forest cover in the planning area is relatively low (13.3%; SNC, 2016), the forested area on the Site and in the Site-vicinity Study Area has been considered SWH for these bird species.

Two additional SOCC were determined to be potentially present in the Site-vicinity Study Area only, but not on the Site Study Area: grasshopper sparrow (*Ammodramus savannarum*); short-eared owl (*Asio flammeus*), both of which require open habitats. As this type of habitat is widespread in the planning area, no SWH for either of these species has been identified in the Site-vicinity Study Area.

In addition, there are four specific habitat types identified as potentially providing habitat for species of conservation concern:

- Marsh bird breeding habitat
- Open country bird breeding habitat
- Shrub/early successional bird breeding habitat
- Terrestrial crayfish

There is no marsh habitat suitable for marsh breeding birds on the Site or in the Site-vicinity Study Area. No open country or shrub/early successional breeding bird habitat meeting the size criteria or containing the required species as listed in the SWHECS are present on the Site or in the Site-vicinity Study Area. No evidence of terrestrial crayfish was identified on the Site or in the Site-vicinity Study Area during the field surveys.

Animal Movement Corridors

The SWHTG (MNRF, 2000) defines animal movement corridors as elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another. This is generally in response to different seasonal habitat requirements. For example, trails used by deer to move to wintering areas or areas used by amphibians between breeding and summer habitat. To qualify as significant wildlife habitat, these corridors would be a critical link between habitats that are regularly used by wildlife.

The SWHECS indicates that movement corridors are to be identified where certain types of SWH have been identified according to the SWHECS, including:

- Amphibian movement corridors: to be identified when significant amphibian breeding habitat (wetland) is present.
- Deer movement corridors: to be identified when deer wintering habitat is present.

None of these SWH were identified on the Site or in the Site-vicinity Study Area; therefore, no animal movement corridors are identified.

The Site-vicinity Study Area is not adjacent to any major watercourse or major landscape feature that would act as a natural corridor for wildlife. The Site-vicinity Study Area is located in a local landscape characterized by a flat topography and a matrix of open and forested habitats, and so does not provide a linkage between different habitat types, or habitats providing different seasonal requirements for wildlife. For this reason, no migration corridors have been identified on the Site or in the Site-vicinity Study Area.

9.4.4.5.5 Areas of Natural and Scientific Interest

Significant ANSIs are areas identified as provincially significant by the MNRF using evaluation procedures established by the Province, as amended from time to time.

Based on the desktop assessment there are no significant ANSIs on the Site or in the Site-vicinity Study Area.

9.4.4.5.6 Terrestrial Endangered and Threatened Species

The following discussion of provincially endangered or threatened species is based on the SAR screening provided in Volume 2 Appendix F-4. Species with a low probability to occur on the Site and Site-vicinity Study Areas are included in the screening, but are not discussed further in this report. Each of the species listed below has moderate or high potential to inhabit the Site or Site-vicinity Study Areas, based on the desktop SAR screening and the results of the field surveys.

Barn Swallow

In Ontario, barn swallow (*Hirundo rustica*) breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared rights-of-way, and wetlands (COSEWIC, 2011). Mud nests are fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown, 2019).

No evidence of nesting of this species was observed at the Site Study Area, and no suitable structures for nesting are present in the Site-vicinity Study Area; however, this species may forage over the Site and Site-vicinity Study Areas. This species is considered threatened under the SARA and ESA. Under the ESA, an active nest and the area within 200 m of it is considered the regulated habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

Bobolink

In Ontario, bobolink (*Dolichonyx oryzivorus*) breeds in grasslands or graminoid dominated hayfields with tall vegetation (Gabhauer, 2007). Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They have low tolerance for presence of woody vegetation and are sensitive to frequent mowing within the breeding season. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows and newly planted hayfields. Their nest is woven from grasses and forbs. It is built on the ground, in dense vegetation, usually under the cover of one or more forbs (Renfrew et al., 2015).

No evidence of nesting of this species was observed at the Site or in the Site-vicinity Study Area; however, suitable nesting habitat is present in the southwest corner of the Site-vicinity Study Area associated with a small area of hayfield. This species is considered threatened under the SARA and ESA. Under the ESA, an active nest and the suitable habitat within 300 m of it is considered the regulated habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

Eastern Meadowlark

In Ontario, eastern meadowlark (*Sturnella magna*) breeds in pastures, hayfields, meadows and old fields. Eastern meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component (Hull, 2019). They prefer well drained sites or slopes, and sites with different cover layers (Roseberry and Klimstra, 1970).

No evidence of nesting of this species was observed at the Site or in the Site-vicinity Study Area; however, suitable nesting habitat is present in the southwest corner of the Site-vicinity Study Area associated with a small area of hayfield. This species is considered threatened under the SARA and ESA. Under the ESA, an active nest and the suitable habitat within 300 m of it is considered the regulated habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

Little Brown Myotis and Eastern Small-footed Myotis

In Ontario, little brown myotis' range is extensive and covers much of the province. It will roost in both natural and man-made structures. Roosting colonies require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC, 2018a).

Eastern small-footed myotis is not known to roost in trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles, but it occasionally inhabits buildings. Entrances of caves or abandoned mines where humidity is low, and temperatures are cool and sometimes subfreezing may be used as hibernacula (Humphrey, 2017).

Little brown myotis was recorded at stations BAT01 and BAT02, and eastern small-footed myotis was recorded at station BAT02. Based on the numbers recorded for each of these species, and the times at which they were recorded, Golder's opinion is that there is a little brown myotis roost in the vicinity of BAT02, and possibly also in the vicinity of BAT01. Also, based on the high number of big brown bat calls, several of which were social calls, it is likely that there is a big brown bat roost in the vicinity of BAT01. Although eastern small-footed myotis was recorded, the low numbers, time of detection and absence of suitable habitat on the Site Study Area indicate that this species is unlikely to be roosting on the Site Study Area.

Little brown myotis is considered endangered under the SARA and ESA. This species currently receives general protection under the ESA, meaning that both individuals and their habitats are protected from harm, harassment, damage or destruction. A recovery strategy for this species has been prepared (Humphrey and Fotherby, 2019), which will assist the Government of Ontario in developing a definition of the regulated habitats, to be protected under the ESA, for this species.

Based on Golder's field surveys, several trees suitable for providing maternity roost habitat for little brown myotis were identified in the vicinity of BAT01 and BAT02, and are shown on Figure 9-11. According to the recovery strategy (Humphrey and Fotherby, 2019), the habitat for little brown myotis is considered the ecosite that encompasses the suitable maternity roost trees (SWD2-2 on Figure 9-10), plus forests, wetlands and waterbodies within 2,400 m surrounding the ecosite (foraging habitat). Within the 2,400 m radius, hayfields, pastures, meadows, and thickets within 40 m of a forested habitat are also to be included as foraging habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

American Ginseng

In Ontario, American ginseng (*Panax quinquefolius*) is found in moist, undisturbed and relatively mature deciduous woods often dominated by sugar maple. It is commonly found on well-drained, south-facing slopes. American ginseng grows under closed canopies in well-drained soils of glacier origin that have a neutral pH (ECCC, 2018b).

Although this species has not been observed on the Site Study Area, it may be present in the Site-vicinity Study Area. This species is considered endangered under the SARA and the ESA. Under the ESA, the area within 150 m of the area occupied by this species is considered the regulated habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

Butternut

In Ontario, butternut is found along stream banks, on wooded valley slopes, and in deciduous and mixed forests. It is commonly associated with beech, maple, oak and hickory (Voss and Reznicek, 2012). Butternut prefers moist, fertile, well-drained soils, but can also be found in rocky limestone soils. This species is shade intolerant (Farrar, 1995).

Although this species has not been observed on the Site Study Area, it may be present in the Site-vicinity Study Area. This species is considered endangered under the SARA and ESA. This species currently receives general protection under the ESA, meaning that both individuals and their habitats are protected from harm, harassment, damage or destruction. A recovery strategy for this species has been prepared (Poisson and Ursic, 2013), which will assist the Government of Ontario in developing a definition of the regulated habitats, to be protected under the ESA, for this species. According to the recovery strategy, the area within 50 m of each tree should be considered the habitat. Alteration within this area that may negatively impact the species or the habitat would require submission of an Information Gathering Form to the MECP to determine permitting needs under the ESA.

9.4.4.5.7 Wildfire Risk Potential

Golder determined that the forested habitats at the Site and in the Site-vicinity Study Area represent a moderate to low fire risk according to Table 4-1 of MNRF (MNRF, 2017), based on the species composition and forest condition. Based on this and following the evaluation matrix provided in Appendix 4 of MNRF (MNRF, 2017), no further consideration to wildlife is required.

9.5 Land Use Planning

The existing Boyne Road Landfill site is located at 12620 Boyne Road (Lot 8, Concession VI) in the rural ward of Winchester in the Township of North Dundas.

This section includes a review of the land use planning policy and regulatory context, in addition to an analysis of existing land uses within the Site-vicinity and Site Study Areas. Planning policy was assessed to determine potential for future development in the area of the landfill site. Planning policy reviewed consisted of:

- MECP Guideline D-4 Land Use On or Near Landfills and Dumps (MOE, 1995a)
- MECP Guideline D-6 Compatibility between Industrial Facilities (MOE, 1995b)
- Provincial Policy Statement, 2020
- United Counties of Stormont, Dundas, and Glengarry Official Plan (2018)
- Township of Winchester Zoning By-Law No. 12-93

9.5.1 MECP D-4 Land Use On or Near Landfills and Dumps

The MECP D-4 Land Use On or Near Landfills and Dumps (MOE, 1995a) guide outlines restrictions and controls on land use in the vicinity of landfills and waste management systems in order to provide health, safety, convenience, and welfare protection to nearby residents.

There are a number of sensitive land uses that the Ministry recommends against not permitting adjacent to operational landfills, as stated in S. 5.1.1, including:

a. *a permanent structure used in animal husbandry; or*
b. *agricultural land used for pasturing livestock; or*
c. *a permanent structure where:*
    I. *a person sleeps, or*
    II. *a person is present on a full time basis;*

    but not including food or motor vehicles service facilities adjacent to highway, utility operations, scrap yards, heavy industrial uses, gravel pits, quarries, mining, or forestry activities; or

d. *cemeteries.*

Land uses compatible with landfills currently in operation, as stated in S. 5.1.2, include:

a. *utilities and above grade transportation routes except major highways;*
b. *fences;*
c. *wood harvesting and other forestry activities;*
d. *certain farming activities;*
e. *industrial uses, including incinerators permitted to operate under O.Reg. 347;*
f. *gravel pits and quarries, and other mining activities (provided the landfill water table is not affected); or*
g. *such land uses which would not be threatened by any hazard to public health or safety and would not be impaired by nuisance effects.*

The guide further states, in S. 5.2, that no land use may take place within a minimum 30 m of an active landfill and that operating landfills shall have a buffer area of no less than 30 m. The typical buffer is normally between 60 and 100 m.

Sections 5.3 and 5.4 of Guideline D-4 state substantial contaminant discharges and visual problems are normally most significant within 500 m of landfill areas. It is the recommendation of the Ministry that these 500 m be used as the study area for any proposed land uses. This study area can be expanded up to 3 km where significant impacts are anticipated. Section 5.5 specifies that where preventative measures have not been indicated to prevent or minimize adverse effects, land use proposals should not be recommended for approval.

9.5.2 MECP Guideline D-6 Compatibility between Industrial Facilities

The MECP Guideline D-6 Compatibility between Industrial Facilities guide defines category designations for industrial uses and provides recommended distances between these uses and sensitive land uses. There are three categories of designation, each with varying degrees of potential influence areas, as stated in S. 4.1.1:

- Class I Industrial – 70 m
- Class II Industrial – 300 m
- Class III Industrial – 1000 m

The guide recommends the use of these terms and minimum setback distances within land use planning policies such as official plans and zoning by-laws. Recommended minimum separation distance between industrial uses and sensitive land uses, as stated in S. 4.3, are:

- Class I – 20 m
- Class II – 70 m
- Class III – 300 m

9.5.3 Provincial Policy Statement, 2020

The Provincial Policy Statement supports growth and intensification within both urban and rural settlement areas while protecting the viability of rural areas.

