City of Hamilton

Natural Heritage Assessment

Mohawk Road Class Environmental Assessment

Lime Kiln Road / McNiven Road to Filman Road

Project No. B000941

September 2019

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Abbreviations

ANSI	Area of Natural and Scientific Interest
CA	Conservation Authority
CSP	Corrugated Steel Pipe
DA	Designated Area
DFO	Department of Fisheries and Oceans / Fisheries and Oceans Canada
EA	Environmental Assessment
EA Act	Environmental Assessment Act, R.S.O. 1998, c. EAST 18
ELC	Ecological Land Classification (Lee et al., 1998, as amended)
ESA	Endangered Species Act, 2007, S.O. 2007, c. 6
ESCP	Erosion and Sediment Control Plan
GIS	Geographic Information System
HCA	Hamilton Region Conservation Authority
LIO	Land Information Ontario
masl	Metres above mean sea level
mbgs	Metres below ground surface
MCEA	Municipal Class Environmental Assessment
MNRF	Ministry of Natural Resources and Forestry
MOECP	Ministry of Environment, Conservation and Parks
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OP	Official Plan
PPS	Provincial Policy Statement, 2014
PSW	Provincially Significant Wetland
ROW	Right of Way
SAR	Species at Risk
SARA	Species at Risk Act, S.C. 2002, c. 29
SWH	Significant Wildlife Habitat (as defined by MNRF criteria)

1. Introduction and Study Area

Mohawk Road is a major arterial road in the City of Hamilton connecting to both the Lincoln Alexander Parkway (LINC) and the provincial Highway 403 in the east. It has a two-lane cross section and a posted speed limit of 50 km/h. West of the study area, Mohawk Road becomes Rousseaux Street providing access to downtown Ancaster.

The City of Hamilton is undertaking a Schedule C Municipal Class Environmental Assessment Study to review the transportation needs of Mohawk Road between Lime Kiln Road/McNiven Road and Filman Road within the former Town of Ancaster (see Figure 1 – Study Area). This EA follows the recommendations of the Ancaster Transportation Master Plan that Mohawk Road (and a number of other arterial roads within Ancaster) have a three-lane section including two-way centre left-turn lane where feasible, plus sidewalks and cycling lanes. The purpose of the wider road section is to accommodate increasing traffic volumes, facilitate safer driveway access for residential properties along Mohawk Road, improve conditions for service trucks, and address the need for active transportation facilities.

A Natural Heritage Assessment was completed to document existing conditions, assess potential impacts to any natural heritage features present within the Study Area, and provide recommendations and supporting documentation for the MCEA.

2. Landscape Features and Designations

Available background information was reviewed to evaluate the landscape context for the Study Area and identify natural heritage features that require further site-specific assessment. These data sets include:

- Aerial imagery (current and historic)
- Surficial geology mapping (Ontario Geological Survey)
- Soil physiography mapping (Chapman and Putnam)
- Regional and local topographic surveys
- Prior site investigations and reports conducted in relation to the proposed project
- Data published through wildlife atlases
- Environment mapping in the Official Plan of the City of Hamilton
- Wildlife data records from the Land Information Ontario (LIO) Natural Heritage Areas database

- Natural heritage features and designated areas identified through LIO
- Data sets provided by the Ministry of Natural Resources and Forestry (MNRF) for the list of species at risk present within the City of Hamilton limits.

CIMA+ also reviewed relevant and available technical studies completed within or directly adjacent to the Study Area. Table 1 summarizes the documents reviewed.

Figure 1. Study Area Map

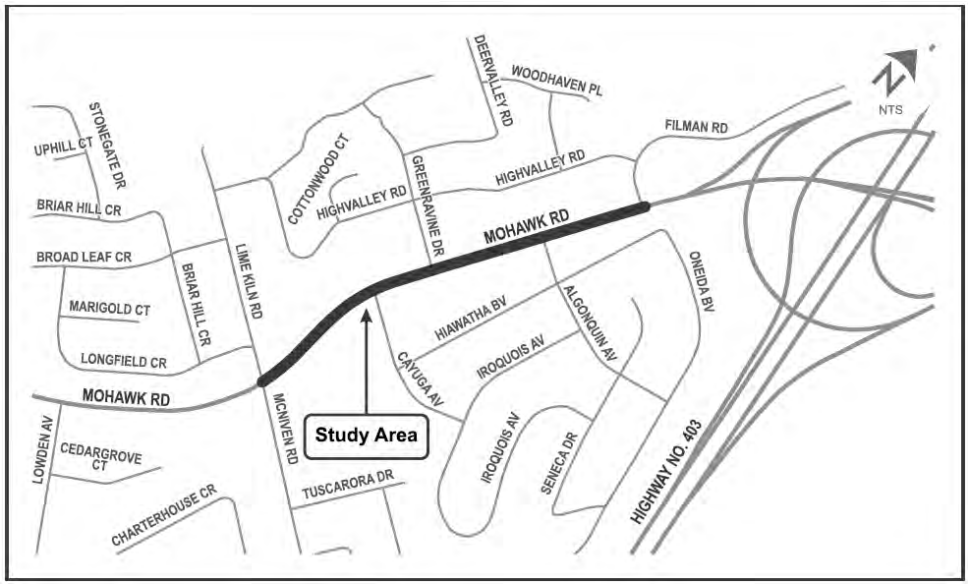


Table 1. Summary of Relevant Studies Reviewed

Document Title	Document Type	Date
Ancaster Creek Subwatershed Stewardship Action Plan (HCA)	Technical Report / Planning Document	April, 2008
Tiffany Creek Subwatershed Stewardship Action Plan (HCA)	Technical Report / Planning Document	April, 2008
Final Tree Management Plan (CIMA+)	Technical Report	September, 2019

2.1 Ecoregion

The Study Area is located within Ecoregion 7E (Lake Erie-Lake Ontario) and is part of the Deciduous Forest Region characterized by diverse vegetation. Approximately 78% of the ecoregion has been converted for agricultural purposes (cropland and pasture), and more than 7% of the remaining lands have been developed for urban settlement and road networks. Of the remaining forest remnants, dense deciduous forest covers 10.3%, sparse deciduous forest covers 1.0%, and mixed deciduous forest covers 0.8% of the ecoregion (Crins et al., 2009).

2.2 Soils, Physiography and Topography

Ecoregion 7E is underlain by Silurian and Devonian limestone bedrock, and the topography is general flat and overlain by deep undulating deposits of ground moraine. Most substrates in the ecoregion are comprised of calcareous mineral material with a minor component of the landscape composed of organic materials, which are glaciolacustrine deposits left over from historical lakes. The predominant substrates in the ecoregion include Gray Brown Luvisols and Gleysols (Crins et al., 2009). The Study Area is located adjacent to escarpment lands (Chapman and Putnam, 1984) and in an area dominated by Halton Till composed of bedrock origin soils from the Queenston Formation. Detailed local soil analysis was not completed as part of the Natural Heritage Assessment, however, Halton Till is known to average 20 % sand, 31% clay, 28% carbonates with a calcite to dolomite average ratio of 2:1 (Ontario Geological Survey Report 255), and this sandy loam characterization is consistent with other published data sources (City of Hamilton, OMAFRA, HCA).

Topography across the Study Area ranges between 224 masl to 229 masl) exhibiting gentle slopes throughout. Specifically, there is a topographic high point at Filman Road (228 masl) which reduces to 224 masl at the approximate centre of the Study Area. From approximately Greenravine Drive to Lime Kiln Road / McNiven Road the topography moves to 229 masl and back down to 227 masl. Drainage ditches are present on both the north and south sides of Mohawk Road exhibiting varying widths and depths throughout. Connecting driveway culverts are present throughout most of the Study Area length. The ditches were observed to be predominantly established with actively managed lawn grasses. No standing water was observed in the ditches present in the Study Area at the time of the site surveys.

2.3 Watershed and Watercourses

The Study Area is located within the Spencer Creek Watershed under the administrative jurisdiction of the Hamilton Conservation Authority (HCA). CIMA+ reviewed provincial, regional and municipal GIS databases and maps including reviews of Land Information Ontario / NHIC / Topo, Fish ON-Line, DFO aquatic species at risk map, HCA watershed studies, as well as official plan schedules.

The Study Area falls within the Tiffany Creek subwatershed which covers an area of 9.3 km^2 and 34% of the subwatershed is developed with impervious surface and 11.8% remains as forest cover (HCA, 2008). The creek's headwaters begin east of Southcote Road, flow northeast towards Stone Church Road, then flow northwest and over Tiffany Falls at the escarpment brow out-letting into Ancaster Creek.

One tributary associated with Tiffany Creek is located east of the Study Area (east of Filman Road) and flows underneath Mohawk Road adjacent to the 403 on-ramps. Refer to Figure 1 and Figure 2 for details. No other watercourses have been identified near the Study Area.

2.4 Surrounding Land Cover / Land Uses

The Study Area is located in an urban setting; lands throughout the Study Area are both designated and currently developed with private residential developments (single family residential dwellings).

2.5 Significant Natural Heritage Features

Natural heritage maps obtained through LIO and online resources were used to identify any significant natural heritage features that receive policy protection under the Provincial Policy Statement.

CIMA+ also sent out a formal information request to the MNRF to identify significant natural heritage features in the Study Area and obtain additional information on restricted Species at Risk (SAR) records, fisheries records, or other data on file concerning the Study Area (Appendix A). Figure 2. Natural Heritage Features Map outlines the respective locations of the natural heritage features described in this section.

2.5.1 Natural Heritage System

No portion of the Study Area has been designated by the Province or City of Hamilton, as part of any mapped natural heritage system (NHS). The closest NHS Core Area is

Tiffany Falls regional Environmentally Significant Area which is located immediately north of Filman Road and approximately 100 m north of the Study Area. A municipal park, Mohawk Meadows, is also located approximately 65 m south of the Mohawk and McNiven Roads Intersection.

2.5.2 Areas of Natural and Scientific Interest

No ANSIs are present within or directly adjacent to the Study Area. The nearest ANSI is the Sulphur Creek Valley Life Science ANSI located greater than 1 km west of the Study Area.

2.5.3 Provincially Significant Wetlands

No Provincially Significant Wetlands (PSW) are present within the Study Area. The nearest PSW is the Tiffany Creek PSW located greater than 1.4 km west of the Study Area.

2.5.4 Significant Woodlands

No Significant Woodlands are present within the Study Area.

2.5.5 Significant Valleylands

No Significant Valleylands are present within the Study Area.

2.5.6 Significant Wildlife Habitat

No Significant Wildlife Habitat (SWH) records were identified through agency correspondence or the background review. See Section 4.3 for further discussion regarding SWH based on the results of the field assessment.

2.5.7 Fish Habitat

Fish habitat has not been identified in the Study Area.

2.5.8 Species at Risk Habitat

The MNRF identified that there are records of Species at Risk (SAR) in the general vicinity of the Study Area. Further investigation was included in the assessment.

2.5.9 Features of Conservation Authority Interest

The Study Area is located within the administrative jurisdiction of the Hamilton Conservation Authority (HCA), but there are no watercourses or regulated areas present within the Study Area.

3. Study Area Field Investigations

3.1 Methods

CIMA+ conducted a field assessment of the Study Area on May 24, 2018 to evaluate existing ecological conditions. The field program included the following surveys:

- Full vascular plant inventories;
- Existing habitat assessments, including ecological community characterization completed in general accordance with MNRF Ecological Land Classification (ELC) for Southern Ontario standard procedures and protocols;
- Breeding bird survey conducted in general accordance with the Ontario Breeding Bird Atlas (OBBA) standard procedures and protocols;
- Incidental wildlife and wildlife habitat observations (auditory, visual, tracks, scat, burrows, nests, etc.) throughout the Study Area; and
- Photographic documentation (Appendix B)

3.2 Vegetation Communities

Lands within the Study Area were assessed to determine the presence or absence of vegetation species of conservation concern and evaluate habitat conditions. The assessment included detailed biological inventories and vegetation community characterization.

Lands within and surrounding the municipal Right-of-Way (ROW) and naturalized areas across lands between the edge of pavement and the adjacent private residential lands were predominantly established with planted streetscaping trees, naturalized trees, or otherwise with disturbance tolerant / adapted vascular plant species associated with road environments and common to urban Ontario landscapes. A detailed tree inventory and associated mapping covering the Study Area is presented in Appendix F.

Lands associated with residential properties included actively managed lawns established with ornamental variants of Kentucky Blue Grass (*Poa pratensis*), as well as scattered naturally established trees intermixed with planted landscape features.

Ecological Land Classification (ELC) characterization following Lee et al., (1998) standard procedures and protocols establishes that separate ecosites must be larger than 0.5 ha. Lands across the Study Area fall under one ELC community class; Low Density Residential (CVR-1).