The PPS defines *waste management systems* as sites and facilities designed to accommodate solid waste from one or more municipalities and may include recycling facilities, transfer stations, processing and disposal sites.

Section 1.2.1 (d) of the PPS requires co-ordination between the various tiers of government, lower, single, and/or lower tier, when dealing with provincial matters including waste management systems.

Section 1.6.10 of the PPS states that "*Waste management systems* need to be provided that are of an appropriate size and type to accommodate present and future requirements, and facilitate, encourage and promote reduction, reuse and recycling objectives" (PPS, pg. 21). It also notes that waste management facilities should be located and designed in accordance with local and provincial legislation.

Waste management systems are classified as a 'Major facility' under the PPS, meaning they require separation from sensitive land uses.

9.5.4 United Counties of Stormont, Dundas, and G*lengarry Official Plan, 2018*

The subject site is located within the Rural District designation of the United Counties of Stormont, Dundas, and Glengarry Official Plan. It also has an identified Active Landfill per Schedule A1. "The intent of this designation is to accommodate a variety of land uses that are appropriate for a rural location and a limited amount of residential development where

such development will not preclude continued agricultural and non-residential uses."
Permitted uses in the Rural District designation include:

- Agricultural uses, forestry and conservation, and natural resource management activities
- Residential uses on existing lots of record and on new lots created by severance as provided for by this Plan
- Animal boarding, breeding, and training facilities, including stables
- Bed and breakfast establishments
- Open space
- Cemeteries

Uses outside of these permitted uses are subject to a zoning by-law amendment and must adhere to the additional uses listed in the OP.

Sections of the OP that relate to waste management facilities include:

3.5.2.2.9. "Land use compatibility shall be considered in the design and development or redevelopment of residential areas. This includes establishing or respecting building setbacks, separation distances, and influence areas from incompatible land uses (e.g., sewage treatment facilities, waste management facilities, industrial uses, mineral extraction operations etc.). Such uses should be located to avoid existing and future residential areas."

4.3.5.2. "New waste management systems may be permitted in either Rural District or Employment District designations and shall require an amendment to this plan and require approval under the *Environmental Protection Act* before an amendment is considered. Provincial and municipal approvals will be required for the hauling and disposal of waste materials and sewage and septage."

4.3.5.3. "Closed or inactive sites, whether public or private, may be used for other purposes subject to meeting requirements of the *Environmental Protection Act* (Section 46 Order). In general, sites used to accommodate a waste management system cannot be redeveloped within a period of 25 years from the date the site was closed without approval from the Minister of the Environment and Climate Change (now the MECP) and amendment to this Plan. Closure plans for waste management systems should include progressive rehabilitation of the site. The County and Local Townships shall collaborate to ensure all closed or inactive waste management systems (and their associated sites) are appropriately identified on the Land Use Schedules of this Plan in accordance with the symbology outlined in 4.3.5.1. Where more restrictive separation distances and/or investigation requirements are determined to be necessary, these should be reflected in the land use schedule and/or zoning of the site."

4.3.5.4 “Local Municipalities shall ensure that there is sufficient capacity to accommodate waste disposal for all new development. Local Municipalities should be proactive in reducing solid waste generation to protect the environment and extend the life of existing landfill sites within the County.”

4.3.5.5 “Local Municipalities will use a 500 m radius, or such other distance recommended by the Ministry of the Environment, as a guideline for triggering the assessment of the impact(s) of waste management systems on surrounding lands. Development proposals near sensitive land uses within the influence study area must include, but are not limited to, landfill generated gases, ground and surface water contamination by leachate, odour, litter, vehicular traffic, dust, noise, vectors and vermin and visual impact (see Section 3.5.1.5). Development within 500 m of an existing waste management system shall generally be discouraged unless supported by an appropriate study or studies which confirm that there will be no negative impacts on the proposed development related to current uses/activities associated with the normal operation of the waste management system. Furthermore, the study(ies) shall confirm, to the satisfaction of the County, that the proposed development will not impact future expansions of the uses/activities associated with the existing waste management system.”

9.5.5 Township of Winchester Zoning By-law No. 12-93

The Boyne Road Landfill site is zoned Special Rural – Waste Disposal (SRD) under the Township of Winchester Zoning By-Law No. 12-93 (see Figure 9-12) . Note that the Township still uses the By-laws that existed at the time of amalgamation, hence the reference is still to the former municipality and not North Dundas.

The permitted uses within this zoning include:

- Agricultural uses
- Conservation use
- Forestry use
- Waste disposal site

The yard requirements for this zone are a minimum of 9 m (29.5 ft.). The separation distance between SRD uses and dwelling units must be 500 m (1640.4 ft.).

The definitions for these uses are found below.

The lands immediately surrounding the landfill site are vacant. There are residential properties to the west of the site; however, they are well removed with the closest dwelling over 600 m away. There are also agricultural properties surrounding the landfill property, with the closest barn approximately 1.5 kilometres away. Agricultural properties are defined as lands with the use of growing crops, raising livestock and animals for food, fur or fiber, aquaculture, apiaries, agro-forestry, maple syrup production, and associated on-farm buildings and structures.

The location of the Boyne Road Landfill is well removed from any other land uses, compatible or otherwise. There are provisions in the County Official Plan to support the expansion, closure, and continued use of the landfill site. Both the Official Plan and the Township Zoning By-law are in accordance with the buffer requirements set out in the MECP D-4 and D-6 Guidelines. As well, the Official Plan and Zoning By-law are in line with the Provincial Policy Statement in that they work together as upper and lower tier municipalities on matters of waste management.

From a land use planning perspective, it is considered that there are opportunities for the landfill site to expand. Surrounding land uses are vacant and potentially incompatible land uses, such as residential and agriculture, are well removed from the site.

Figure 9-12: Surrounding Land Designations

A Waste Disposal site is defined in the By-law as a site licensed or approved by the Ministry of the Environment and/or its agents where garbage, refuse, domestic or industrial waste is disposed of or dumped, excluding radioactive or toxic chemical wastes, and shall include a sludge disposal area.

The expansion of the Landfill site should be guided by the "D-4 Land Use on or Near Landfills and Dumps" to ensure minimum distances are being maintained between the landfill and existing sensitive land uses, such as agriculture. This guide states that no land use may take place within 30 m of a fill area, and that there be a 500 m study area for any proposed land use within this distance of the landfill site.

Should the proposed landfill expansion be horizontal in nature and occupy lands outside of the SRD Zone, there will be a need for a rezoning. If the lateral extent of the expansion remains within the SRD Zone, there will be no requirement for a rezoning.

9.6 Agriculture

In the United Counties of Stormont, Dundas and Glengarry Official Plan, the majority of the Township of North Dundas is designated as Agricultural Resource Lands outside of the Urban Settlement Area. The County Official Plan defines Agricultural Resource Lands as lands predominated by prime agricultural lands and other large tracts of land characterized by viable farming activity.

This designation is derived from the PPS 2020, which defines Prime Agricultural Land as specialty crop areas and/or Canada Land Inventory Class 1, 2, and 3 lands, as amended from time to time, in this order of priority for protection. Groupings of Prime Agricultural Land form Prime Agricultural Areas, which are defined as areas where prime agricultural lands predominate. This includes areas of prime agricultural lands and associated Canada Class 4 through 7 lands, and additional areas where there is a local concentration of farms that exhibit characteristics of ongoing agriculture. These groupings of Agricultural Lands are shown in the Official Plan as Prime Agriculture.

Permitted uses on these lands include:

- Agricultural uses
- Agriculture-related uses and on-farm diversified uses
- Forestry use or woodlands
- Conservation uses
- Existing dwellings and dwellings on lots created by consent and legally existing uses, buildings or structures
- Public service facilities which are more appropriately located in the rural area because of their type, size or the catchment area they serve
- Mineral aggregate operation as an interim use

- Passive outdoor recreation use excluding buildings and golf courses
- Natural heritage features and areas
- Wayside pits or quarries
- Legally existing uses, buildings, or structures

The County's Land Use Schedule designates the lands due south and to the east of the Boyne Road Landfill site as Agricultural Resource Lands. Agricultural uses are also permitted in the Rural zone designation, which includes the landfill site.

The Township of North Dundas Zoning By-law, for the subject lands that are in the former Township of Winchester, designates the areas immediately surrounding the Boyne Road Landfill site as Rural, where agricultural use is a permitted use. Lands on the perimeter of these Rural lands are designated Agricultural Zone.

The By-law defines agricultural use as the use of land, building, or structures for any of the following:

(a) The production of crops, including all related activities such as soil preparation, fertilizer and manure spreading, planting, spraying, harvesting, storage, and sale of produce.
(b) The raising, breeding, boarding, keeping, training, and grazing of all types of livestock.
(c) The production and sale of animal products such as milk, eggs, honey, wool or fur.
(d) The storage, maintenance and use of all forms of farm related machinery such as tractors, harvesters, grain dryers, and irrigation equipment.

9.6.1 Soils

The Ministry of Agriculture, Food and Rural Affairs Agricultural Maps show the Landfill Site within a Muck soil area. Muck soil, as defined in the Soil Survey of Dundas County (Ontario Agricultural College, 1952), is soil having a 0 to 0.45 m thickness of organic layer consisting of semi-decomposed vegetative material, usually neutral to alkaline on the surface. Presently, this soil is generally not suitable for agriculture and has traditionally not been included in an Agricultural designation, as it requires a great deal of work to prepare for crops and the rate of return is low.

Other soil types in proximity to the Landfill site include:

- North Gower – a clay-based alkaline soil with poor drainage characteristics. This soil is generally used for permanent pasture and hay, although with proper drainage channels installed can be used for some crop growth.
- Allendale – a sand over clay soil with poor drainage characteristics. The soil is generally used for permanent pasture or woodlots. Some cereal grains can be grown in these soils.

- Grenville – a well-draining, undulating grey-brown organic soil. This soil is well-poised for agricultural use and most lands underlain by this soil in the area is cleared and used for agricultural purposes. General farming and dairy operations are supported on these soils.
- Wolford – a heavy textured morainic soil with good drainage characteristics. This soil is well suited for general farming operations when cleared.

There is a Muck buffer between the Boyne Road Landfill site and other types of soil.

The Agricultural Map also shows the landfill site as being underlain by Class O, or Organic soils, which are not placed in capability classes. The surrounding lands are classified as either Soil Class 2 or 3. Class 2 is defined as soils with moderate limitations that restrict the range of crops or require moderate conservation practices. Class 3 is defined as soils with moderately severe limitations that restrict the range of crops or require special conservation practices.

Both Classes 2 and 3 are to be considered for protection for agriculture through the Township/County Official Plan reviews.

9.7 Cultural Heritage Resources

9.7.1 Archaeological Resources

In support of this EASR, a Stage 1 archaeological assessment was carried out in the Site Study Area (Volume 2 Appendix G-2) in accordance with the Ontario Ministry of Heritage, Sport, Tourism, and Culture Industries' (MHSTCI) Standards and Guidelines for Consultant Archaeologists (2011). A Stage 1 archaeological assessment background study provides information about the project area, evaluates archaeological potential, and provides recommendations as to whether further work is required. This Section of the EASR summarizes the information about the project area from the Stage 1 assessment. For the evaluation of archaeological potential and recommendations, see Section 13.7.1 of the EASR.

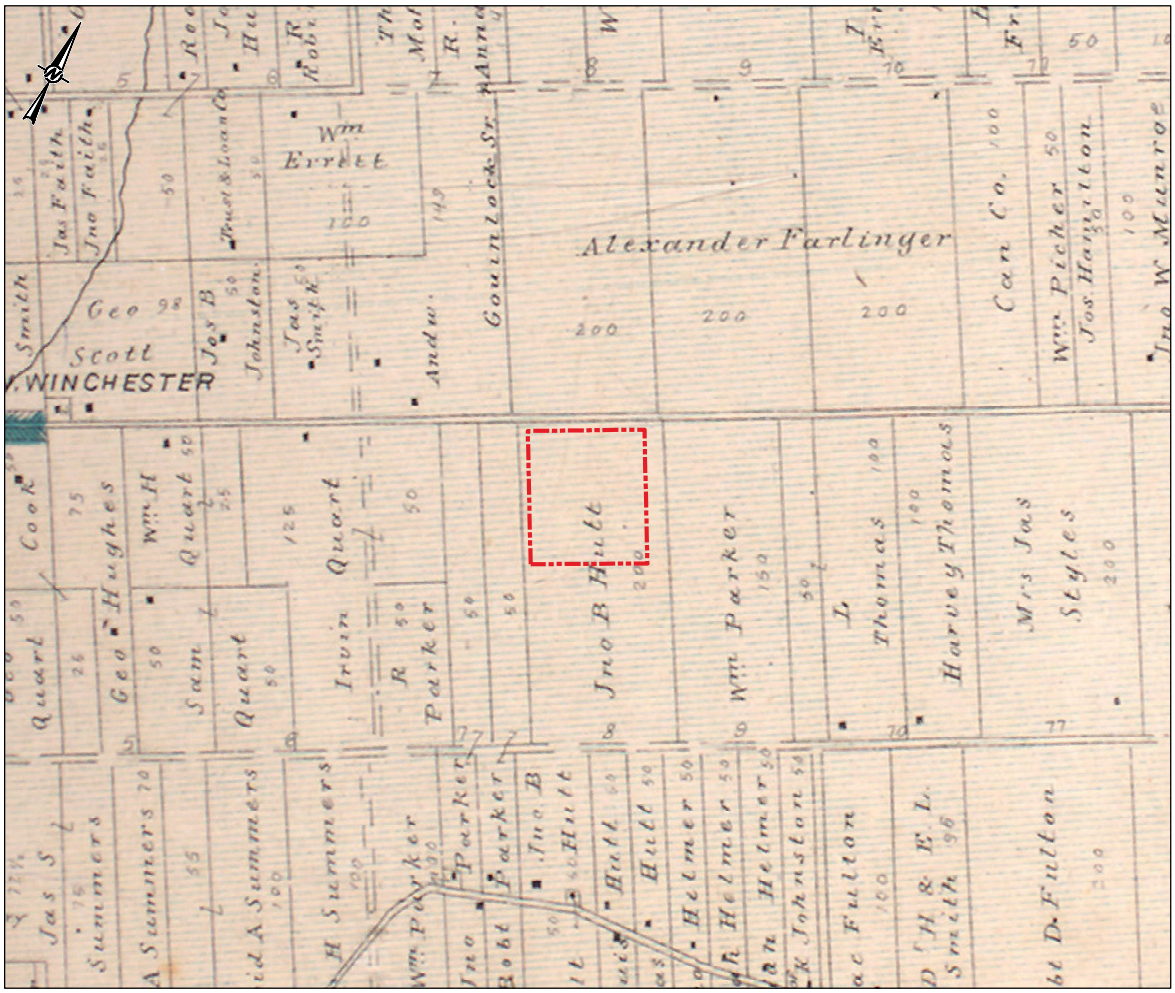
9.7.1.1 Site Study Area History

Land registry records for Lot 8, Concession 6 of Winchester Township indicate the lot was first granted by the Crown to Hannah Louchs in 1801 (reg. no. 557). The land was sold to John Crysler in 1808 and then to John Richardson in 1811 (reg. no. 191, 1172). In 1839, the entire lot was transferred to Peter McGill and the Trustees of Thomas B. Anderson (reg. no. 438). John Hutt purchased the entire lot in 1855 (reg. no. 438) and he appears to have owned it until 1895 when he willed the property to George (west half) and John (east half) Hutt (reg. no. 8118). The property appears to have remained in the Hutt family until the early 20th century.

An 1879 plan of Winchester Township (Figure 9-13) shows the name "Jno B Hutt" on the property. This is likely the John Hutt who is listed in the land registry records. No structures are shown on the property during this time. However, a structure is shown to the south on the adjacent lot (Lot 7, Concession 5) associated with the same name, so it is likely that John Hutt resided to the south. He may have used the southern portions of Lot 8, Concession 6, for

agriculture while the northern end was left unused. A road going to the nearby village of Winchester is shown running along the north end of the Site Study Area and the settlement of Boyne is located in the approximate location of the schoolhouse between lots 12 and 13 of Concession 6.

Canada Census records for 1861 list John Hutt as a 46 year old farmer. He is listed as residing in a brick house, which is likely the house shown on Lot 7. Given the early date of this record, the fact that John Hutt has already built a brick home suggests that he was already well established on his property by this time and was successful enough to afford the construction of a brick house rather than the log or frame house most common during this period. Indeed, all the other families listed on the same page in the Census records are residing in log and frame houses, expect for John Hutt.



LEGEND

STUDY AREA

REFERENCE(S)

1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9

0 150 300 600

1:15,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

TITLE
1879 PLAN OF WINCHESTER TOWNSHIP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-01
DESIGNED	---
PREPARED	JEM
REVIEWED	RH
APPROVED	AM

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-13**

The 20th century history of the Site Study Area is shown by aerial photographs (Figure 9-16) and topographic maps (Figures 9-14 and 9-15). A topographic map from 1908 (Figure 9-14) indicates that the southern end of the Site Study Area was woodlot. No structures are shown within 300 m of the Site Study Area. Two streams are located over 300 m to the east and west. A 1933 topographic map shows little change within the Site Study Area (Figure 9-15). A 1954 air photo (Figure 9-16) shows the Site Study Area prior to its use as a landfill. The southwest corner is an agricultural field while much of the rest of the Site Study Area is woodlot or unused lands. The 1972 air photo (Figure 9-16) shows the beginnings of the landfill with much of the rest of the property remaining woodlot. The 1985 air photo (Figure 9-16) shows the impact of the expanding landfill with a larger area disturbed. The drainage ditch located in the northeast corner is now visible suggesting the ditch dates to between 1972 and 1985.

9.7.1.2 Site Study Area Environment

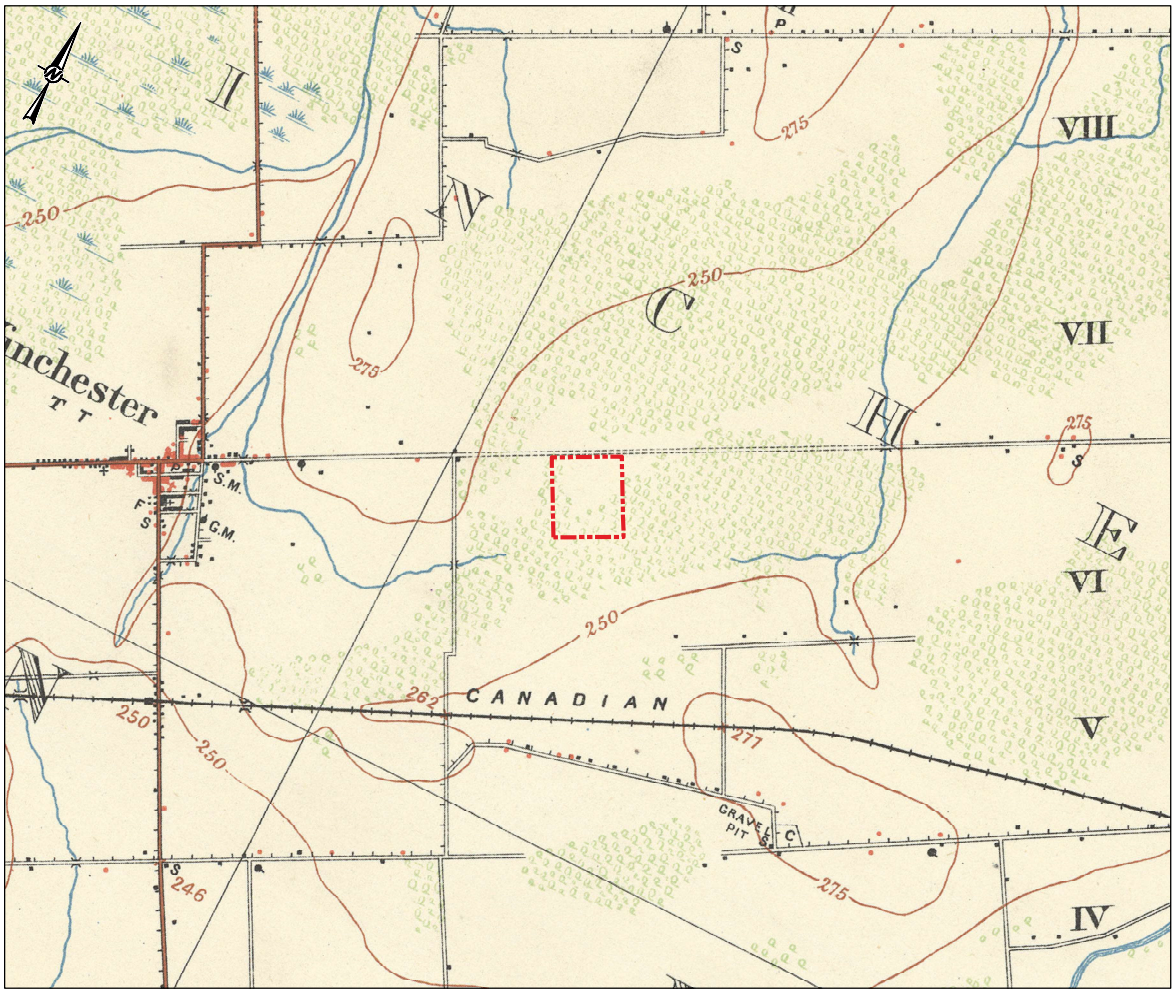
The Site Study Area is located within the Winchester Clay Plains physiographic region, a low-lying area within the South Nation River drainage basin. The original vegetation of the plains consisted primarily of red maple, elm, white and black ash which are all species characteristic of swamp-forest environments (Chapman and Putnam, 1984, p. 203). The original forests of the region were largely removed, and the swamps drained to convert the land to agriculture. The South Nation River is located approximately 4.5 km to the south.

The surficial geology is shown to consist of organic deposits over much of the Site Study Area. The southwestern corner indicates clay, silty clay and silt.

The portion of the Site Study Area located along Boyne Road is presently being used as a landfill. The southern half is primarily woodlot with the exception of the southwestern corner, which is an agricultural field.

9.7.1.3 Previous Archaeology and Known Archaeology Sites

The Ministry of Heritage, Sport, Tourism and Cultural Industries' (MHSTCI's) Archaeological Report Database was searched on July 8, 2021, for previous archaeological assessments completed within 50 m of the Site Study Area. Although the archaeological report database did not show any archaeological assessments within 50 m, Golder's archaeological report database indicates CARF (1992) conducted a Stage 1 archaeological assessment for a proposed water transmission main. One of six proposed routes followed Boyne Road and appears to pass within 50 m of the present Site Study Area (Figure 9-17). CARF identified this route as having low archaeological potential for historical and Indigenous archaeological resources.