A full vascular plant inventory is presented in Appendix C. The MNRF flagged two provincially Endangered species; American Chestnut (*Castanea dentata*) and Butternut (*Juglans cinerea*), as potentially occurring in the project location. Lands across the Study Area were searched for any rare species, locally listed species of conservation concern, or listed Species at Risk (SAR). None were observed within the Study Area at the time of the site surveys.

3.3 Wildlife

3.3.1 Mammals

Four Grey Squirrels (*Sciurus carolinensis*) were observed throughout private residential lands in the Study Area during the field visit. No evidence of other mammalian land use was observed at the time of the site investigation (e.g. tracks, scat, burrows, dens, carcasses, etc.).

Lands within the ROW and surrounding the intersection where impacts could occur were carefully inspected for potential bats roosting areas. While cavities were observed in three distinct Silver Maple trees (no.55, 72 and 129) of more than 25 cm of diameter at breast height, these trees did not contain bats and they are not located within a forest stand meeting the OMNRF criteria of a bat maternity colony (OMNRF, 2015).

No other mammals, or evidence thereof, were observed at the time of the site surveys.

3.3.2 Birds

A review of available bird observation data from the Ebirds Canada, the Natural Heritage Information Centre (NHIC) database governed by Land Information Ontario (LIO), and Ontario Breeding Bird Atlas (OBBA) databases was completed as part of the assessment. Furthermore wildlife records were requested from the Ministry of Natural Resources Guelph District Office. A review of these data records has identified SAR within or adjacent to the Study Area:

1. Yellow-breasted Chat (*Icteria virens*); a provincially Endangered species, and;
2. Louisiana Waterthrush (*Seiurus motacilla*), a provincially Threatened species,

CIMA+ completed a breeding bird count survey which included point counts taken from 8 stations from the ROW across the length of the Study Area, refer to Figure 2 for location details. Point counts were taken in late May 2018 between 7 am and 9:30 am. Visual and auditory observations outside of the point count stations were also noted through the field investigation. A second breeding birds survey was not deemed required by CIMA+ as part of this Natural Heritage Assessment due to the low diversity

and quality of habitats available within the Study Area and the identified mitigation measures presented in sections 5 and 7 to protect migratory birds as part of the project construction stage.

CIMA+ observed 11 bird species throughout the duration of the field investigations: American Robin (*Turdus migratorius*), Mourning Dove (*Zenaida macroura*), Rock Pigeon (*Columba livia*), Northern Cardinal (*Cardinalis cardinalis*), Blue Jay (*Cyanocitta cristata*), House Sparrow (*Passer domesticus*), American Goldfinch (*Spinus tristis*), House Finch (*Haemorhous mexicanus*), Canada Goose (*Branta canadensis*), Red-winged Blackbird (*Agelaius phoeniceus*), and European Starling (*Sturnus vulgaris*).

No rare species or SAR were observed (visual or auditory) within or adjacent to the Study Area at the time of the field investigations.

Lands within the ROW and surrounding the intersection where impacts could occur, were carefully inspected for ground nesting structures, or nests within shrubs or trees. Artificial structures including culverts, posts, and signs were also inspected for wildlife nesting structures. No nests were observed in these areas at the time of the site investigations.

All SAR which have been historically recorded for the area, have been included in the SAR Screening Assessment to determine whether local habitat features may support populations at any given time of year.

3.3.3 Reptiles and Amphibians

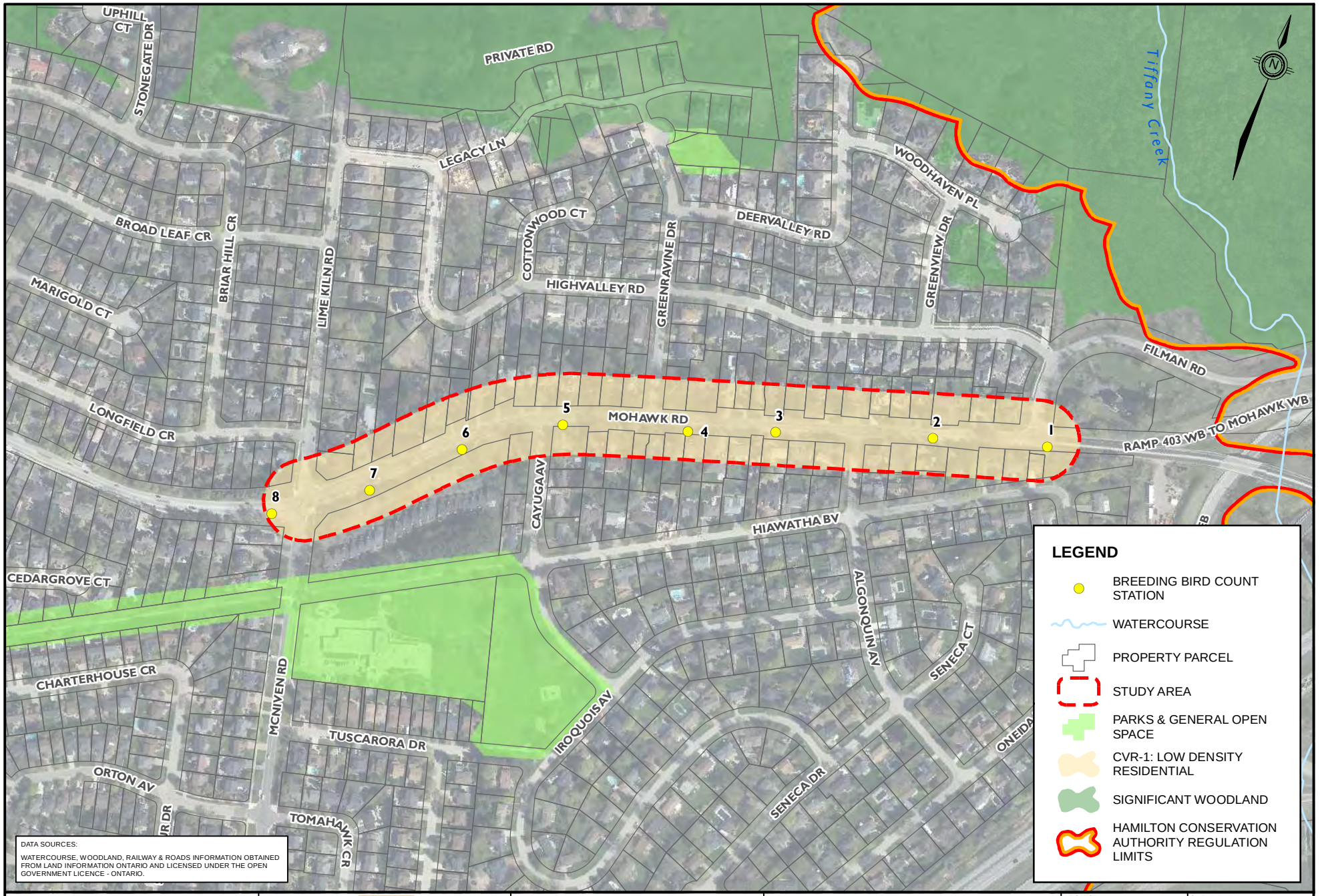
CIMA+ biologists accessed the Ontario Reptile and Amphibians Atlas to perform a search of reptile and amphibian observations recorded within the 10 km^2 grid which covers the Study Area. 2930 herpetofauna observation records were found, totalling 26 species, 21 species of which have been observed within the last 15 years (see full list located in Appendix C – for details). Four species of conservation concern were among the list. One of the species (Jefferson Salamander) was also flagged by the MNRF, see Records of Correspondence located in Appendix A for details. No additional records for SAR herpetofauna were provided the MNRF.

No herpetofauna species were observed (visual or auditory) during the field investigation. No roadkill, carapaces, snakeskins, egg shells, tracks, nests, burrows, or other evidence of turtles or snakes were observed at the time of the field investigation.

No ponds, watercourses, natural drainage features, wetlands or pooled water was observed in the Study Area at the time of the site investigations nor through the results of the background review and pre-consultation phase. No amphibian or aquatic reptile

habitat is present in the Study Area where improvements are proposed. No snake or terrestrial reptile habitat is present in the Study Area.

Where records of listed species at risk or species of conservation concern were observed by others, they were included in the Species at Risk (SAR) Screening Assessment.



CLIENT: Hamilton

SCALE: 50 25 0 50 100 150 meters; 1:5,000

PROJECT NAME: MOHAWK-ROUSSEAUX ROAD EA

SHEET TITLE: NATURAL HERITAGE FEATURES

PROJECT No: B000941		CLIENT FILE No: ---
DRAFTER: S. ELLIOTT	DESIGNER: ---	DRAWING No: FIG. 2
APPROVER: L. CYMBALY	APPROVER: ---	
DATE: 11/15/2018		SHEET No: 1 of 1

4. Assessment of Natural Heritage Features

4.1 Results of Background Review

Based on the results of the background review, no designated natural heritage features are present within or directly adjacent to the Study Area that trigger policy and legislation protection for this Project.

4.2 Species at Risk Screening

A Species at Risk (SAR) screening was completed to evaluate potential for the presence of SAR in the Study Area. SAR identified by the MNRF, identified in the general area from third party data sources, or observed during the field assessment, were included in the screening. Habitat requirements for these species were compared to the habitat available in the Study Area. If matching habitat was not present, and no observations of the species were made, the likelihood of occurrence was deemed *Low*. If matching habitat was present in the Study Area, but no individuals of the species were observed, the likelihood of occurrence was deemed to be *Low* to *Moderate*. Where matching habitat was present, and the species was observed in the Study Area, the likelihood of occurrence was deemed to be *High*. Details of the screening are provided in Appendix D.

As per the results of the SAR Screening only one species as a Low to Moderate likelihood of occurrence, the Red-headed Woodpecker (*Melanerpes erythrocephalus*). This species' legal protection status is identified as "Special Concern" under the *Endangered Species Act* and "Threatened" under the federal *Species at Risk Act*. This species can use roadsides as an habitat and is known to use decadent deciduous trees that are 18 cm diameter at breast height or more or have dead or dying limb(s) with a diameter of 13 cm or more as potential nesting/roosting structures (ECCC, 2019). While this bird species has not been observed by CIMA+, a few trees corresponding to these criteria have been observed within the Study Area.

4.3 Significant Wildlife Habitat Assessment

Significant Wildlife Habitat (SWH) is generally defined as critical areas where animals and other organisms live, and find adequate amounts of food, water, shelter, and space needed to sustain their populations. SWH can be considered ecologically important in terms of features, functions, representation or amount, or contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable time,

areas of rare or specialized habitat, habitats of species of conservation concern, or animal movement corridors.

Using the *Significant Wildlife Habitat Criteria Schedules For Ecoregion 7E* (OMNRF, 2015), the CIMA+ desktop review only identified two SWH that met the criteria for consideration as candidate SWH: Reptile Hibernacula and Habitat for Special Concern and Rare Wildlife Species. However, based on field assessment, these SWH were not confirmed to be present on site. For the Reptile Hibernacula, no evidence of snakes or potential hibernacula location (nests, burrows, crevices, etc.) were observed by CIMA+ within the Study Area. As for Habitat for Special Concern and Rare Wildlife Species, the only special concern or rare wildlife species for which habitat requirements are present within the Study Area is the Red-headed Woodpecker. However, although the bird survey was completed during this species nesting season (May to August), it wasn't observed by CIMA+ within the Study Area. A copy of this assessment is provided in Appendix E.

Based on the results of the assessment, Significant Wildlife Habitat is not present within the Study Area.

5. Potential Impacts and Proposed Mitigation Measures

The City is proposing road widening and the incorporation of additional / modified pedestrian and cycling pathways along Mohawk Road between Lime Kiln Road / McNiven Road and Filman Road. In this phase of the EA process, alternative design concepts for the preferred solution were developed, analyzed and evaluated. Nine (9) alternative design concepts were examined as part of this Class EA study:

Do Nothing – Mohawk Road remain in a "as-is" state
Option 0 – Three-lane section with two-way left-turn lane only
Option 1 – Three-lane section with bicycle lanes and sidewalks both sides
Option 2 – Three-lane section with cycle tracks and sidewalks both sides
Option 3A – Three-lane section with boulevard multi-use trail on south side only
Option 3B – Three-lane section with boulevard multi-use trail on south side and sidewalk on north side
Option 4A – Three-lane section with boulevard multi-use trail on north side only
Option 4B – Three-lane section with boulevard multi-use trail on north side and sidewalk on south side
Option 5 – Three-lane section with sidewalks both sides

Given that the three-lane cross-section with a two-way centre left-turn lane was identified as part of the preferred solution, the differences amongst alternative design concepts was the type of active transportation facilities provided.