LEGEND

STUDY AREA

REFERENCE(S)

1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9

0 250 500 1,000

1:25,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE
TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

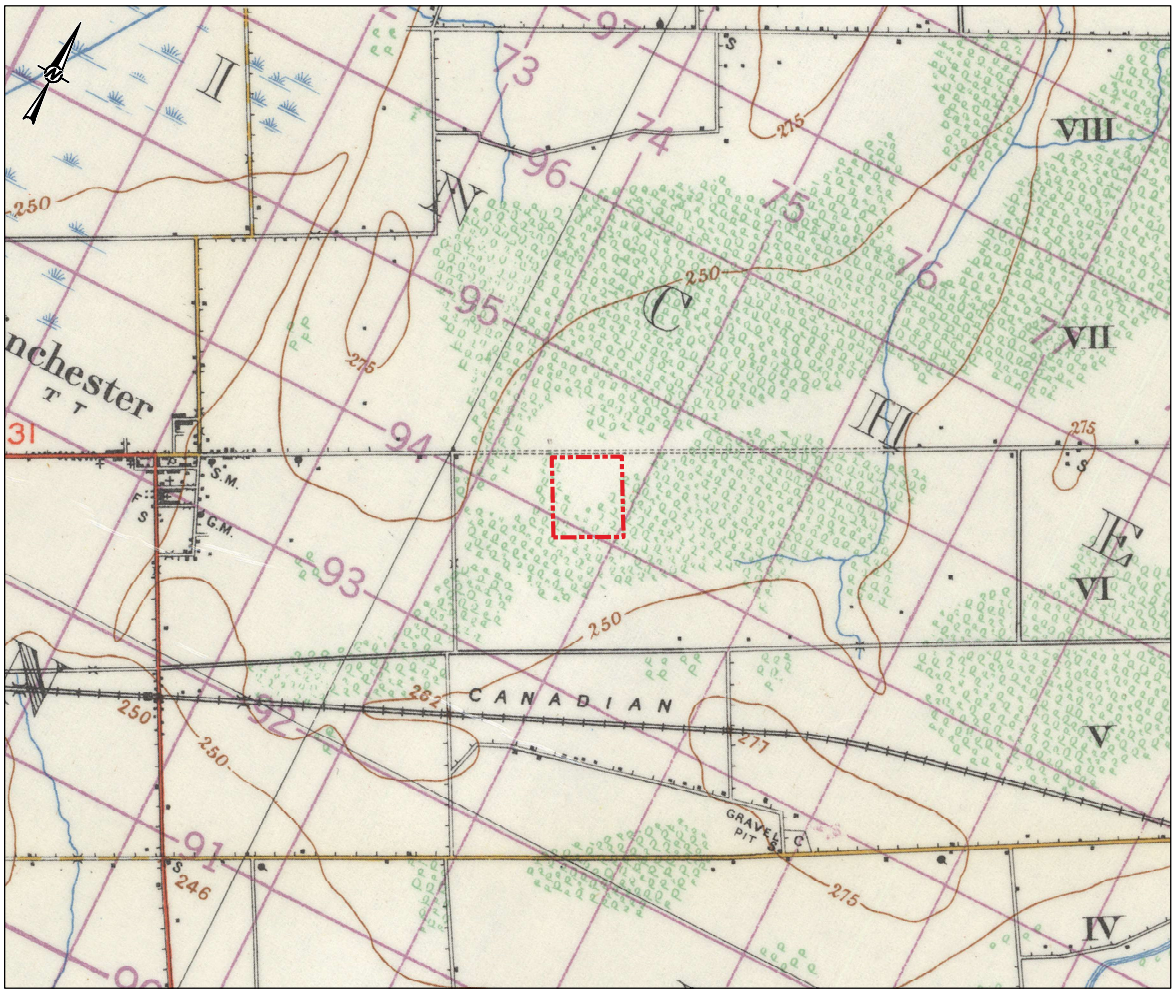
TITLE
1908 TOPOGRAPHIC MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-01
DESIGNED	---
PREPARED	JEM
REVIEWED	RH
APPROVED	AM

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-14**



LEGEND

STUDY AREA

REFERENCE(S)

1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9

0 250 500 1,000

1:25,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

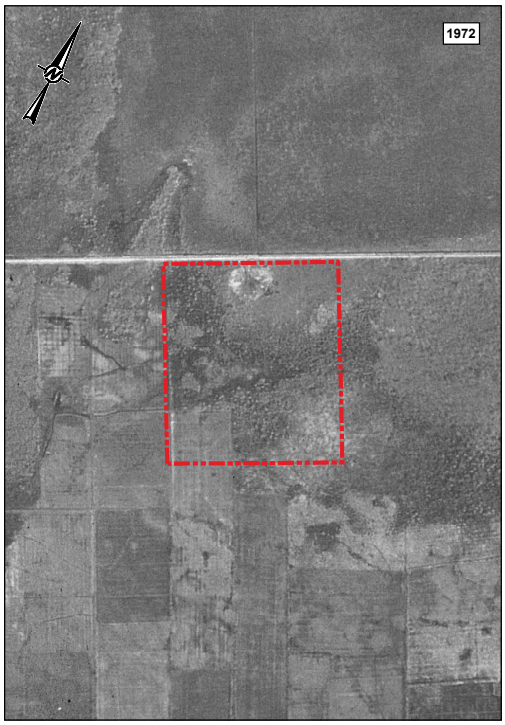
TITLE
1933 TOPOGRAPHIC MAP

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-01
DESIGNED	---
PREPARED	JEM
REVIEWED	RH
APPROVED	AM

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-15**



LEGEND

STUDY AREA

REFERENCE(S)
1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9

0 100 200 400
1:10,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

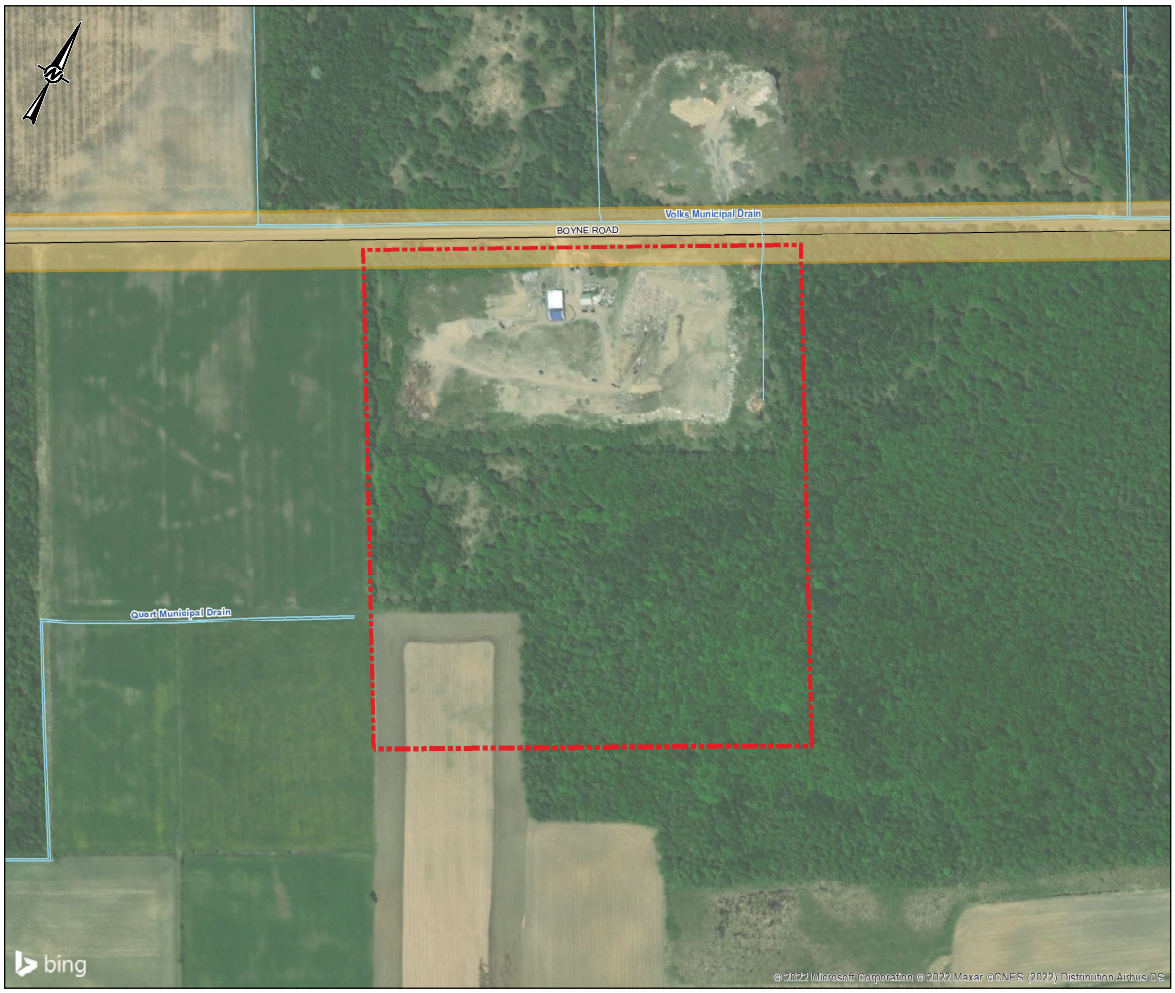
PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE
TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

TITLE
AERIAL PHOTOGRAPHS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-01
DESIGNED	---
PREPARED	JEM
REVIEWED	RH
APPROVED	AM

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-16**



LEGEND

- WATERCOURSE
- ROADWAY
- STAGE 1 ARCHAEOLOGICAL ASSESSMENT (CARF 1992; 92-65) - APPROXIMATE LOCATION
- STUDY AREA

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 40 80 160
1:4,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

TITLE
PREVIOUS ARCHAEOLOGICAL ASSESSMENTS WITHIN 50 M

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-01
DESIGNED	----
PREPARED	JEM
REVIEWED	RH
APPROVED	AM

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.2.0	0	**9-17**

Other archaeological assessments conducted within the vicinity of the Site Study Area have been limited. CARF (1997, 2000) conducted Stage 1 and 2 archaeological assessments for a new 7 km long sewage system running from an existing sewage lagoon located northeast of the Village of Winchester to the South Nation River. A portion of the sewage system corridor followed Belanger Road located approximately 600 m to the west of the Site Study Area. More recently, a Stage 1 and 2 archaeological assessment (P027-125-2011) and Stage 2 archaeological assessment (P052-0753-2016) were conducted for the Mighty Solar Farm located over 5 km to the east.

The primary source of information regarding known archaeological sites in the MHSTCI archaeological sites database. The database was consulted on July 8, 2021, which indicated there are no registered archaeological sites located within 1 km of the Site Study Area.

9.7.1.4 Stage 1 Site Inspection

A visual inspection of the Site Study Area was conducted on July 14, 2021, under PIF P1107-0045-2021.

The northern half of the Site Study Area consists of the existing Boyne Road Landfill (Figures 9-18 to 9-20). Much of this area has been impacted by activities associated with the landfill and is surrounded by large earthen berms that separate the landfill from the surrounding land (Figure 9-21).

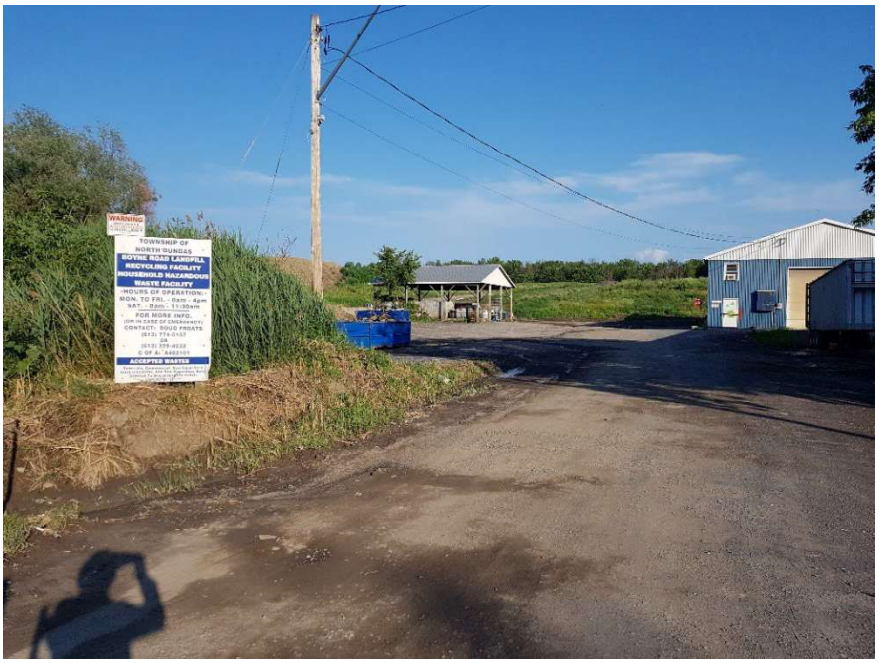


Figure 9-18: Entrance to the Boyne Road Landfill, view southeast. The large berm that surrounds the landfill is behind the sign on the left.