Based on the analysis and evaluation of alternative design concepts, Option 4A, Three-Lane Section with Boulevard Multi-Use Trail North Side Only, was selected as the preliminary preferred alternative design subject to agency and public review. Primary reasons this option was selected as preferred:

- All options have a centre two-way left-turn lane which will improve traffic operations yet not result in excessive vehicle speeds and passing like a four-lane section
- All options will feature centre medians to calm traffic and create pedestrian crossing areas
- All options except Options 1 and 5 provide a dedicated space for pedestrians and cyclists physically separated from motor vehicles
- Options 3A and 4A don’t have pedestrian and cyclist facilities on both sides of Mohawk Road but will impact fewer trees than Options 2, 3B and 4B
- Option 4A will not require (expensive) relocation of an overhead utility line

This preferred alternative conceptual plan is presented in Appendix F.

Each activity of the technically preferred alternative proposed works was evaluated based on its potential to impact the natural environment. The duration, frequency, permanence, and extent of effect were assessed to determine the magnitude of potential effect if no mitigation measures were in place. Where the effect was not 'None', mitigation measures were recommended. An assessment of residual magnitude of effect with the mitigation measures in place was then re-evaluated. Where the residual effect was 'Moderate' or 'Severe', compensation measures were recommended. The impact assessment results are provided in Table 2.

Table 2. Impact Assessment of Proposed Works

Activity	Potential Impacts	Duration	Frequency	Permanence	Extent	Magnitude of Effect without Mitigation	Recommended Mitigation Measures	Residual Magnitude of Effect with Mitigation	Required Compensation
Pre-construction Phase									
Vegetation clearing for site preparation	Potential loss of 25 individual public trees in the landscape context Potential injuries of 58 other trees	Long-term	Singular event	Permanent	Limited to the site	Minor	• Limit removal of trees to the minimum; i.e. preferred pruning of individual branch and root when less than 30% of the crown or root system is impacted • Implementation of the mitigation measures proposed in section 6 of CIMA+ Tree Management Plan (September 2019) to protect the trees to be retained	Minor	None
	Loss of some nesting habitat for birds	Long-term	Singular event	Permanent	Limited to the site	Minor	• Tree removals should occur between September 1 and March 31 to protect the breeding bird period	Minor	None
Construction Phase									

Activity	Potential Impacts	Duration	Frequency	Permanence	Extent	Magnitude of Effect without Mitigation	Recommended Mitigation Measures	Residual Magnitude of Effect with Mitigation	Required Compensation
Operation of construction machinery	Generation of localized disturbance to wildlife from noise and dust	Short-term	Singular event	Temporary	Limited to the site	Minor	• Construction should be conducted during allowable periods according to the City's noise by-law • Machinery should be maintained in good condition with appropriate exhaust controls • Machinery should be kept clean of excessive dirt and debris	Minor	None
Stockpiling of construction materials	Potential for run-off into roadside ditches.	Short-term	Singular event	Temporary	Affects adjacent areas	Moderate	• Prepare Erosion and Sediment Control Plan (ESCP) to avoid sediment from entering the ditches • Stockpiles are to be located outside of existing ditches • Stockpiles of erodible material are to be stabilized during inclement weather events • Remove all construction materials from the site upon project completion	Minor	None
Post-Construction Phase									

Activity	Potential Impacts	Duration	Frequency	Permanence	Extent	Magnitude of Effect without Mitigation	Recommended Mitigation Measures	Residual Magnitude of Effect with Mitigation	Required Compensation
Operation of the road	Road-related wildlife mortality	Long-term	Continuous	Permanent	Limited to the site	Minor	• None required – traffic volumes and road-related mortality were not previously identified as an issue for wildlife in the area	Minor	None

6. Policy and Legislation Compliance

6.1 Federal Legislation

6.1.1 Migratory Birds Convention Act

The *Migratory Birds Convention Act* regulates the protection and conservation of migratory birds as populations and individuals, and also protects their nests. The Act applies to any areas that provide potential for nesting habitat of migratory birds.

Section 6 of the Migratory Bird Regulations made under the Act states that no person shall disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird except under authority of a permit.

Portions of the Study Area provide nesting opportunities for migratory birds; therefore, the provisions of this Act apply. Provided that tree removals occur between September 1 and March 31, the Project will be in compliance with the Migratory Birds Convention Act.

6.1.2 Species at Risk Act

The federal *Species at Risk Act* purposes are to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened. In the Study Area, this Act is applicable to all migratory birds and fish species identified in Schedule 1.

The Red-headed Woodpecker is a migratory bird and it is identified in Schedule 1 as a Threatened species. As such, should it be observed within the Study Area, every individual and its eggs as well as its residence (nest) is protected and a permit under sections 32 and 33 of this Act must be obtained from Environment and Climate Change Canada if the project could kill, harm, harass an individual or damage or destroy its residence.

While this species as not yet a legal critical habitat being protected, a proposed definition has been presented in its proposed recovery strategy (ECCC, 2019):

> Areas containing critical habitat for Red-headed Woodpecker are delineated from observations (as described above) as follows:

i. when the observation consists of a nest cavity location (during the breeding season only), an area with a radius of 200 m centered on the observation location: radius of 190 m to include the breeding pair's territory, plus 10 m to account for location accuracy;
OR
ii. when the observation is of an individual or individuals (i.e. non-nest observations, during either breeding and/or wintering season), an area with a radius of 600 m centered on the observation (human observer) location: 200 m to account for the maximum likely distance between the observer and the bird, plus 10 m to account for location accuracy of observer, plus 380 m to include the diameter of the territory, plus 10 m to include a potential nest/roost tree's dripline

As per Figure C-3S of this document, critical habitat has been identified as present within the 10 x 10 km Standardized UTM grid squares covering the Study Area. Once legally in force through a ministerial order, a permit would also be required under section 58 if the project would destroy any part of the critical habitat described in the ministerial order.

6.2 Provincial Legislation

6.2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) was issued under Section 3 of the Planning Act and is applicable province-wide to all planning decisions. The Study Area is located in Ecoregion 7E.

The assessment conducted for this project has not identified impacts to natural heritage features covered under the PPS located within or directly adjacent to the Study Area. Therefore, the project is in compliance with the PPS.

6.2.2 Conservation Authorities Act

The Conservation Authorities Act was enacted to provide for the organization and delivery of programs and services that further the conservation, restoration, development and management of natural resources in watersheds in Ontario. Under Section 21 of the Act, Conservation Authorities have the power to study and investigate the watersheds of their jurisdictions and to determine programs whereby the natural resources of the watershed may be conserved, restored, developed and managed.

Based on regulation mapping, no portions of the Study Area are regulated by the HCA. Therefore, Ontario Regulation 161/06 does not apply. The project will not require a permit from the HCA.

6.3 Municipal Legislation

6.3.1 City of Hamilton Official Plan

City of Hamilton Official Plan section 2.11 defines policies applicable to tree and woodland protection. Section 2.11.3 specifically identifies that: “Where the City is undertaking infrastructure work, existing woodland resources shall be protected and preserved, where feasible. If it is necessary for infrastructure works to destroy any trees, excluding trees that are listed as *threatened or endangered species***,** the City shall endeavour to compensate by re-planting on site and/or planting trees elsewhere.”

6.3.2 City of Hamilton Public Tree Preservation and Sustainability Policy

This policy and the City of Hamilton Public Tree By-law 15-125 are protecting all public trees within City of Hamilton limits. However, although the 25 trees expected to be removed as part of this project are all public tree, these legislative tools only apply to work not subject to a *Planning Act* process and therefore are not applicable to this project.

6.3.3 Town of Ancaster By-law no. 2000-118

While the Town of Ancaster is amalgamated with the City of Hamilton since 2001, its By-law no. 2000-118 protecting private trees is still in force. However, this By-law is not applicable to activities proposed by a municipality or local board and therefore is not applicable to this project.

7. Summary and Conclusions

7.1 Significant Natural Environment Features

- The Red-headed Woodpecker potential habitat has been identified within the Study Area. As this species and its residence are protected under the federal *Species at Risk Act*, additional bird surveys are recommended previously to construction works to confirm the absence of this species from the works area.

7.2 Potential Impacts

- Potential loss of 25 public individual trees in the landscape context and potential injuries to 58 other trees.

- Loss of some nesting habitat for birds
- Generation of localized disturbance to wildlife from noise and dust
- Potential for run-off into ditches during precipitation events
- Road-related wildlife mortality

7.3 Recommended Mitigation Measures

- Limit removal of trees to the minimum; i.e. preferred pruning of individual branch and root when less than 30% of the crown or root system is impacted
- Implementation of the mitigation measures proposed in section 6 of CIMA+ Tree Management Plan (September 2019) to protect the trees to be retained
- Tree removals should occur between September 1 and March 31 to protect the breeding bird period
- Vegetation clearing should avoid spring and summer periods when local wildlife are most active and sensitive to disturbance and loss of habitat
- Construction should be conducted during allowable periods according to the City's noise by-law
- Machinery should be maintained in good condition with appropriate exhaust controls
- Machinery should be kept clean of excessive dirt and debris
- An erosion and sediment control plan (ESCP) should be developed to avoid run-off from entering the ditches
- Stockpiles of erodible material are to be stabilized during inclement weather events
- Remove all construction materials from the site upon project completion

7.4 Compensation Requirements

Compensation in the form of re-planting on site and/or planting trees elsewhere is required for the loss of 25 individual public trees. This compensation requirement shall be completed during the project detailed design and construction phases.

7.5 Permits and Approvals

None required, unless the presence of the Red-headed Woodpecker, its residence or its critical habitat has been identified within the work area. This assessment needs to be completed during the project detailed design.

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Town of Ancaster. By-law no. 2000-118

A

Appendix A

Records of Correspondence

Lauren Cymbaly

From: ESA Guelph (MNRF) <ESAGUELPH@ontario.ca>
Sent: Wednesday, August 15, 2018 12:33 PM
To: Lauren Cymbaly
Cc: Jennifer Haslett; Phil Weber
Subject: RE: SAR Information Request - Mohawk Road EA
Attachments: InfoRequestResponse_GuelphOffice_MohawkRdEA_Hamilton.pdf; SAR LIST CITY OF HAMILTON - AUG 2018.pdf

Hi Lauren

In response to your request for natural heritage information, please see the attached letter from the Ministry of Natural Resources & Forestry (MNRF), Guelph District Office.

Best regards,

Anne Marie

Anne Marie Laurence
Management Biologist
Ministry of Natural Resources & Forestry
Guelph District
(519) 826-4132

From: Lauren Cymbaly [mailto:Lauren.Cymbaly@cima.ca]
Sent: June-20-18 6:47 PM
To: ESA Guelph (MNRF)
Cc: Jennifer Haslett; Phil Weber
Subject: SAR Information Request - Mohawk Road EA

To whom this may concern,

Please see attached for our formal information request for Species at Risk data for evaluation in the Natural Heritage Assessment/Impact Assessment for the Mohawk Road Schedule C class EA.

If you have any questions regarding the project, please don't hesitate to contact us anytime.

Best regards,
Lauren

LAUREN CYMBALY, M.E.S.
Environmental Professional

T 905 697-4464 ext. 6931
55 King Street East Bowmanville Ontario L1C 1N4 CANADA

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Ministry of Natural Resources And Forestry

Ministère des Richesses naturelles et des Forets

Guelph District
1 Stone Road West
Guelph, Ontario
N1G 4Y2

Telephone: (519) 826-4955
Facsimile: (519) 826-4929

August 15, 2018

Ms. Lauren Cymbaly
Cima Canada Inc.
lauren.cymbaly@cima.ca

RE: MOHAWK ROAD ENVIRONMENTAL ASSESSMENT – MCEA PHASES 3 & 4 CITY OF HAMILTON

Dear Ms. Cymbaly

The Ministry of Natural Resources and Forestry (MNRF), Guelph District Office, has reviewed the natural heritage information available for the above-noted property and surrounding area (the "study area"), and offers the following comments:

WETLANDS

The Ministry notes that there are no provincially significant wetlands (PSWs) within the study area.

AREAS OF NATURAL AND SCIENTIFIC INTEREST

The Ministry notes that there are no provincially significant Areas of Natural and Scientific Interest (ANSIs) within the study area.

SPECIES AT RISK

There are records in the area for the following species at risk (SAR):

- Unisexual Ambystoma (Jefferson dominated population) *(Ambystoma laterale – (2) jeffersonianum)* (Endangered)
- American Chestnut *(Castanea dentata)* (Endangered)
- Butternut *(Juglans cinerea)* (Endangered)
- Yellow-breasted Chat *(Icteria virens)* (Endangered)
- Northern Myotis *(Myotis septentrionalis)* (Endangered)
- Little Brown Myotis *(Myotis lucifugus)* (Endangered)
- Louisiana Waterthrush *(Seiurus motacilla)* (Threatened)

Threatened and Endangered Species receive both individual species and habitat protection under the *Endangered Species Act, 2007* (ESA). SAR habitat prescribed under regulation is listed in Ont. Reg. 242/08 (https://www.ontario.ca/laws/regulation/080242).