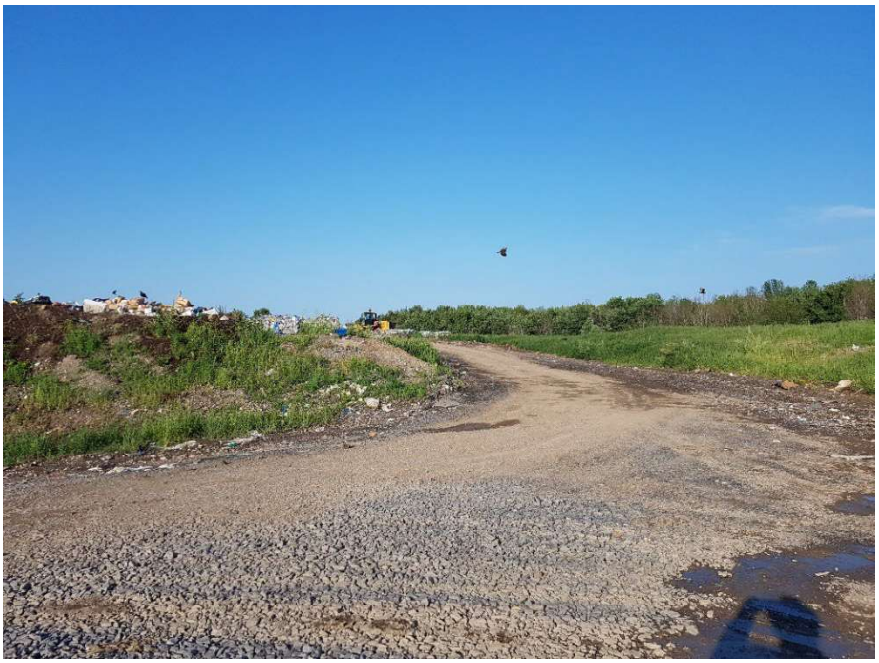


Figure 9-19: View northeast showing conditions within the landfill. The entire landfill footprint has been disturbed and contains no archaeological potential.

Figure 9-20: View southwest showing conditions within the Boyne Road Landfill.

Figure 9-21: One of the large berms that surround the landfill portion of the Site Study Area, view northeast.

On the west end of the Site Study Area there is an old gravel road that leads to the south end of the property (Figure 9-22). This road appears to have been artificially raised above the neighbouring farmland, likely using soils from a drainage ditch that runs alongside much of the road (Figure 9-23). This ditch which also runs through the center of the Site Study Area, just south of the boundary of the existing landfill, is the existing landfill perimeter ditch and does not correspond to any water sources shown on the historical plans or topographic maps and thus reflects modern drainage patterns.

Figure 9-22: An overgrown road located along the western edge of the Site Study Area, view southeast. The road is artificially raised above the neighbouring farmland. A large berm runs parallel to the left, separating the road from the landfill.

Figure 9-23: Perimeter drainage ditch running through the Site Study Area, view northeast.

The southern half of the Site Study Area is mostly woodlot (Figures 9-24 to 9-26) with the southwest corner consisting of agricultural fields (Figure 9-27). The southern portion of the Site Study Area contains several abandoned 20th century vehicles and other modern waste

(Figures 9-28 to 9-30). These modern garbage piles are likely associated with the 20th century use of the agricultural fields to the south.

Figure 9-24: Field conditions within the wood lot located at the southern end of the Site Study Area, view north.

Figure 9-25: Field conditions within the wood lot located at the southern end of the Site Study Area, view northwest.

Figure 9-26: Open meadow area located south of the present landfill boundaries, view southeast.

Figure 9-27: Agricultural field located in the southwest corner of the Site Study Area, view southeast.

Figure 9-28: 20th century garbage pile located in the southeast portion of the Site Study Area, view southeast

Figure 9-29: Abandoned trailer located near the southeast corner of the Site Study Area, view southeast.

Figure 9-30: Abandoned bus located within the southeast portion of the Site Study Area, view southeast

Another modern drain is located along the eastern edge of the Site Study Area (again part of the existing landfill perimeter ditch), which has created wet conditions within the northeast corner (Figure 9-31). Background research indicates that these conditions date to the construction of the drains sometime after 1972.

Figure 9-31: Wet field conditions caused by modern drainage in the northeast corner of the Site Study Area, view southeast.

9.7.2 Built Heritage Resources and Cultural Heritage Landscapes

The scope of this evaluation of existing conditions follows guidance outlined in the MHSTCI Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes checklist (2016). For the purposes of the evaluation, the Site-vicinity Study Area constitutes all property parcels within or crossed by the 500 m boundary around the Site Study Area as well as all adjacent properties (Figure 8-1).

9.7.2.1 Key Legislation and Policies

In Ontario, several provincial and municipal policies and legislation guide identifying, protecting, and managing cultural heritage resources.

9.7.2.1.1 Environmental Assessment Act

The *Environmental Assessment Act* (EAA) was legislated to ensure that Ontario's environment is protected, conserved, and wisely managed. Under the EAA, "environment" includes not only natural elements such as air, land, water and plant and animal life, but also the "social, economic and cultural conditions that influence the life of humans or a community", and "any building, structure, machine or other device or thing made by humans".

9.7.2.1.2 *Planning Act* and Provincial Policy Statement

The Ontario *Planning Act* (1990b) and associated Provincial Policy Statement 2020 (PPS, 2020) mandate heritage conservation in land use planning. Under the *Planning Act*, conservation of "features of significant architectural, cultural, historical, archaeological or scientific interest" are a "matter of provincial interest" and integrates this at the provincial and municipal levels through the PPS 2020. Issued under Section 3 of the *Planning Act*, PPS 2020 recognizes that cultural heritage and archaeological resources "provide important environmental, economic, and social benefits", and that "encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including built heritage resources and cultural heritage landscapes" supports long-term economic prosperity (PPS, 2020:6,22).

The importance of identifying and evaluating built heritage and cultural heritage landscapes is recognized in two policies of PPS 2020:

- Section 2.6.1 – *Significant built heritage resources* and *significant cultural heritage landscapes* shall be *conserved*.
- Section 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*.

Each of the italicized terms is defined in Section 6.0 of PPS 2020, with those relevant to this report provided below:

- **Adjacent lands**: for the purposes of policy 2.6.3, those lands contiguous to a *protected heritage property* or as otherwise defined in the municipal official plan.
- **Built heritage resource**: means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community. *Built heritage resources* are located on property that may be designated under Parts IV or V of the Ontario *Heritage Act* (Ontario, 1990c), or that may be included on local, provincial, federal and/or international registers.
- **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. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment, and/or heritage impact assessment that has been approved, accepted or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative development approaches can be included in these plans and assessments.
- **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 Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the Ontario *Heritage Act*; or have been included in on federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms.
- **Development**: means the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the *Planning Act*.
- **Heritage attributes**: 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, constructed, or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (e.g., significant views or vistas to or from a protected heritage property).
- **Protected heritage property**: 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.

- **Significant**: means, in regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest. Processes and criteria for determining cultural heritage value or interest are established by the Province under the authority of the Ontario *Heritage Act*.

The definition for *significant* includes a caveat that "while some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation." The criteria for significance established by the Province as well as the need for evaluation is outlined in the following section. Municipalities implement PPS 2020 through an official plan, which may outline further heritage policies.

9.7.2.1.3 Ontario Heritage Act and Ontario Regulation 9/06

The Ontario *Heritage Act* (OHA) enables the Province and municipalities to conserve significant individual properties and areas. For municipalities, Part IV and Part V of the OHA enables councils to "designate" individual properties (Part IV), or properties within a heritage conservation district (Part V) as being of Cultural Heritage Value or Interest (CHVI). Evaluation for CHVI under the OHA (or significance under PPS 2020) is guided by *O. Reg. 9/06*, which prescribes the "criteria for determining cultural heritage value or interest". *O. Reg.* 9/06 has three categories of absolute or non-ranked criteria, each with three sub-criteria:

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 ***historic 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.

A property needs to meet only one criterion of *O. Reg.* 9/06 to be considered for designation under Part IV of the OHA. If found to meet one or more criterion, the property's CHVI is then described with a Statement of Cultural Heritage Value or Interest that includes a brief property description, a succinct statement of the property's cultural heritage significance, and a list of its heritage attributes.

In the OHA heritage attributes are defined slightly differently to the PPS 2020 and directly linked to real property; therefore, in most cases a property's CHVI applies to the entire land parcel, not just individual buildings or structures.

Once a municipal council decides to designate a property, it is recognized through by-law and added to a ''Register'' maintained by the municipal clerk. A municipality may also ''list'' a property on the Register to indicate it as having potential cultural heritage value or interest.

9.7.2.2 Scope and Method

The scope for a cultural heritage screening assessment is outlined in the MHSTCI *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (2016; the MHSTCI *Checklist*). The MHSTCI Checklist provides a tool to identify from desktop sources all known or recognized cultural heritage resources in a study area, as well as commemorative plaques, cemeteries, Canadian Heritage River watersheds, properties with buildings 40 or more years old, or potential cultural heritage landscapes. Since cultural heritage is linked to real property under the *OHA*, the desktop analysis included all parcels within or crossed by the study area boundaries.

To complete the MHSTCI Checklist, Golder undertook the following tasks:

- **Task 1**: review of available desktop sources for aerial imagery, historical maps, federal, provincial, and municipal heritage registers, inventories and/or databases. These sources include:
  - Canadian Register of Historic Places (https://www.historicplaces.ca/en/pages/about-apropos.aspx)
  - Parks Canada Directory of Federal Heritage Designations (http://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx) and Directory of Heritage Railway Stations (https://www.pc.gc.ca/en/culture/clmhc-hsmbc/pat-her/gar-sta/on)
  - Canadian Heritage Rivers System list of designated heritage river systems (https://chrs.ca/en)
  - Ontario Heritage Trust (OHT) Places of Worship Inventory (https://www.heritagetrust.on.ca/en/places-of-worship/places-of-worship-database/search), Plaque Database (http://www.heritagetrust.on.ca/en/online-plaque-guide), web mapping tool showing OHT Buildings and Easements (https://www.heritagetrust.on.ca/en/index.php/property-types/buildings), and OHT Register (https://www.heritagetrust.on.ca/en/oha/basic-search)

- Ontario Historical County Maps Project web mapping application (http://utoronto.maps.arcgis.com/apps/webappviewer/index.html?id=8cc6be34f6b54992b27da17467492d2f)
- Historical Topographic Map Digitization Project (Ontario Council of University Libraries, main page: https://ocul.on.ca/topomaps/collection/)
- 20th century aerial imagery accessed from the University of Toronto Map and Data Library (https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index)
- Google Street View©

- **Task 2**: consult planning staff at the Township of North Dundas to inquire if local registers and/ or inventories exist as well as identify additional data sources.
- **Task 3**: identify and map all known (i.e., designated, listed, inventoried) and potential built heritage resources and cultural heritage landscapes within and adjacent to the study area, and recommend further studies based on the MHSTCI Checklist.

9.7.2.3 Existing Conditions

9.7.2.3.1 Overview of Existing Conditions

Tasks 1 to 3 identified within the Site and Site-vicinity Study Area:

- No listed or designated built heritage resources or cultural heritage landscapes
- No properties with buildings or structures 40 or more years old of potential CHVI
- No potential cultural heritage landscapes

The completed MHSTCI Checklist and supplementary documentation for this analysis are provided in Volume 2 Appendix G-1.

9.7.2.3.2 Record of Engagement

Table 9-16 lists the results of consultation with planning staff at the Township of North Dundas as well as building, easement and plaque management staff at the OHT.