Please be advised that because the province has not been surveyed comprehensively for the presence of listed species, the absence of a record does not necessarily indicate the absence of SAR from an area. To determine the presence of SAR for a given study area, the District's recommended approach is as follows:

I. Habitat Inventory

The Ministry recommends undertaking a comprehensive botanical inventory of the entire area that may be subject to direct and indirect impacts from the proposed activity. The vegetation communities should be classified as per the "Ecological Land Classification (ELC) for Southern Ontario" system, to either the "Ecosite" or "Vegetation Type" level. For aquatic habitats in the study area, we recommend that you collect data on the physical characteristics of the waterbodies and inventory the riparian zone vegetation, so that these habitats can be classified as per the Aquatic Ecosites described in the ELC manual.

II. Potential SAR within the Study Area

A list of SAR that have the potential to occur in the area can be produced by cross-referencing the ecosites described during the habitat inventory with the habitat descriptions of SAR known to occur within the planning area. The list of SAR known to occur in the **CITY OF HAMILTON** is attached for your reference. The species-specific COSEWIC status reports (https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html) are a good source of information on habitat needs and will be helpful in determining the suitability of the study areas ecosites for a given species.

Please note that the Species at Risk in Ontario (SARO) List is a living document that is periodically amended as a result of species assessment and re-assessments conducted by the Committee on the Status of Species at Risk in Ontario (COSSARO). The SARO List can be accessed on the following webpage: https://www.ontario.ca/environment-and-energy/species-risk-ontario-list.

COSSARO also maintains a list of species to be assessed in the future. It is recommended that you take COSSARO's list of anticipated assessments into consideration, especially when the proposed start date of an activity is more than 6 months away, or the project will be undertaken over a period greater than 6 months. This list can be viewed at: https://www.ontario.ca/page/how-comment-protecting-species-risk.

III. SAR Surveys

The Ministry recommends that each potential SAR identified under Step II is surveyed for, regardless of whether or not the species has been previously recorded in the area. The survey report should describe how each SAR was surveyed for, and provide a rationale for why certain species were not afforded a survey (e.g., habitat within the study area is not suitable for a specific SAR). Please note that some targeted surveys may require provincial authorizations (e.g., ESA permit or Wildlife Scientific Collector's Permit).

ADDITIONAL INFORMATION

Natural heritage features (e.g. wetlands, ANSIs) can be viewed for a given study area through the MNRF's "Make a Map" web application: https://www.ontario.ca/page/make-natural-heritage-area-map. Digital data layers can be obtained through the Land Information Ontario (LIO) geowarehouse https://www.ontario.ca/page/land-information-ontario.

Additionally, the MNRF recommends contacting the municipality and the conservation authority to determine if they have any additional information or records of interest for the study area.

Please be advised that it is your responsibility to comply with all other relevant provincial or federal legislation, municipal by-laws, other MNRF approvals or required approvals from other agencies. If your investigations reveal the presence of Threatened or Endangered species, please contact the MNRF at esa.guelph@ontario.ca for further direction.

I trust that the above information is of assistance.

Sincerely,

Anne Marie Laurence
Management Biologist

Hamilton

Date Generated: August-14-18

Amphibian	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Jefferson Salamander *Ambystoma jeffersonianum*	END	Species Protection and Habitat Regulation	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	Active: March – October Hibernates: October – March Breeding: Late March - Mid April	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Unisexual Ambystoma - Jefferson-dominated *Ambystoma laterale - jeffersonianum*	END	Species Protection and General Habitat Protection	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	Active: March – October Hibernates: October – March Breeding: Late March - Mid April	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Bird	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
Acadian Flycatcher *Empidonax virescens*	END	Species Protection and General Habitat Protection	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines.	Migrate South before Winter	Follow Breeding Bird Survey Protocol
Bald Eagle *Haliaeetus leucocephalus*	SC	N/A	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers. They roost in super canopy trees such as Pine.	Breed and Nest - April or May Some Migrate South when waterbodies freeze over	Follow Breeding Bird Survey Protocol
Bank Swallow *Riparia riparia*	THR	Species Protection and General Habitat Protection	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers.	Migrate South before Winter	Follow Breeding Bird Survey Protocol. Colony and Roost information should be recorded and submitted using Bird Studies Canada's Ontario Bank Swallow Project data forms (2010).
Barn Owl *Tyto alba*	END	Species Protection and Habitat Regulation	Generally prefer low-elevation, open country; often associated with agricultural lands, especially pasture. Nests are located in buildings, hollow trees and cavities in cliffs.	Active Year Round Some leave for the Winter	Follow Breeding Bird Survey Protocol Night surveys may be helpful as they are very vocal

Barn Swallow *Hirundo rustica*	THR	Species Protection and General Habitat Protection	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	Migrate South before Winter	Follow Breeding Bird Survey Protocol
Black Tern *Chlidonias niger*	SC	N/A	Generally prefer freshwater marshes and wetlands; nest either on floating material in a marsh or on the ground very close to water	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Bobolink *Dolichonyx oryzivorus*	THR	Species Protection and General Habitat Protection	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Canada Warbler *Cardellina canadensis*	SC	N/A	Generally prefers wet coniferous, decidiuous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	Arrive in Early May Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Cerulean Warbler *Setophaga cerulea*	THR	Species Protection and General Habitat Protection	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Chimney Swift *Chaetura pelagica*	THR	Species Protection and General Habitat Protection	Historically found in deciduous and coniferous, usually wet forest types, all with a well developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys	Nesting - Late April to Mid-May Migrate South in September or Early October	Chimney Swift Monitoring Protocol. Bird Studies Canada, March 2009

Common Nighthawk *Chordeiles minor*	SC	N/A	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops).	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Eastern Meadowlark *Sturnella magna*	THR	Species Protection and General Habitat Protection	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Eastern Whip-poor-will *Caprimlugus vociferus*	THR	Species Protection and General Habitat Protection	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	Nesting: May - July	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Eastern Wood-Pewee *Contopus virens*	SC	N/A	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Golden-winged Warbler *Vermivora chrysoptera*	SC	N/A	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
Henslow's Sparrow *Ammodramus henslowii*	END	Species Protection and General Habitat Protection	Generally found in old fields, pastures and wet meadows. They prefer areas with dense, tall grasses, and thatch, or decaying plant material	Migrate South for the Winter	Follow Breeding Bird Survey Protocol

King Rail *Rallus elegans*	END	Species Protection and General Habitat Protection	Generally this species requires large marshes with open shallow water that merges with shrubby areas	Breed from Late April to mid-May Migrate South for the Winter	Follow Marsh Monitoring Protocol.
Least Bittern *Ixobrychus exilis*	THR	Species Protection and General Habitat Protection	Generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants	Migrate South for the Winter	Follow Marsh Monitoring Protocol; 10 day window of male calling (variable timing). Does not respond well to playback. Very difficult to detect.
Louisiana Waterthrush *Seiurus motacilla*	THR	Species Protection and General Habitat Protection	Generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps	Migrate South for the Winter	Follow Breeding Bird Survey Protocol or Marsh Monitoring Protocol
Peregrine Falcon *Falco peregrinus*	SC	N/A	Generally nest on tall, steep cliff ledges adjacent to large waterbodies; some birds adapt to urban environments and nest on ledges of tall buildings, even in densely populated downtown areas.	Active Year Round - Lay Eggs around Easter Hatching occurs around Mother's Day Young fledge around Father's	Visit ideal habitat locations and listen/look for individuals in the vicinity.
Prothonotary Warbler *Protonotaria citrea*	END	Species Protection and General Habitat Protection	Generally found in the dead trees of flooded woodlands or deciduous swamp forests; Carolinia Zone	Migrate South for the Winter Eggs are laid from Late May - Early July	Follow Breeding Bird Survey Protocol
Red-Headed Woodpecker *Melanerpes erythrocephalus*	SC	N/A	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks	Active from May to September	Follow Breeding Bird Survey Protocol
Short-eared Owl *Asio flammeus*	SC	N/A	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	Active Year Round	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

Wood Thrush *Hylocichla mustelina*	SC	N/A	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	Migrate South for the Winter Arrive in Ontario in mid to late spring	Follow Breeding Bird Survey Protocol
Yellow-breasted Chat *Icteria virens*	END	Species Protection and General Habitat Protection	Generally prefer dense thickets around wood edges, riparian areas, and in overgrown clearings	Migrate South for the Winter Arrive in Ontario Early May	Follow Breeding Bird Survey Protocol

Bryophyte	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Spoon-leaved Moss *Bryoandersonia illecebra*	END	Species Protection and General Habitat Protection	Generally found in deciduous forests; found on soil that is in or near flat, low-lying, seasonally wet areas.	Active Year Round	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Best time to survey is during early Spring or late Fall when ground vegetation is minimal

Fish	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
American Eel *Anguilla rostrata*	END	Species Protection and General Habitat Protection	All fresh water, estuaries and coastal marine waters that are accessible to the Atlantic Ocean; 12-mile Creek watershed and Lake Ontario	Active Year Round	Electrofishing For information please contact your local MNRF office, CA or DFO
Grass Pickerel *Esox americanus vermiculatus*	SC	N/A	Generally occur in wetlands with warm, shallow water and an abundance of aquatic plants; occur in the St. Lawrence River, Lake Ontario, Lake Erie, and Lake Huron	Spawn from late March to early May	For information please contact your local MNRF office, CA and/or DFO
Northern Sunfish *Lepomis peltastes*	SC	N/A	Shallow vegetated areas of quiet, slow flowing rivers and streams, as well as warm lakes and ponds, with sandy banks or rocky bottoms.	Spawning occurs in June and July	For information please contact your local MNRF office, CA and/or DFO

Redside Dace *Clinostomus elongatus*	END	Species Protection and Habitat Regulation	Generally found in pools and slow-moving areas of small headwater streams with a moderate to high gradient	Spawning occurs in May Timing Window is Coldwater - June 1 - September 15	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Silver Shiner *Notropis photogenis*	THR	Species Protection and General Habitat Protection	Generally prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients	Spawning occurs in May and June	For information please contact your local MNRF office, CA and/or DFO

Insect	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Monarch Butterfly *Danaus plexippus*	SC	N/A	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces	Usually migrate south in late September and October	Watch for adults along roadsides and in open fields. Caterpillars feed on milkweeds: Common milkweed grows in open disturbed habitats (fields, roadsides, etc) and swamp milkweed grows in wet habitats (along streams, lakes, marshes) Adults can be spotted from a distance; caterpillars must be looked for carefully on the host plant.
Mottled Duskywing *Erynnis martialis*	END	Species Protection and General Habitat Protection	Generally inhabits a range of grassland, shrubland, and savanna habitats that contain well drained soils and the presence of its host plants Prairie Redroot (Ceanothus herbaceus) or New Jersey Tea (Ceanothus americanus).	Adult butterfly emerges from pupa in late May	Watch for adults near host plants or search for caterpillars on the host plant Adults can be spotted from a distance; caterpillars must be looked for carefully on the host plant.
West Virginia White *Pieris virginiensis*	SC	N/A	Generally prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort (Cardamine diphylla), which is a small, spring-blooming plant of the forest floor.	Adult butterfly emerges from pupa in late March; flies only in April and May	Watch for adults within moist, deciduous woodlands Caterpillars feed on the two-leaved toothwort: Toothwort grows in damp, open, rich hardwood woodlands and blooms from April to June. Adults can be spotted from a distance; caterpillars must be searched for carefully by checking host plant

Mammal	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol

American Badger *Taxidea taxus*	END	Species Protection and Habitat Regulation	Generally prefers open habitats, whether natural (grasslands) or man-made (agricultural fields, road right-of-ways, golf courses).	Breed: Late Summer Semi-dormant over Winter	Determine if soils are suitable (sandy or loamy) Dens and Woodchuck burrows should be surveyed for use
Eastern Small-footed Myotis *Myotis leibii*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark.	Hibernates in caves and mines during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Little Brown Myotis *Myotis lucifugus*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh).	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Northern Myotis *Myotis septentrionalis*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Often asssociated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Tri-colored Bat *Perimyotis subflavus*	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Can be in trees or dead clusters of leaves or arboreal lichens on trees. May also use barns or similar structures.	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
Woodland Vole *Microtus pinetorum*	SC	N/A	Generally associated with deciduous forests in areas of soft, friable, often sandy soil beneath deep humus, where it can burrow easily.	Active Year Round	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

Mollusc	SARO	Protection	Habitat Information	Timing Windows	Survey Protocol
Eastern Pondmussel *Ligumia nasuta*	Speci	N/A	Generally inhabit sheltered areas of lakes or slow streams in substrates of fine sand and mud	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008).
Lilliput *Taxolasma parvum*	END	Species Protection and General Habitat Protection	Found in a variety of habitats including small to large rivers, wetlands, shallows of lakes, ponds and reservoirs. They are common in soft substrates with over 50% of the substrate type comprised of sand and a mud/muck/silt combination. Typically occur with or near Green Sunfish, Bluegill, White Crappie, and Johnny Darter	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008): Print.
Rainbow *Villosa iris*	SC	N/A	Most abundant in shallow, welloxygenated reaches of small- to medium-sized rivers and sometimes lakes, on substrates of cobble, gravel, sand and occasionally mud.	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008): Print.
Plant	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**
American Chestnut *Castanea dentata*	END	Species Protection and General Habitat Protection	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils.	Flowers occur in Late Spring and Early Summer	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Perform detailed floristic inventory Look for distinictive fruits on the ground
American Columbo *Frasera caroliniensis*	END	Species Protection and General Habitat Protection	Most commonly associated with open deciduous forested slopes, thickets and clearings; grows in a variety of relatively stable habitats as well as on a wide variety of soils.	Germination and development of the rosette begin in early spring Flowers open in May Fruit production continues	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Look for spikes from last years flowers

American Ginseng *Panax quinquefolius*	END	Species Protection and General Habitat Protection	Grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock).	Flowering begins in June and continues until August The fruit develop from July to August and ripen in August and September	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Broad Beech Fern *Phegopteris hexagonoptera*	SC	N/A	Generally inhabits shady areas of beech and maple forests where the soil is moist or wet	The frond of the Broad Beech Fern appears towards the end of May	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Butternut *Juglans cinerea*	END	Species Protection and General Habitat Protection	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows	Flowers from April to June. Fruits reach maturity during the month of September or October	Walk slowly and systematically in grid fashion through suitable habitat pausing every 30 meters for a detailed scan of trees within sight. Areas with dense foliage or many saplings will require a more intensive survey to detect sapling butternut. Use Butternut Health Assessment Protocol if planning on removing trees.
Cherry Birch *Betula lenta*	END	Species Protection and General Habitat Protection	Generally grows in moist, well-drained soils, but it is also found on coarse-textured or rocky shallow soils.	Flowering occurs in the spring, before the leaves appear	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Eastern Flowering Dogwood *Cornus florida*	END	Species Protection and Habitat Regulation	Generally grows in deciduous and mixed forests, in the drier areas of its habitat, although it is occasionally found in slightly moist environments; Also grows around edges and hedgerows	Flowering occurs in mid-May, just as the leaves begin to develop. Fruit turns red at the end of summer.	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species Easiest to detect during Spring when in flower Also look for distinctive bark
Few-flowered Club-rush *Trichophorum planifolium*	END	Species Protection and Habitat Regulation	Generally found in Dry Fresh Oak deciduous forests and Dry Fresh Oak-Maple-Hickory deciduous forests (only found on RBG property).	Plants flower early before the forest canopy	Seaches for this species should only be done in March or April, when the species is most visible Walk slowly and systematically in grid fashion, pausing to scan for plants every 1 meters Distinguishing this species from similar species is difficult

Green Dragon *Arisaema dracontium*	SC	N/A	Generally grows in damp deciduous forests and along streams.	Flowering occurs in May and June	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Hoary Mountain-mint *Pycnanthemum incanum*	END	Species Protection and General Habitat Protection	Oak savannas and prairies, dry sites.	Flowering occurs in July	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Red Mulberry *Morus rubra*	END	Species Protection and General Habitat Protection	Generally grows in moist forest habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and bottom lands; Can grow in open areas such as hydro corridors	Flowering occurs when leaves emerge in late spring. Fruit emerges in Mid-July.	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from the similar White Mulberry Distinguishing Red Mulberry and the hybrid Red and White Mulberry will require the collection of leaves for generic testing, which requires a 17(2)(b) permit
White Wood Aster *Eurybia divaricata*	THR	Species Protection and General Habitat Protection	Generally grows in open, dry, deciduous forests. It has been suggested that it may benefit from some disturbance, as it often grows along trails.	Flowering occurs in early September, and sets fruit later in the month	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters Use a plant field guide to distinguish from similar species
Reptile	**SARO**	**Protection**	**Habitat Information**	**Timing Windows**	**Survey Protocol**

Blanding's Turtle *Emydoidea blandingii*	THR	Species Protection and General Habitat Protection	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	Eggs are laid in June, with hatchlings emerging in late September and early October.	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
Eastern Hog-nosed Snake *Heterodon platirhinos*	THR	Species Protection and General Habitat Protection	Generally prefer habitats with sandy, well-drained soil and open vegetative cover, such as open woods, brushland, fields, forest edges and disturbed sites. The species is often found near water.	Mating occurs in spring and in August and early September. Eggs are laid in June. Hatching occurs in late August or early September	In early spring, look for individuals near ideal hibernation sites During egg-laying period (June), look for nesting females in sandy areas in early morning and late evening. Rest of the season, survey intensively and systematically by flipping rocks
Eastern Musk Turtle *Sternotherus odoratus*	Speci	Species Protection and General Habitat Protection	Generally prefers shallow, slow-moving water where it typically walks along the bottom rather than swimming	Nests: Late May - Early July Basks under cover of floating vegetation	Best time to survey is during the spring emergence (April - mid-May) from hibernation They stage near hibernating sites and thermoregulate Survey on warm sunny calm days During the cooler times of the year survey on the warmest time of the day
Eastern Ribbonsnake *Thamnophis sauritus*	SC	N/A	Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	Hibernate: October - April Mating: Early Spring Hatching: Early Fall (September)	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

Northern Map Turtle *Graptemys geographica*	SC	N/A	Generally inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	Active: At night Hibernate: October - April Hatching: Late August - Early September	Scan shoreline in spring and partially submerged logs/rocks in summer for basking turtles Be aware that map turtles do not allow as close of approach as other turtles before leaving a basking site Snorkel in desired aquatic habitat
Snapping Turtle *Chelydra serpentina*	SC	N/A	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.	Nesting: Late May and June Hibernate: October - April	Scan offshore rocks and logs for basking turtles (10am-2pm) Snorkel in desired aquatic habitat Nesting Season: Search known or preferred nesting habitat areas for females
Spiny Softshell *Apalone spinifera*	END	Species Protection and General Habitat Protection	Generally prefer marshy creeks, swift-flowing rivers, lakes, impoundments, bays, marshy lagoons, ditches and ponds near rivers	Lay eggs in June or July Hibernate over winter	Best time to survey is during nesting season when females are active laying eggs Visual searches should be conducted in appropriate habitat

ONTARIO MINISTRY of NATURAL RESOURCES and FORESTRY | GUELPH DISTRICT OFFICE
1 Stone Road West, Guelph, Ontario, N1G 4Y2 esa.guelph@ontario.ca

B

Appendix B

Photographic Log

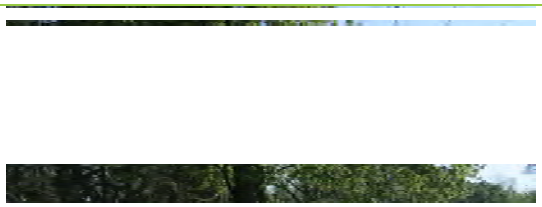
Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
1	05/24/2018	W
Description		
View of lands within the ROW and associated natural and built features on the south side of Mohawk Road, just west of Cayuga Avenue.		

Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
2	05/24/2018	S
Description		
View of unmanaged residential greenspace present on the south side of Mohawk Road, just west of Cayuga Avenue (17.584272.4786917).		

Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
3	05/24/2018	W
Description		
View of the existing ROW and associated landscape and cultural features.		

Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
4	05/24/2018	E
Description		
View of the existing ROW and associated landscape and cultural features on the south side of Mohawk Road, just east of Lime Kiln Road / McNiven Road.		

Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
5	05/24/2018	E
Description		
View of the ROW and associated landscaping and cultural features located on the north side of Mohawk Road at the east end of the Study Area.		



Site Location		
Mohawk Road from Lime Kiln Road to Filman Road, Hamilton, Ontario		
Photo #	**Date**	**Cardinal Direction**
6	05/24/2018	E
Description		
View of the ROW, drainage ditch and associated landscaping and cultural features located on the north side of Mohawk Road at the east end of the Study Area.		

F-2

Appendix F-2

Tree Management Plan

City of Hamilton

Tree Management Plan

September 2019

C11-B000941

SUBMITTED BY CIMA CANADA INC.
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Bowmanville, ON L1C 5M2
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CONTACT
Lisa Cullen
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City of Hamilton

Tree Management Plan

Mohawk Road EA

Project no C11-B000941

PREPARED BY: **Greg Bunker, OALA, ISA Certified Arborist**
Landscape Architect

VERIFIED BY: _____
Lisa Cullen, OALA, ISA Certified Arborist
Associate Partner

CIMA+
415 Baseline Road West, 2nd Floor
Bowmanville, Ontario L1C 5M2

September 2019

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4. Summary and Recommendations 6

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Appendix A – Tree Inventory Drawings TI-1 to TI-3, Tree Inventory Table

1. Introduction

CIMA+ has been retained by the City of Hamilton (the City) to review the trees potentially affected by a proposal to widen and urbanize Mohawk Road between Lime Kiln Road/McNiven Road to Filman Road in Ancaster. This report serves as part of the documentation required for the Schedule 'C' Municipal Class Environmental Assessment required for this project, and will help determine the project's potential impacts as well as general recommendations to avoid and/or mitigate tree loss and injury.

2. Limitations

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in the Council of Tree and Landscape Appraisers *Guide for Plant Appraisal, 9th Edition* (2000). These techniques include visual examination of above ground parts of each tree or trees in each group. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year in which the inspection took place.

Since trees are living organisms, their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be re-assessed periodically to identify changes in condition. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

CIMA+ has prepared this report for the sole use of the client. Any use of this report by a third party, as any decision based on this report, is the singular responsibility of the third party. CIMA+ will not be held responsible for eventual damages towards a third party resulting from decisions taken, or based, on this report.

3. Methodology

An ISA Certified Arborist from CIMA+ conducted a site visit on August 28, 2018 to complete the following inventory and assessment.

Trees and tree groups were located within and adjacent to the existing right-of-way (ROW) and uniquely numbered. Trees were identified, measured, and assessed for condition. The assessment methodology is outlined further below, and follows the tree assessment requirements outlined by the City. The tree inventory table containing this information are included in Appendix A along with drawings TI-1 through TI-3 that show the the locations of the numbered trees and tree groups surveyed.

3.1 Tree Size

Size refers to trunk diameter (caliper or diameter at breast height: DBH) measured in centimetres at 1.4 m above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked to codominant trunks, each trunk was measured or the diameter was measured under the flare and the approximate height of the measurement was noted.

The diameter spread (dripline) of each tree canopy is included to help determine possible injury and branch pruning that may be required as a part of the proposed work.

3.2 Observations

Several structural defects and health problems are included in the Comments section of the tree inventory and assessment table. Following is an explanation of the short forms used in the table:

GR Girdling roots
COD Codominant trunks or codominant leaders
NA Narrow branch angles
INCL Included bark
CRB Crossing branches
MBR Multiple branches from the same point of attachment
DPR Decay at pruning wounds
SMD Small dead branches
ADV Adventitious shoots
LEAN Cardinal direction of lean

These observations are defined below.

Structural defects are often insignificant when a tree is small, but can pose problems when the tree grows larger and the weight of branches put added stress on defects that can cause weakness. Larger trees also have the potential to cause more damage should they fail. The following is an explanation of some of the observations included in the inventory and assessment table, and how they can affect trees over time.

- *Adventitious shoots* are vigorous growth of shoots from pruning cuts, inner branches, or along the trunk that usually occur in response to stress.
- *Codominant leaders* (2 trunks or branches of approximately equal size) often have narrow branch angles, and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.
- *Crossing branches* are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.
- *Decay at pruning wounds* can occur when pruning (or other bark-penetrating abrasions) expose a tree's heartwood, which can then be affected by a rot-causing fungi. The decay

can lead to cavities and internal decay, and potentially affect the structural integrity of the tree.

- *Emerald Ash Borer* (EAB) refers to a species of beetle native to East Asia that feeds on all species ash trees *(Fraxinus* spp.*)* during its larval stage. Typical symptoms of infection include heavy seed set, dieback, splitting bark, and adventitious shoots. Almost all infected ash trees will die within a few years of infection.
- *Exposed surface roots* can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.
- *Frass* is the excrement of insect larvae, with an appearance similar to sawdust or small wood chips that can be seen at the base of a tree where wood boring insects are feeding. Frass can be an indicator of internal decay.
- *Fruiting bodies* are often recognized as mushrooms or conks on trees. Presence of fruiting bodies is a positive indicator of wood decay, but depending on the species of the fruiting body, the decay can be of little significance or an indicator of imminent failure. It is important to observe decay fungi during the season in which it is growing to accurately identify the species and consider the potential associated indications of the extent of decay.
- *Girdling roots* are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water, and inhibit structural anchorage.
- *Grapevines and dog-strangling vine* growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight. They also add weight that can make trees more susceptible to breakage during storms.
- *Included bark* is bark that has become embedded in a crotch where limbs join, and causes weakened branch attachments. As the trunk and branch increase in diameter, the bark of each stem in the tight crotch begin to push apart, increasing the likelihood of failure.
- A tree with a *lean* can be more susceptible to windthrow and soil failure*. Self-correcting lean refers* to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.
- *Live crown ratio* is the ratio of the live crown to the overall height of the tree. A low live crown ratio can develop when trees are growing close together in stands, or can be created by pruning or dieback. Low live crown ratio is associated with increased likelihood of failure, depending on the cause and site factors.
- When a tree has *multiple branches from the same point of attachment*, the branches usually have characteristics of weakly attached branches.
- *Narrow branch angles*, especially where there is included bark, can be a problem as trees grow larger because the inner wood is poorly attached.