Table 9-16: Results of Engagement

Contact	Information Request	Response Received
Calvin Pol Director of Planning, Building and Enforcement, Township of North Dundas	Query sent via email 22 July 2021 to inquire if the Township had any heritage registers or inventories (preliminary or draft) they would be able to share at this time and/ or if the Township was aware of any built heritage or cultural heritage landscape concerns within or adjacent to the Site-vicinity Study Area.	Response received via email 26 July 2021 providing a copy of the Counties' *Official Plan* and confirming no built heritage or cultural heritage landscapes within or near the Site-vicinity Study Area.
Kevin DeMille Natural Heritage Coordinator, Designated Contact for Trust Property and Easements Requests, Ontario Heritage Trust	Query sent via email 22 July 2021 to confirm if the OHT's *Places of Worship Inventory*, *Plaque Database*, web mapping tool of OHT Buildings and Easements, and OHA *Register* were up to date as well as inquire if the OHT had any additional cultural heritage concerns within or near the Site-vicinity Study Area.	Response received via email 28 July 2021 confirming OHT's *Places of Worship Inventory*, *Plaque Database*, web mapping tool of OHT Buildings and Easements, and OHA *Register* were up to date and that OHT was not aware of any additional cultural heritage concerns within or near the Site-vicinity Study Area.

9.8 Socio-economic

The socio-economic environment relates to the following assets in a community:

- Social assets: e.g., housing, recreational facilities, tourist attractions.
- Natural assets: e.g., parks, trails, watercourses and open spaces.
- Economic assets: e.g., businesses, industry, employment.
- Infrastructure assets: e.g., roads, waste management, utilities.
- Institutional assets: e.g., schools, hospitals, care homes, emergency services.

In addition, for landfill expansion projects, visual considerations are an important component to be considered.

The Boyne Road Landfill site is located in the Township of North Dundas and is located approximately 2 km east of the main Village of Winchester. The Village of Chesterville is located about 6.5 km southeast of the Site Study Area. Due to its closer proximity, the Village of Winchester is more likely to experience positive or negative effects related to landfill expansion and hence moving forward the Village of Winchester is discussed; however, the Village of Chesterville is not discussed.

The existing conditions noted in this section cover the immediate area surrounding the landfill site and the wider community. For the purposes of the assessment, the study area for local economy and residents and community is defined as the area within 500 m of the Site Study Area.

The socio-economic environment can be affected by expanded landfill operations in a number of different ways including potential changes to the population, effects to municipal finances, changes to employment opportunities, nuisance effects such as increased noise, odour or vermin (e.g., rats and gulls), effects to traffic and roads as well as visual impacts.

This section documents the baseline socio-economic environment in terms of the assets mentioned above as well as detailing current landfill operations and any known related issues in the community.

9.8.1 Local Economy

The Township of North Dundas is considered an “agri-food cluster” with many agriculture related businesses including Natunola, Sevita, Horst Equipment, Advanced Drainage Systems, SynAgri, Tri-County Protein, Agri-Partners as well as large farm equipment dealers selling Massey Ferguson, CASE IH, New Holland, John Deere and other brands (SDG, 2020).

The labour force participation rate in Winchester in 2015 was 59.1%, this is slightly lower than the average for Ontario (64.7%); however, the unemployment rate of 4.4% is lower than the provincial average of 7.4%. This is likely due to the older population who are retired. The average household income in Winchester in 2015 was $75,596, which is lower than the average for Ontario ($97,856). Healthcare, public administration and retail are the most common industry sectors for local residents (Statistics Canada, 2016).

Major employers in the area include the Winchester District Memorial Hospital (approximately 450 employees), and Lactalis Canada (approximately 180 employees) (SDG, 2020).

9.8.2 Residents and Community

9.8.2.1 Residences and Businesses

The landfill site is located in a mainly agricultural setting with few residences or notable features in the immediate vicinity. There are no existing residences within 500 m of the landfill boundary; the closest existing residence is on Boyne Road and is approximately 0.7 km west of the landfill. There are 6 existing residences found between 700 m and 1 km of the landfill.

The area is defined by agricultural operations and there are no businesses located within 500 m of the Site Study Area. To the east of the Site Study Area there are some farm operations and industrial operations (CNK Ag-Tech is approximately 2 km away and services farm machinery). The Village of Winchester is approximately 2 km west of the Site Study Area boundary and has a number of residences and business operations including shops, offices and restaurants.

9.8.2.2 Population

The population of the Township and the existing landfill's nearest neighbouring community, the Village of Winchester were discussed in Section 5.8 and are approximately 11,700 and 2,400, respectively. The average age in the community is 48.5 years which is older than the average age for Ontario as a whole (41); the number of residents aged 85 years or more is also higher than the provincial average (5.6% compared to 2.2%).

9.8.2.3 Institutional and Community Facilities

Winchester is a small community but is well served by institutional and community facilities. The Winchester District Memorial Hospital is a teaching hospital recently renovated and provides important care to the community and surrounding areas. The Dundas Manor Long Term Care Home is found on the same site as the hospital. In terms of schools, Winchester Public School is the only school in the village, the closest high school is North Dundas District High School. Winchester has a Fire Department located on Clarence Street. There is also a paramedic post located south of the town that is managed by Cornwall SDG Paramedic Service (City of Cornwall, 2020). The community is served by the Ontario Provincial Police who have a detachment located on Lawrence Street.

The Joel Steele Community Centre is located in downtown Winchester and includes the Winchester skating club and an outdoor swimming pool and the Winchester 100 club park which features a skate park, children's play areas and a pavilion and picnic area. The Winchester Curling Club is located opposite the community centre.

Other notable community features are:

- Winchester Public Library
- Winchester Lions' club
- Places of worship including Westminster United Pastoral Charge, Southgate Church and Bethany Chapel

The downtown area of Winchester hosts many retail outlets, restaurants, banks, a pharmacy and a post office providing important services and consumer goods for local people.

9.8.2.4 Existing Landfill Operations

The Boyne Road Landfill has been in operation since 1965 and is estimated to have approved disposal capacity to operate through 2023 and into 2024. It is the only municipal landfill site available for residents and businesses in the township. The landfill site is only authorized to accept waste from residents and businesses within the Township of North Dundas. The landfill site also has a waste recycling facility that is used for receipt of metals, plastics, cardboard and newspapers that are then sent elsewhere for processing, a tire recycling program, a household hazardous waste depot and an electrical and electronic equipment waste depot.

A survey of the full landfill footprint was completed in both December 2015 and December 2020; a comparison of the full landfill surface between 2015 and 2020 indicates an average annual fill rate of approximately 16,200 m^3 per year. In 2019, the Township reported that approximately 478 tonnes of recyclable materials were collected or dropped-off (Volume 3 Appendix J) and reported a diversion rate of 23%.

The landfill and other facilities at the site (recycling, diversion, etc.) currently employs two staff.

The Boyne Road Landfill currently costs $55,000 per year to operate, including salaries and excluding capital costs and hauling contracts.

No complaints related to the landfill site were received in past year (Golder, 2020).

9.8.3 Visual

9.8.3.1 Methodology

A technical review of publicly available biophysical, regulatory and cultural data relating to visual aesthetics within the Site-vicinity Study Area was completed to prepare a baseline description of the current visual landscape character. Landscape character evaluation uses information about the visual landscape to determine distinct patterns of physical elements that distinguish areas from one another. The description of landscape character focuses on the nature of these elements and their combination to express visual aesthetic assets, including scenic quality. The assessment methodology used in this study is based on components of the Guidelines for Landscape and Visual Impact Assessment (LI/IEMA, 2013) and the USDI Visual Resource Management System (USDI, 1986), as well as professional judgment and experience from conducting previous visual impact assessments.

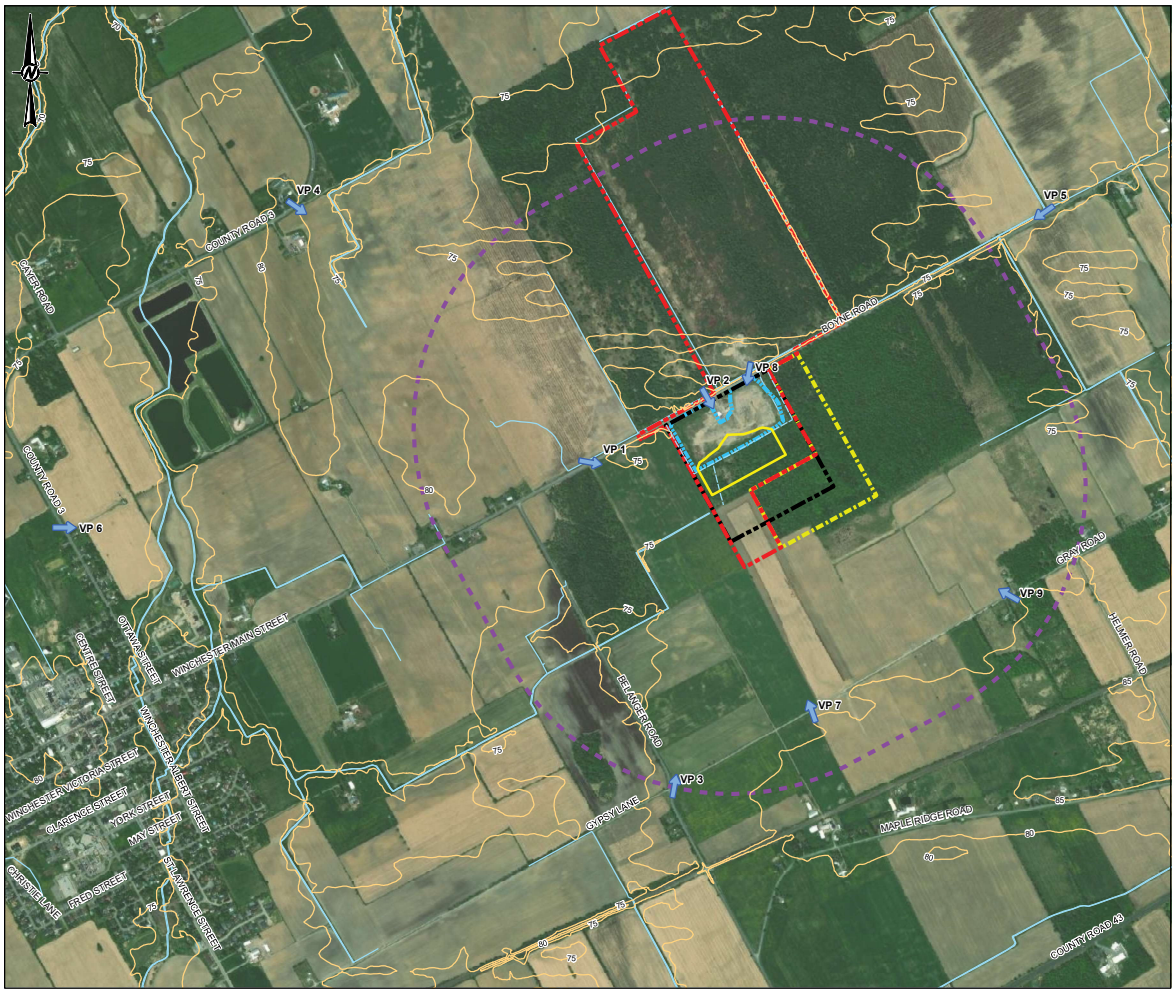
The baseline study used several data sources, including ecoregion, landcover, land use and topographic data available from the MNRF, as well as Bing and ESRI Imagery. Regulatory information (e.g., the Zoning By-Law) was obtained from the Township of North Dundas and the SDG. Spatial data was used in a geographic information system (GIS) to conduct a viewshed analysis to determine potential representative public receptor locations for viewing the undertaking within 1 km[1] of the Site Study Area.

[1] 1 km represents a foreground viewing distance that provides for a discernible level of visual detail to be perceived (USDI, BLM 1986).