- *Sapsucker holes* refers to holes in the trunk or branches made by birds in search of insects. This damage is a sign of insects in the tree, and can make trees more susceptible to other infection.
- *Small dead branches* are an indicator of crown dieback and can be an early sign of stress.
- *Suppressed* trees are growing under the canopies of neighbouring trees, which can diminish vigour and affect structural form.
- *Woundwood* is the thickened tissue growing around the edges of a wound. The rate of its development can be a sign of the tree's vigour.

The detailed observations made concerning tree species, size, and condition are included in the tree inventory and assessment table in Appendix A.

3.3 Tree Condition

Each tree was given a subjective rating for trunk integrity, canopy structure, and crown vigour, and an overall health condition rating of Good, Fair, Poor, or Dead. The following is a summary of how the ratings are determined:

- **GOOD (G):** dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects
- **FAIR(F):** 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects
- **POOR (P):** more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects
- **DEAD (D):** tree shows no signs of life

4. Summary and Recommendations

A total of 162 trees and tree groups were surveyed. Of these, five (5) trees were located on public property that are potential hazards to the public: Trees 29, 31, 32, 33, and 35. These were the only ash trees observed on site, and all are severely affected by Emerald Ash Borer (EAB). They suffer from at least 80% crown dieback, with mostly bare crowns and large scaffold branches overhanging the sidewalk to the north, and in some cases overhanging parked cars on private property to the south. Their DBHs range from 28 to 52 cm, and their spreads from 9 to 12 m. Regardless of the impacts of the proposed project on these trees, their removal is prudent because Ash trees affected by EAB tend to break more easily than other dead trees. See Table A1 and drawings TI-1 to TI-3 in Appendix A for further information about the locations and descriptions of these trees.

4.1 Tree Impacts and Compensation

A total of 58 trees are expected to be injured as a result of the proposed hardscape and/or grading though the TPZs as required for the road reconstruction. Injuries are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

A total of 25 trees are expected to require removal due to conflict with contruction zones along the roadway. Removals are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

Wher nothing is indicated in the tree impacts column, the tree is to be retained and no impacted is expected.

Compensation in the form of re-planting on site and/or planting trees elsewhere is required for the loss of 25 individual public trees. This compensation requirement shall be completed during the project detailed design and construction phases.

5. Protected Species

The *Migratory Birds Convention Act*, 1994 protects the nests of migratory birds. Trees to be removed from the site should be removed outside of the migratory bird-nesting window, the timing of which differs regionally across Canada as determined by Environment Canada. Following Environment Canada's guidelines, the window at this site is from April 1 to August 31. Trees may be removed during this restricted period only when trees are inspected for nests of protected bird species by a qualified avian biologist immediately prior to removal.

No protected tree species listed under the Endangered Species Act (2007) were found at this site.

6. Construction Management

The most typical construction damage to trees is root damage from compaction and severance. While the dripline of a tree's canopy is typically thought to be associated with the root area, the root zones can actually extend significantly beyond the dripline of the tree, sometimes up to 2 or 3 times the height of the tree. Some of the trees inventoried are growing close to the edge of the proposed construction and may be at risk of contact with, and damage from, heavy equipment.

Generally, to protect trees, grade changes and construction activities that could cause soil compaction should be kept away from trees as much as possible. If roots will be damaged by excavation equipment, it is better to cut roots cleanly with sharp pruning tools rather than allow them to be torn by large equipment. Clean cuts will help to minimize decay and entry points for disease. If branches are likely to hang in the way of passing equipment, the branches should be pruned by a qualified arborist to avoid tearing and undue injury to the tree.

Equipment and materials should not be stored near trees, and equipment should not be left idling where exhaust could burn foliage.

It is recommended that tree protection fencing be erected following the City's Tree Protection Zone Detail around trees at risk of injury. The project design drawings must show the City's Tree Protection Zone Detail as well as the Tree Preservation Fencing Detail and the Tree Preservation Techniques notes as per the City's Tree Preservation & Protective Measures for Trees Affected by Construction Policy (attached in Appendix B).

7. Certification and Closure

I certify that all the statements of fact in this assessment are true, complete, and correct to the best of our knowledge and belief, and that they are made in good faith.

I trust that this report meets your needs at this time. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Lisa Cullen, OALA, ISA
ISA Certified Arborist ON-0741A

Attachments:

Appendix A: TI-1 to TI-3 Tree Inventory Drawings (3 pp.) and Tree Inventory Table (5 pp.)

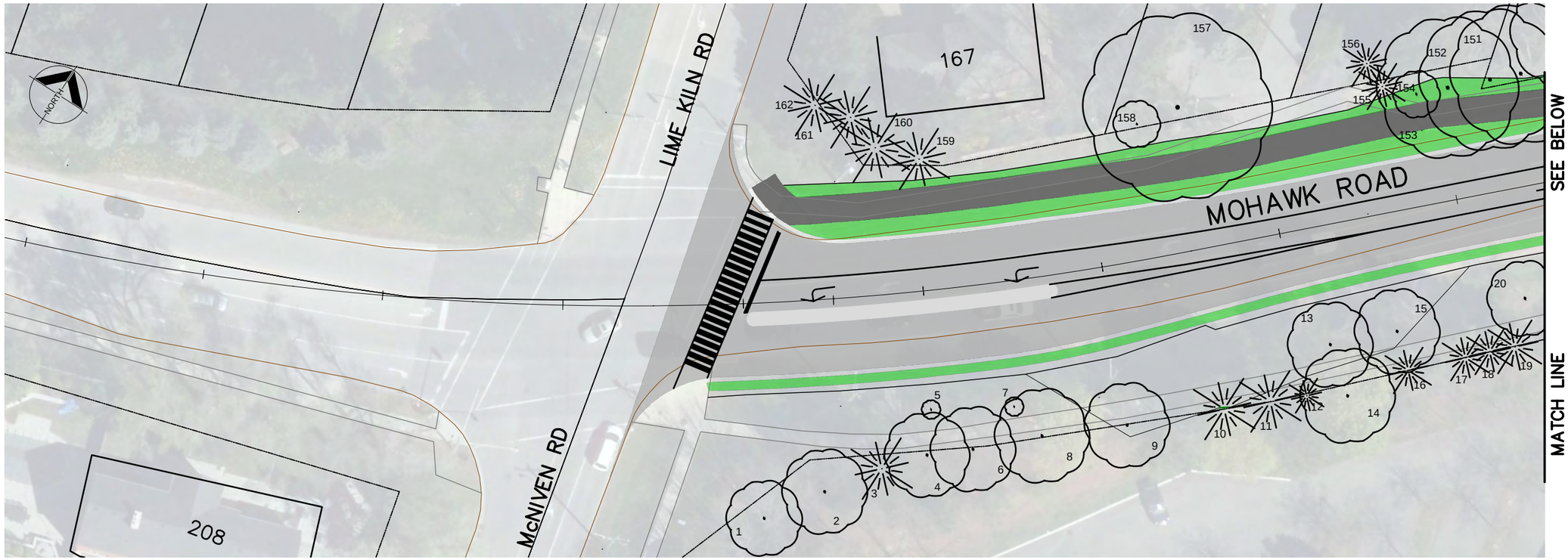
Appendix B: Tree Protection Zone Detail, Tree Preservation Fencing Detail, and Tree Preservation & Protective Measures for Trees Affected by Construction Policy

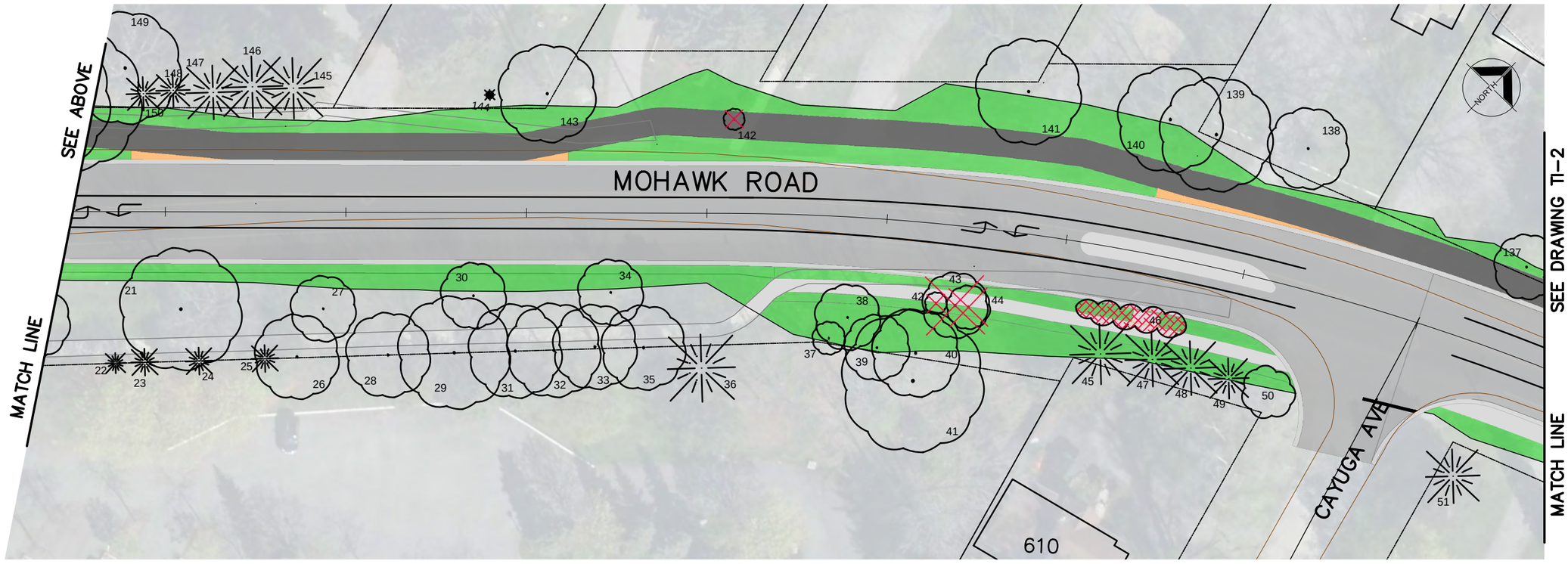
A

Appendix A

Tree Inventory Drawings TI-1 to TI-3

Tree Inventory Table





LEGEND

15 — EXISTING TREES WITH TREE INVENTORY NUMBERS (SEE TREE REPORT)

EXISTING TREES TO BE REMOVED

CIMA+

2nd Floor - 415 Baseline Road West, Bowmanville, ON L1C 5M2
Phone: 905-697-4464 www.cima.ca

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

ALL DIMENSIONS AND INFORMATION SHALL BE CHECKED AND VERIFIED ON THE JOB AND ANY DISCREPANCIES MUST BE REPORTED TO THE MUNICIPALITY BEFORE COMMENCING THE WORK. DRAWINGS ARE NOT TO BE SCALED.

No.	DATE	BY	ISSUES / REVISIONS

PROJECT:

Mohawk Road
Environmental Assessment from McNiven Road to HWY 403

Hamilton, Ontario

DRAWING:

TREE INVENTORY AND ASSESSMENT

DRAWN BY :	CHECKED BY :	PROJECT
L. MAY	G. BUNKER	B000941
DESIGNED BY :	APPROVED BY :	DRAWING No.
	L. CULLEN	
SCALE :	DATE :	TI-1
1:500	SEPTEMBER 2018	

Z:\Cima+CIT\Projects\CIT-CA\B000941-Hamilton_Mohawk-Rousseaux Road EA\400_DRAWINGS\B000941 Mohawk Road – TREE INVENTORY v000.dwg

B

Appendix B

Tree Protection Zone Detail,

Tree Preservation Fencing Detail, and

Tree Preservation & Protective Measures for Trees Affected by Construction Policy

Tree Protection Zone

All trees situated on City property are protected under provisions of City by-laws.
In order to protect trees within or near a construction site you must consider the following:

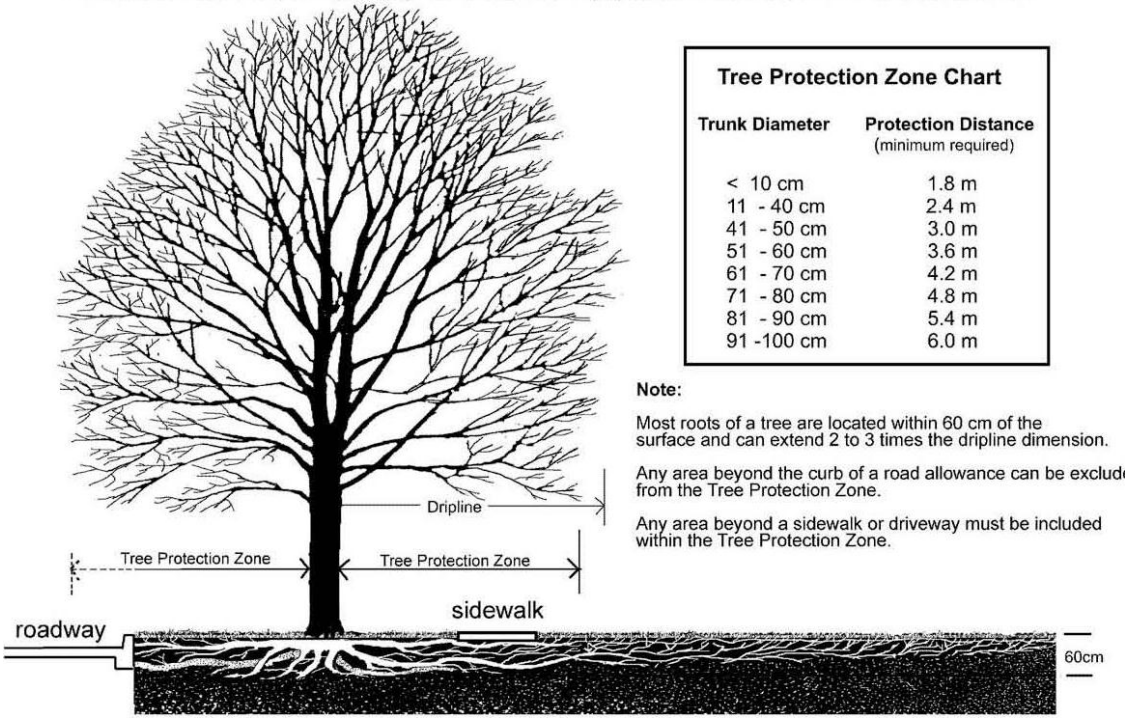
Use the chart below to determine the Tree Protection Zone.

Deliniate or fence off the Tree Protection Zone by means appropriate to the project.
e.g. caution tape for short duration, snow fencing or plywood hoarding for longer.

Avoid excavating within or near the Tree Protection Zone.

Within the Tree Protection Zone of a tree please remember:

- avoid any alteration or disturbance to existing grade;
- do not change grade by adding fill, excavating or scraping;
- do not store construction materials, soil, waste material or dispose of liquid material;
- if no other options for storing of excavated material is available, place soil on a tarp and avoid the base of the tree as much as possible.
- avoid the movement or parking of vehicles or equipment within the Tree Protection Zone.



Tree Protection Zone Chart

Trunk Diameter	Protection Distance (minimum required)
< 10 cm	1.8 m
11 - 40 cm	2.4 m
41 - 50 cm	3.0 m
51 - 60 cm	3.6 m
61 - 70 cm	4.2 m
71 - 80 cm	4.8 m
81 - 90 cm	5.4 m
91 -100 cm	6.0 m

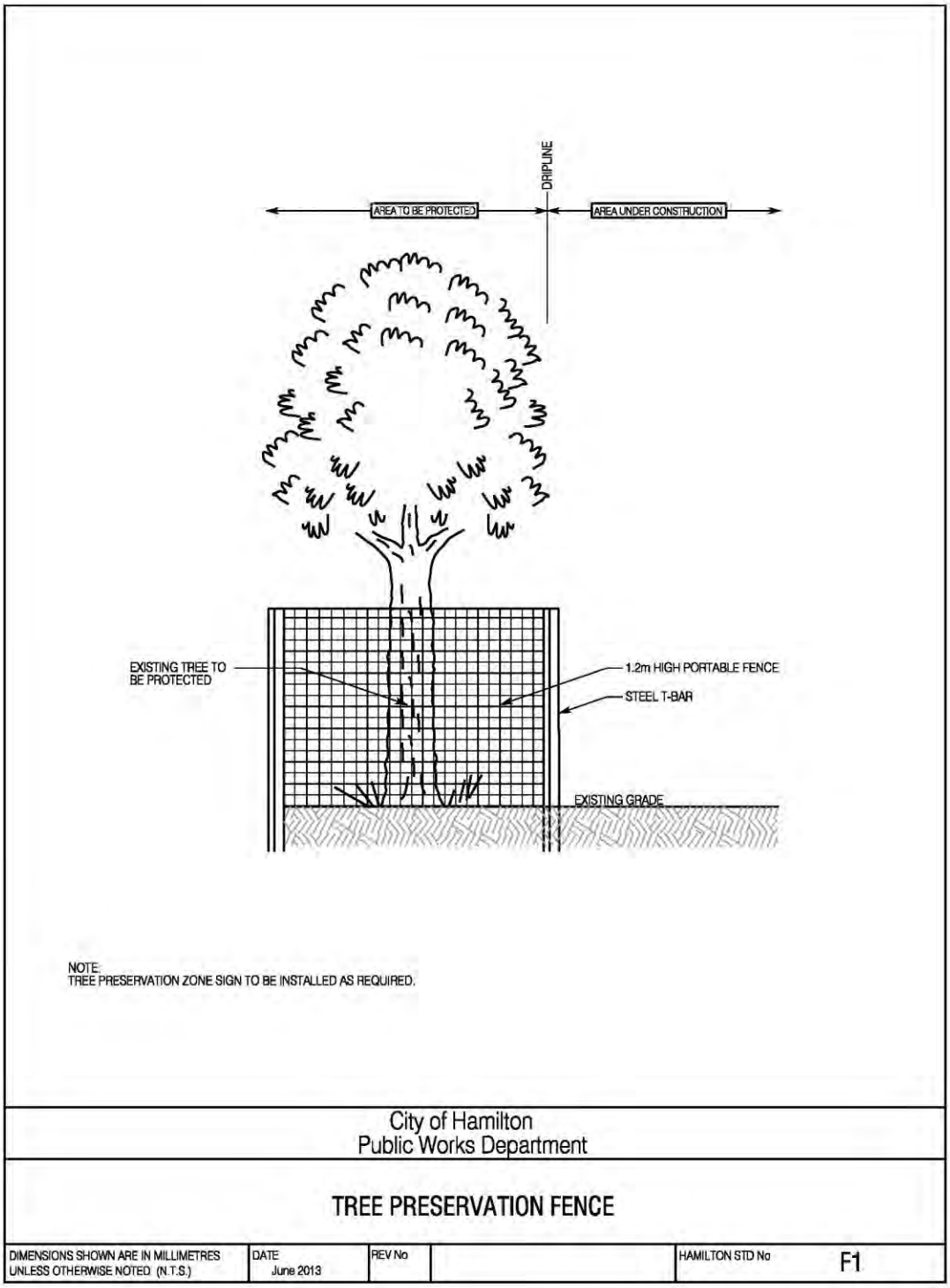
Note:

Most roots of a tree are located within 60 cm of the surface and can extend 2 to 3 times the dripline dimension.

Any area beyond the curb of a road allowance can be excluded from the Tree Protection Zone.

Any area beyond a sidewalk or driveway must be included within the Tree Protection Zone.

Tree Preservation Fencing



THE CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
OPERATIONS & MAINTENANCE DIVISION
Forestry & Horticulture Section

POLICY

SUBJECT: City of Hamilton Tree Preservation & Protective Measures For Trees Affected by Construction Policy

This policy regulations form part of the City of Hamilton Forestry Management Plan. In addition to the regulations listed in By-law 06-151 the provisions of this policy shall apply to all public trees under the jurisdiction of the City of Hamilton. All definitions listed under Section 1 of By-law 06-151 are deemed to have the same meaning and application in this Policy.

Planning Objectives

This policy seeks to provide additional preservation and protective measures for those trees which are affected by construction. The additional protective measures aim to conserve the vitality of the urban forest and tree health.

Application

In accordance with the protection policies provided to public trees under the "City of Hamilton Public Tree By-Law", the following regulations shall apply to all contractors, engineers, architects and citizens working or affecting work in the vicinity of municipally owned trees.

Approvals

Written permission must be obtained from the Director prior to commencing any development, construction, or activity within the dripline of municipally owned trees.

Reporting and Notification

All trees within the development areas are to be identified as public or private, and a tree management plan must be submitted for all trees on public property, prior to grading. This plan should appear in chart form and list all species, diameters at breast height (d.b.h.), proposed grade changes, property lines, proposed removals, relocations and trees to be preserved. The Director reserves the right to the final determination of which trees shall be preserved, removed, or relocated. All tree removals are subject to the provisions listed under By-law 06-151 and under the City of Hamilton Public Tree Removal Policy.

Protective Measures

1. All existing trees to remain on site, or on adjacent properties, shall be tagged and fully protected with fencing located beyond their dripline to the satisfaction of the Director. Tree protection zones may be expanded as required based on the species of the tree. These barriers are created to protect the roots, trunks and branches during development, as well as the understory and ground covers. Small lot by lot tree protection will require snow fencing with metal post enclosures. Long term development construction will require special paige wire fencing or plywood to a minimum height of five feet. The type of fencing to be used is

determined during the site inspection by the Director. Fences shall be located at a minimum of 0.5 times the crown radius of the tree from the dripline, 360 degrees around the perimeter of individual or clustered trees. Only areas within the tree protective fencing zone shall remain undisturbed and shall not be used for the storage of building materials, structures or equipment. This tree protection zone shall be completed prior to the commencement of site clearance, demolition, or any type of construction.

2. Surplus soil, equipment, vehicles, tools, debris or materials shall not be placed over the root systems of the trees within the tree protection zone. No contaminants shall be dumped or flushed where feeder roots of trees exist.

3. Tree roots typically spread well beyond the dripline of trees, up to 3.5 times the dripline radius, and are located predominantly within the top 30 cm of soil. As this area is not protected, activity should be kept to a minimum to prevent root damage and soil compaction. Where root systems of trees are exposed or damaged by construction work, the Director must be advised first before the roots are trimmed neatly and the area back-filled with topsoil.

4. Equipment shall not compact soil over the root zone of existing trees. To avoid damage to trees that are to be protected, access routes must be established away from protected areas. All access roads or pathways, regardless of how temporary, must be identified and approved by the Director.

5. Written permission must be obtained from the Director prior to commencing any work such as tunneling, torpedoing, digging or trenching within the dripline of any tree to minimize root injury, and to avoid soil compaction.

6. Wherever possible, avoid cutting surface roots. During excavation, if root cuts are necessary, it should be done quickly, making smooth flush cuts while supervised by an inspecting City of Hamilton Forestry representative. The roots shall be back-filled and watered before they have a chance to dry out. Where roots require removal, there may be a subsequent decline within the tree canopy. Branches should only be removed if dieback occurs.

7. Where limbs or portions of trees are damaged or must be removed to accommodate construction work, City of Hamilton Forestry personnel, in accordance with accepted arboricultural practices, will remove them. Measures shall be taken to prevent any further damage.

8. Where necessary, the trees will be given an overall pruning by the City of Hamilton Forestry personnel at appropriate stages during the construction process or development.

9. Unless authorized in writing by the Director, all individuals shall avoid disturbing original grades around trees in areas of the tree protection zone. In addition, road grades should match topography at the curb lines to maximize tree retention in boulevards and front yards.

10. If grades around protected trees are likely to change, the developer or their agents or contractors performing municipal operations for the City shall be required to take such precautions as dry welling, retaining walls and root feeding to the satisfaction of the Director.

11. At no time shall there be any placement, deposit, or storage of any stone, brick, sand, concrete, soil or any other material or equipment which may impede the free passage of water, air, or nutrients to the tree.

12. No cables, or ropes of any type shall be wrapped around or installed in, or on any trees.

13. Under no circumstances, should any part of the tree that is to remain after construction is completed, have signs or fences nailed to it, or survey markings or paint applied to the tree.

14. All vegetation within the tree protection zone, including trees, shrubs and grasses are to be watered, fertilized and maintained to an acceptable level as required.

15. New sidewalks, paving or asphalting must allow 1.5 m^2 of breathing space for tree roots, and must include, but not be limited to, such construction materials as interlocking stone and steel grating.

Inspections and Redress

1. The Director shall be notified to inspect all tree protection zones. These measures shall remain in effect until the completion of all work, at which time authorization from the Director must be obtained for the removal of the tree protection zone. The Director may, and shall, make periodic inspections while the tree protection zone remains in effect.

2. The Director must be notified immediately when any municipally owned tree is injured or destroyed during construction or development.