The following existing conditions are also based on the baseline study and on photographic field reconnaissance undertaken on November 23, 2018, November 6, 2019, and April 7, 2020 from selected potential public receptor viewpoint locations (Figure 9-32). Field photographs were taken in the late fall or early spring during leaf-off conditions to demonstrate maximum visibility of the proposed undertaking or worst-case scenario conditions.

9.8.3.2 Existing Conditions

The landscape character within the Wider Study Area can be defined as semi-rural with agricultural features being predominant, as depicted in Figure 9-33. The landform is generally a uniform and open configuration interspersed with natural features that include trees, shrubs, wetlands and watercourses. The Township is located in Ecoregion 6E (Lake Simcoe – Rideau) where the majority of the landcover is cropland, pasture or abandoned fields with a small percentage of water (Crins et al. 2009). The Township is located in the Upper St. Lawrence section of the Great Lakes – St. Lawrence Forest Region, which contains a wide variety of both coniferous and deciduous species (Rowe 1972) that are interspersed throughout agricultural fields as wood lots, hedge rows or vegetation corridors. Built structures include roads, communication towers, power lines and poles, fences, and buildings.



LEGEND

- VIEWPOINT LOCATION AND DIRECTION
- TOPOGRAPHIC CONTOUR, metres
- INTERMITTENT WATERCOURSE
- WATERCOURSE
- PROPOSED LIMIT OF WASTE FOR THE LANDFILL EXPANSION AREA
- EXISTING LANDFILL FILL AREA
- SITE STUDY AREA
- TOWNSHIP OWNED PROPERTY
- APPROXIMATE PROPERTY BOUNDARY OF LANDFILL SITE
- 1 km VISUAL STUDY AREA

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2014
2. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

0 150 300 600
1:15,000 METRES

CLIENT
TOWNSHIP OF NORTH DUNDAS

PROJECT
INDIVIDUAL ENVIRONMENTAL ASSESSMENT OF THE TOWNSHIP OF NORTH DUNDAS WASTE MANAGEMENT PLAN

TITLE
VISUAL STUDY AREA AND KEY VIEWPOINT LOCATIONS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-10-12
DESIGNED	PJM
PREPARED	JEM
REVIEWED	PAS
APPROVED	PLE

PROJECT NO.	PHASE/TASK	REV.	FIGURE
1648253	2.0/2.1.11	0	**9-32**

Ecoregion 6E is underlain by limestone bedrock (Chapman et al., 1984) and interspersed with drumlin fields and moraines. The local surface form is classified as level and the soils are primarily mineral-based and dominated by greyish brown coloured Melanic Brunisols (Soils Landscape of Canada v3.2).

Figure 9-33: Taken November 6, 2019 from County Road 3 (Viewing South East from Viewpoint 4 on Figure 9-32)

The Village of Winchester is located approximately 2 kilometres west of the Site Study Area. Some residences along the eastern boundary of the town may be able to view the existing landfill. Farms and residences along Maple Ridge Road have a view towards the existing landfill site from the south, although that view may be screened by the forested land in the south corner of the landfill property.

The landscape within the Site-vicinity Study Area consists of relatively flat terrain. The overall topographic relief across the Site-vicinity Study Area indicated by topographic mapping (Figure 9-32) shows that the ground surface ranges in elevation from approximately 75 masl in the northwest to 80 masl in parts of the southeast. The existing landfill rises to a maximum height of approximately 12 m above the surrounding terrain and is partially visible behind a row of trees from vantage points to the northwest, west and southwest. Views of the existing landfill from the east and southeast are obscured by the forested land adjacent to the eastern and southeastern side of the Site Study Area. The Land north of Boyne Road is predominantly forested and offers visual screening from further to the north.

The existing landfill is most visible to motorists and pedestrians that are travelling east along Boyne Road, as depicted in Figure 9-34 from viewpoint 1. The landfill can be seen across the field and is partially visible through a row of trees along the western property boundary. The landfill is also partially visible through trees and buildings when passing the main entrance on Boyne Road and from the snowmobile trail that runs along the north side of Boyne Road. The existing landfill is not at all visible from viewpoint 9 and is partially visible from viewpoints 3 and 7 (refer to Figure 9-32) along Gray Road located about 1 km south of the existing disposal area.

Figure 9-34: Taken April 7, 2020 from Boyne Road (Viewing East from Viewpoint 1 on Figure 9-32)

There are currently no objectives or guidelines present in current land use planning policy or regulation in the SDG Official Plan related to visual quality or visual aesthetics.

9.9 Transportation

Potential transportation components include both roadway traffic and aircraft. The Boyne Road Landfill is located 36 km from the Ottawa International Airport and 24 km from the Rideau Valley Air Park (aerodrome); in view of these separation distances, consideration of and potential effects on aircraft are not relevant to the proposed expansion of the Boyne Road Landfill site. The transportation component therefore includes only roadway traffic.

9.9.1 Traffic

The Boyne Road Landfill site is located along the south side of Boyne Road approximately 2 km east of the Village of Winchester. The roadway system is illustrated on Figure 9-35, which is provided below.

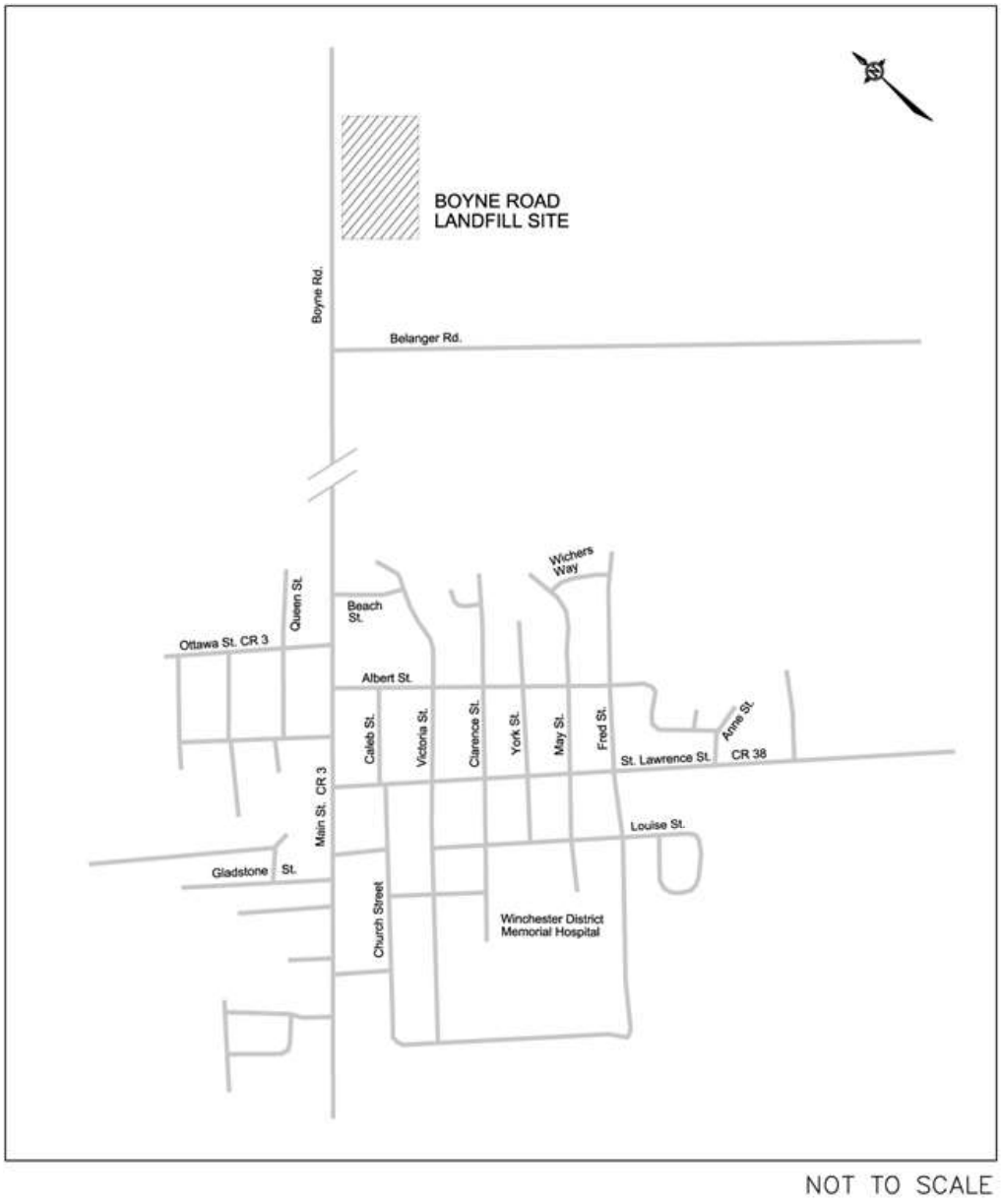


Figure 9-35: Roadway System near Boyne Road Landfill Site

From a traffic perspective, the roads and intersections relevant to the landfill site are described below.

Roadways

Boyne Road (Main Street) – The landfill site is located along Boyne Road. Boyne Road is an east-west arterial road under the jurisdiction of the Township of North Dundas. The road travels between the Village limit of Winchester to the west and County Road 7 (CR 7) to the east, a length of approximately 8.6 km. Boyne Road is a rural road with a 7.2 m paved surface and gravel shoulders. The speed limit is posted at 80 km/h.

Main Street – Main Street travels through the Village of Winchester connecting to the west limit of Boyne Road. Main Street (CR 3) is under the jurisdiction of the SDG from CR 31 to the west, connecting to and travelling north along Ottawa Street east of the village core. Main Street has an urban cross section, which changes to a rural cross section as it extends towards the village limit. The street has a sidewalk on the north side of the road which terminates at Ottawa Street, and a sidewalk on the south side which extends to the urban limit of the road. The speed limit along Main Street is posted at 50 km/h.

St. Lawrence Street – St. Lawrence Street (CR 38) is a north-south arterial road under the jurisdiction of the SDG. The street is located 2.8 km west of the Boyne Road Landfill site. St. Lawrence Street has an urban cross section with sidewalks on both sides of the roadway and extends south through the village from Main Street. The posted speed limit is 50 km/h.

County Road 7 – CR 7 is a north-south rural road under the jurisdiction of the SDG. The road is located 6.6 km east of the Boyne Road Landfill site. CR 7 has a paved surface with gravel shoulders with a posted speed limit of 80 km/h.

Intersections

Access/Boyne Intersection – The site access and Boyne Road is a “T” intersection with the access to the landfill representing the northbound approach to the intersection. The site access is a private approach with an implied stop. Boyne Road would form the eastbound and westbound approaches to the intersection. There are no exclusive turn lanes at any of the approaches to the intersection. The intersection will be analyzed as a two-way stop-controlled intersection. The intersection has the following lane configuration:

Northbound Access	One shared left/right turn lane (Implied stop)
Eastbound Boyne Road	One shared through/right lane
Westbound Boyne Road	One shared left/through lane

An aerial photograph of the site access/Boyne Road intersection obtained from Google Mapping is shown below as Figure 9-36.

Figure 9-36: Aerial Photograph of Boyne Road/Landfill Site Access Intersection

St. Lawrence/Main Intersection – The intersection of St. Lawrence Street and Main Street within the Village of Winchester is a "T" intersection controlled by all-way stop signs. The intersection is located 2.8 km west of the landfill access onto Boyne Road. An aerial photograph of the St. Lawrence/Main intersection obtained from Google Mapping is shown below (Figure 9-37). All approaches are a single lane with no exclusive turn lanes. The intersection has the following lane configuration along with an aerial photograph of the intersection.