3. Any tree deemed by the Director, to have died or declined as a result of a construction related injury or stress within 24 months after the removal of the tree protection zone, will be removed by the City of Hamilton Forestry Section and suitable replacement trees will be planted. The cost of removal and replacement will be borne by the developer or contractor in accordance with the City of Hamilton Reforestation Policy – Municipally Owned Lands.

4. Prior to this final authorization, a site inspection will be performed to determine any deficiencies that may exist and recommend corrective measures to be followed. All departments shall ensure that the Forestry and Horticulture Section is contacted prior to the commencement of any work to arrange for a City of Hamilton Forestry Investigator to determine if any pre-existing damage is present, and catalogue the present condition of the tree.

5. During the time the tree protection zone remains in effect, the Director shall make periodic site inspections.

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CONTACT
Lisa Cullen
Lisa.Cullen@cima.ca
T 905 697 4464 ext. 6915

F-3

Appendix F-3

Preferred Option Conceptual Plan

CIMA+

T: 289-288-0287
400-3027 Harvester Rd, Burlington ON L7N 3G7 CANADA

SCALE
1:1000

0 10 20 40

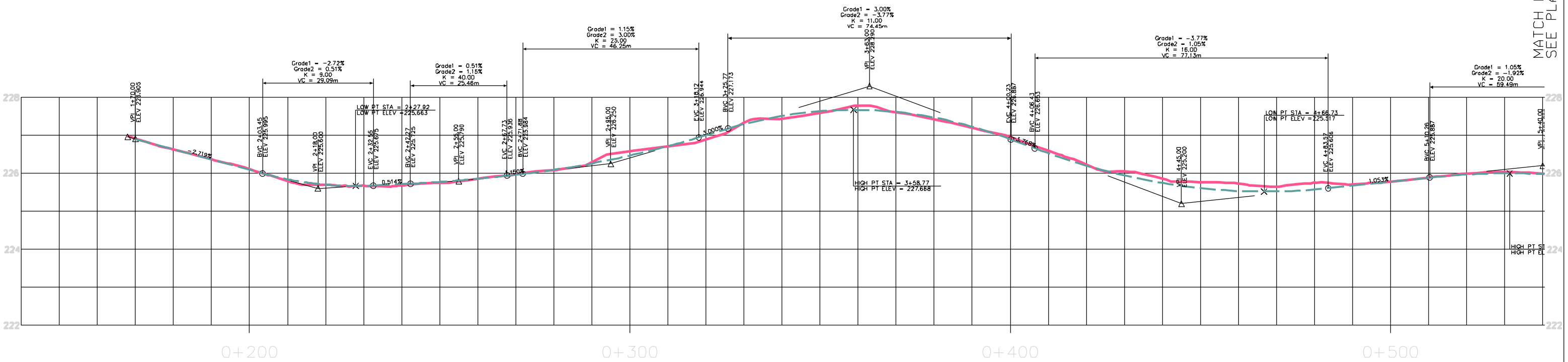
PREFERRED PRELIMINARY DESIGN – PLAN
FROM STA. 0+140 TO STA. 0+540

CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

LEGENDS:

- ASPHALT PAVEMENT
- MULTI-USE TRAIL
- CONCRETE SIDEWALK/CONCRETE MEDIAN
- SOD/GRASS
- CONCRETE CURB/GUTTER
- ASPHALT SPLASH PAD

PLATE
1



MATCH LINE - STA. 0+540
SEE PLATE 4

CIMA+
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SCALE
1:1000
0 10 20 40

PREFERRED PRELIMINARY DESIGN – PROFILE
FROM STA. 0+140 TO STA. 0+540

CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

LEGENDS:

PROPOSED PROFILE

EXISTING GROUND OF PROPOSED CENTRE LINE

PLATE
2

SEE PLATE 1
MATCH LINE- STA. 0+540

MATCH LINE- STA. 0+920
SEE PLATE 5

GREEN RAVINE DRIVE

MOHAWK ROAD

ALGONQUIN AVENUE

HIAWATHA BOULEVARD

POLE TO BE RELOCATED

GRADING LIMIT

3.0m MULTI-USE TRAIL

3.5m

TRAFFIC CALMING MEDIAN

0.5m SHOULDER

1.8m SIDEWALK

GRADING EASEMENT

1.5m SIDEWALK

1.0m SHOULDER (ASPHALT)

CIMA+

T: 289-288-0287
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SCALE
1:1000

0 10 20 40

PREFERRED PRELIMINARY DESIGN – PLAN
FROM STA. 0+540 TO STA. 0+920

CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

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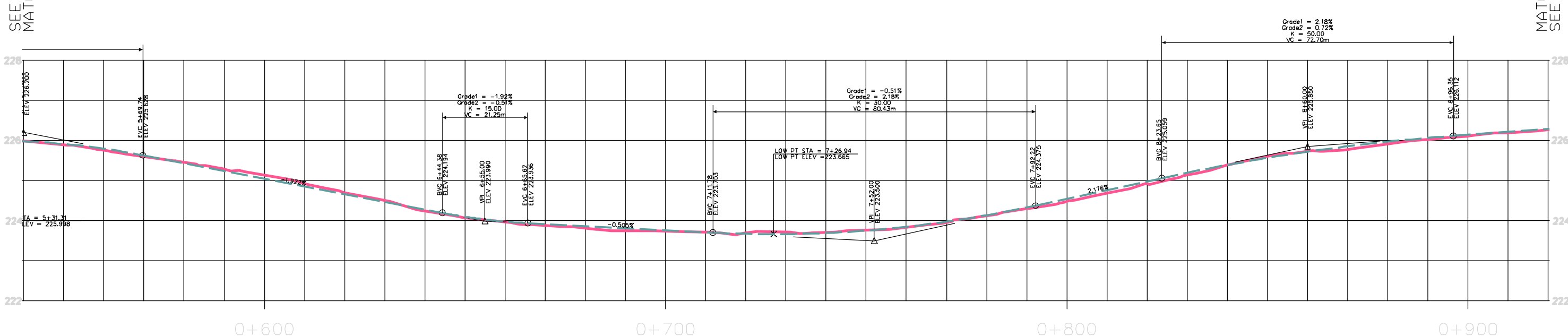
- MULTI-USE TRAIL
- CONCRETE SIDEWALK/CONCRETE MEDIAN
- SOD/GRASS
- CONCRETE CURB/GUTTER
- ASPHALT SPLASH PAD

PLATE
3

SEE PLATE 2
MATCH LINE- STA. 0+540

MATCH LINE- STA. 0+920
SEE PLATE 6



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SCALE
1:1000
0 10 20 40

PREFERRED PRELIMINARY DESIGN – PROFILE
FROM STA. 0+540 TO STA. 0+920

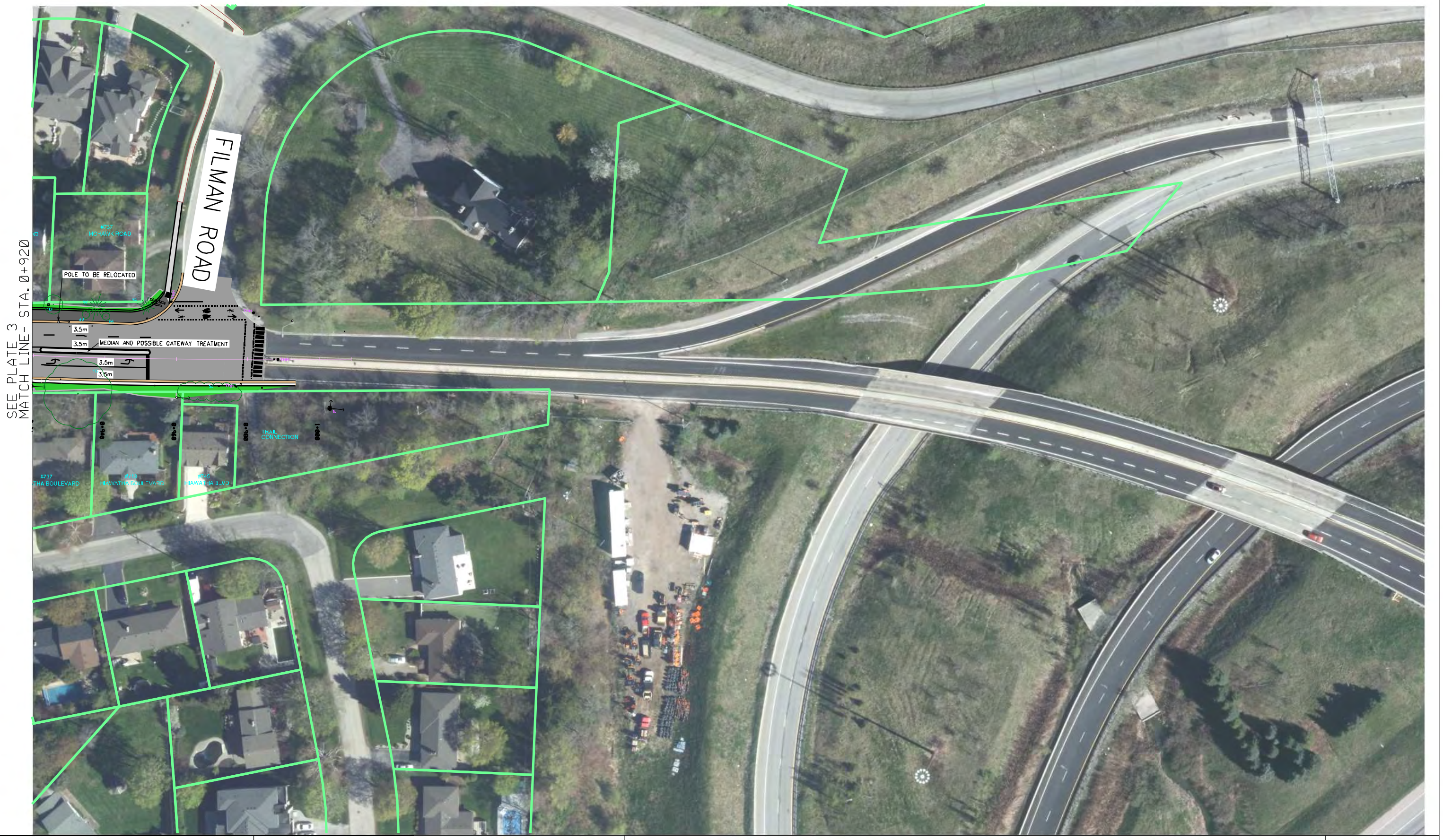
CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

LEGENDS:

PROPOSED PROFILE

EXISTING GROUND OF PROPOSED CENTRE LINE

PLATE
4



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400-3027 Harvester Rd. Burlington ON L7N 3G7 CANADA

SCALE
1:1000
0 10 20 40

PREFERRED PRELIMINARY DESIGN – PLAN
FROM STA. 0+920 TO STA. 1+000

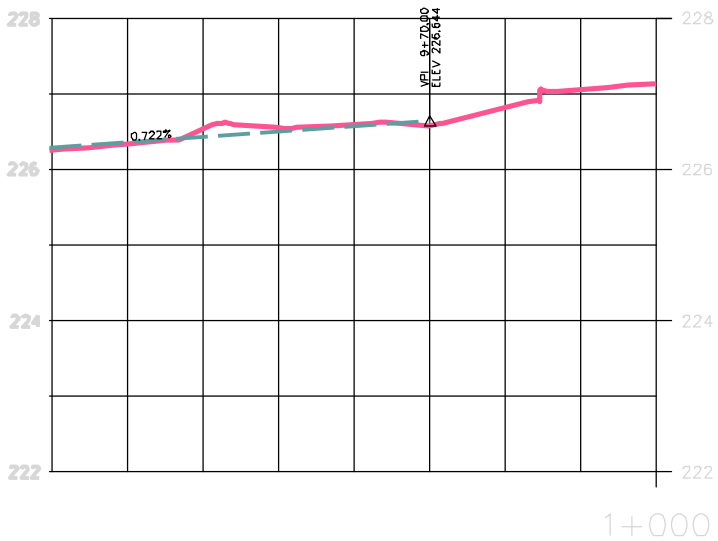
CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

LEGENDS:

- ASPHALT PAVEMENT
- MULTI-USE TRAIL
- CONCRETE SIDEWALK/CONCRETE MEDIAN
- SOD/GRASS
- CONCRETE CURB/GUTTER
- ASPHALT SPLASH PAD

PLATE
5

SEE PLATE 4
MATCH LINE- STA. 0+920



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T: 289-288-0287
400-3027 Harvester Rd, Burlington ON L7N 3G7 CANADA

SCALE
1:1000
0 10 20 40

PREFERRED PRELIMINARY DESIGN –PROFILE
FROM STA. 0+920 TO STA. 1+000

CITY OF HAMILTON
MOHAWK ROAD
CLASS ENVIRONMENTAL ASSESSMENT STUDY

LEGENDS:

PROPOSED PROFILE

EXISTING GROUND OF PROPOSED CENTRE LINE

PLATE
6

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