Northbound St. Lawrence St.	One shared left/right turn lane (stop sign)
Eastbound Main Street	One shared through/right lane (stop sign)
Westbound Main Street	One shared left/through lane (stop sign)

Figure 9-37: Aerial Photograph of St. Lawrence/Main Intersection

CR 7/Boyne Intersection – The intersection of CR 7 and Boyne Road is located 6.6 km east of the landfill access. The intersection is a two-way stop-controlled intersection with stop signs placed at the eastbound Boyne Road and westbound Connaught Road approaches. There are no exclusive turn lanes at any of the approaches to the intersection, which has the following lane configuration:

Northbound CR 7	One shared left/through/right lane
Southbound CR 7	One shared left/through/right lane
Eastbound Boyne Road	One shared left/through/right lane (stop sign)
Westbound Connaught Rd.	One shared left/through/right lane (stop sign)

An aerial photograph of the CR 7/Boyne intersection obtained from Google Mapping is shown below (Figure 9-38).

Figure 9-38: Aerial Photograph of CR-7/Boyne Intersection

Peak Hour Traffic

The peak hour traffic was determined from counts taken by the project team at the Access/Boyne intersection on September 9, 2021, and at the St. Lawrence/Main and CR 7/Boyne intersections on September 14, 2021. Figure 9-39 shows the 2021 peak hour traffic counts with a count summary table presented in Volume 2 Appendix H as Exhibit 1 for the Access/Boyne intersection, Exhibit 2 the St. Lawrence/Main intersection, and Exhibit 3 the CR 7/Boyne intersection.

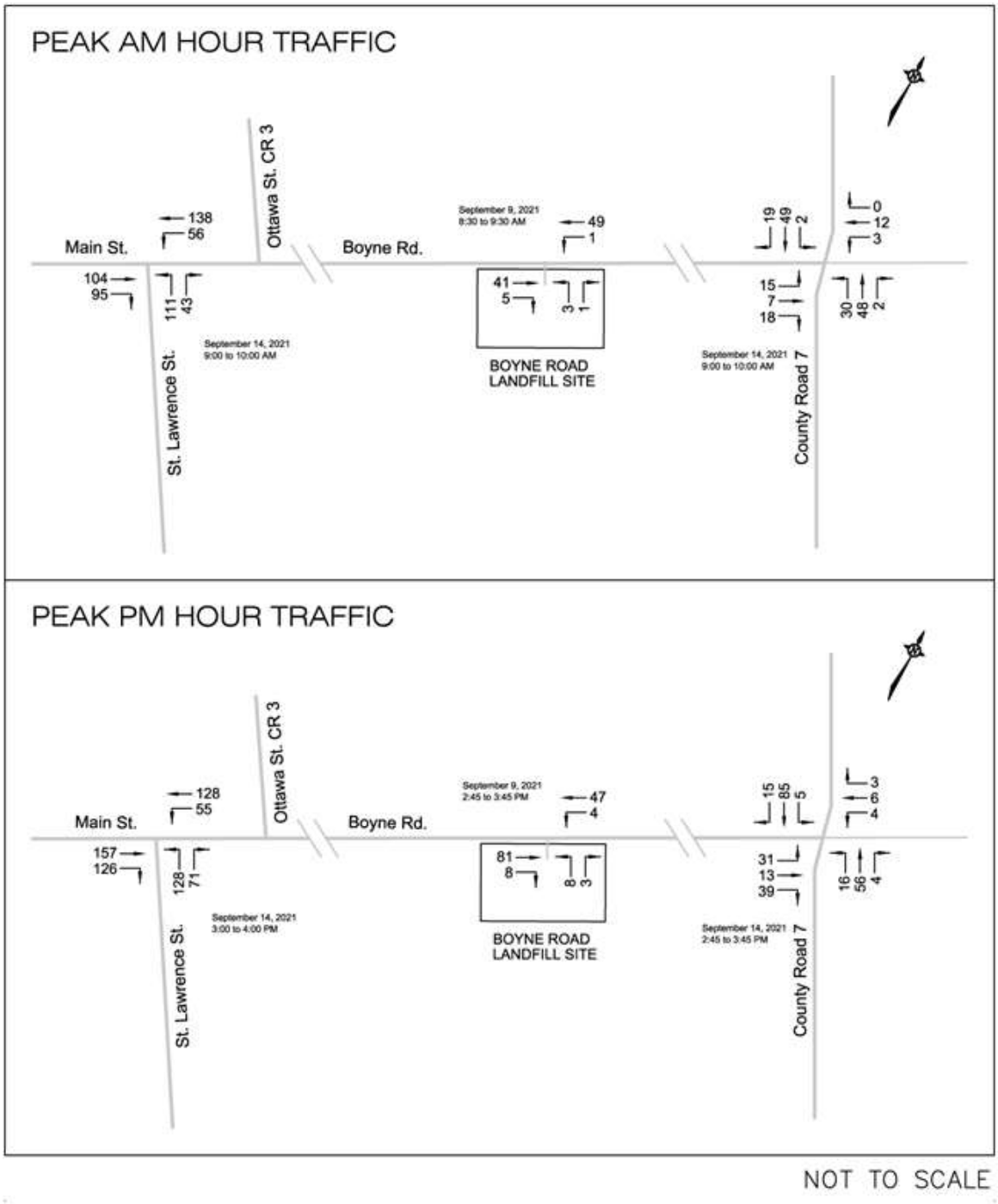


Figure 9-39: 2021 Peak AM AND PM Hour Traffic Counts

Routes for Recycling and Collection

The Boyne Road Landfill facility accepts waste and recyclables from the communities of Winchester, Chesterville, Morewood, Inkerman and South Mountain, plus the rural area within the Township of North Dundas. The truck routes to the major communities have already been established and are the shortest and most convenient routes along County roads. The major route not designated as a County road is Boyne Road where the landfill facility is located. Boyne Road stretches from the Village of Winchester to County Road 7. Figure 9-40, shows the collection route for both waste and recyclables.

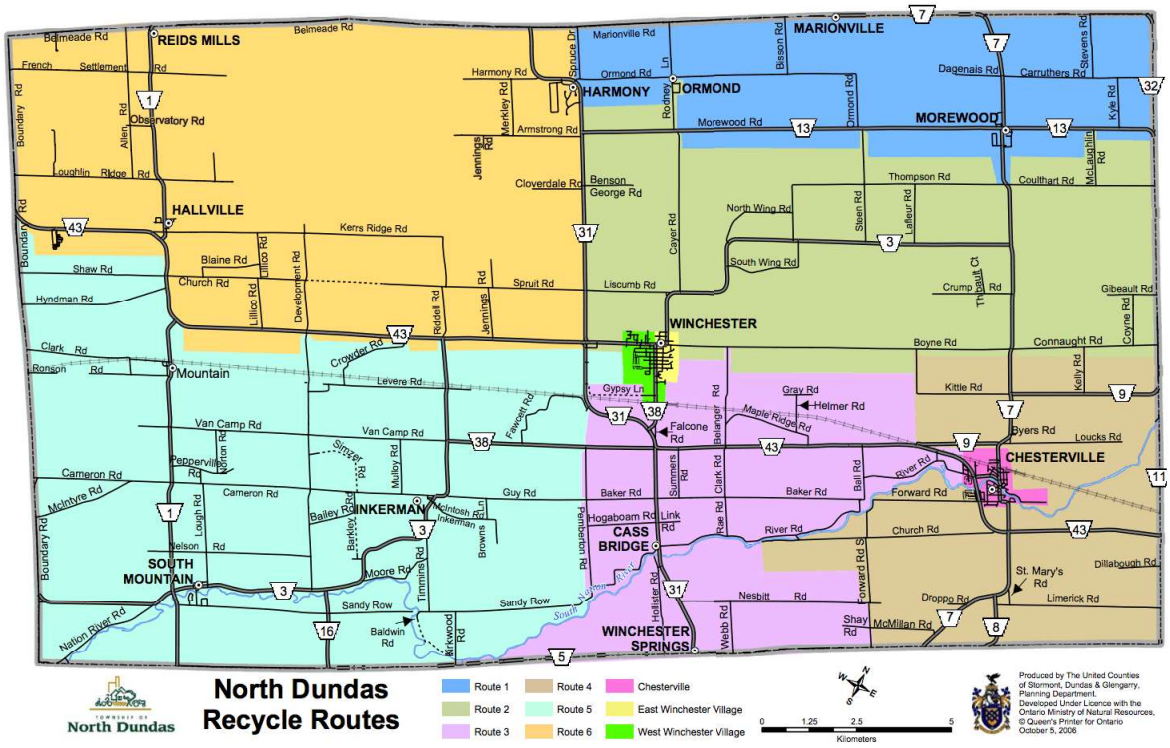


Figure 9-40: Waste Collection Route Map

As described above, the traffic counts taken at the St. Lawrence/Main and CR 7/Boyne intersections were conducted on Tuesday, September 14, 2021. Tuesday is the day for the collection of waste and recyclables by municipal trucks for Routes 1 and 2, which includes the communities of Morewood, Inkerman and South Mountain. Traffic counts at the site access were taken on Thursday, September 9, 2021, and would include municipal trucks collecting waste and recyclables in the Chesterville and East Winchester areas.

Some of the waste and recycling material is dropped off by contractors by truck or trailer, which would travel from the construction site to the landfill facility. These routes would vary depending on the location of the construction site. Alternate truck routes would not be as efficient and may have greater impact on the surrounding area compared to the established routes.

9.10 Design and Operations

The Design and Operations component comprises the design and operation of the Boyne Road Landfill site. The operations at the site are approved under ECA No. A482101. As described in Section 1.3, the landfill site has been operational since 1965 and is the only operational waste disposal site in the Township, receiving all the residential and some of the IC&I waste from the entire Township. In addition to the landfill, the material recycling facility, the HHW and WEEE transfer station are located in the north central portion of the site on the south side of Boyne Road. All recyclables (metal, plastic, paper, cardboard) collected within the Township are taken here then transferred to a recycling facility located outside of the Township.

The Boyne Road Landfill currently has an approved disposal area of 8.1 ha within an overall landfill property (consisting of the original disposal area and the addition of a number of parcels of adjoining land between 1992 and 2018) of approximately 97.1 ha. The Township has also acquired an additional 16.2 ha of property immediately to the east and southeast of the landfill property. In addition to the landfill property, the Township has acquired groundwater easements on adjacent properties (referred to as Contaminant Attenuation Zone). These areas are shown on Figure 1-2.

The landfill currently has an approved waste disposal capacity of 643,050 m^3. Over the past ten years, the annual fill rate ranges from approximately 10,400 to 18,900 m^3 per year (with one higher fill rate in 2017), with an average annual fill rate of approximately 16,200 m^3 per year.

The landfill operates from 8 a.m. to 4 p.m., Monday through Friday plus one hour before, i.e., 7 a.m. to 8 a.m., for site preparation and one hour after, i.e., 4 p.m. to 5 p.m. to complete placement of daily cover. The site also operates Saturday from 8 a.m. to 12 p.m. May through November and only one Saturday a month from 8 a.m. to 12 p.m. November through May. The site is closed on Sunday.

The approved landfill footprint is C-shaped (around the diversion facilities). The disposal area design has for the most part 4 horizontal: 1 vertical (4H:1V) sideslopes and a top deck area with a 5% slope to provide drainage. The sequence of landfilling follows an approved phasing plan. The final contour design has two peak areas at a height of approximately 12.5 m above the adjacent ground level. Runoff from the disposal area is controlled by a perimeter ditch on the west, south and east sides that discharges to the off-site municipal drain network.

The existing landfill site is a natural attenuation landfill, without an engineered bottom liner and leachate collection system. Compliance of the landfill with the applicable requirements for protection of off-site groundwater quality relies on natural processes in the subsurface. An annual monitoring program, consisting of groundwater and surface water monitoring, is part of the current landfill site operations. The results of the 2020 monitoring program (Golder, 2021) indicate that with respect to protection of off-site groundwater quality, the landfill is operating in compliance with the MECP Reasonable Use Guideline (MECP, 1994). Surface water quality in the often-stagnant water within the drainage ditch along the north side of Boyne Road that receives surface water runoff from the landfill site is interpreted to experience

discontinuous marginal impacts by landfill leachate but is generally in compliance with provincial surface water management policies and relevant CWQG.

In addition, the site has not received complaints about nuisance effects off-site, i.e., dust, odour, noise).