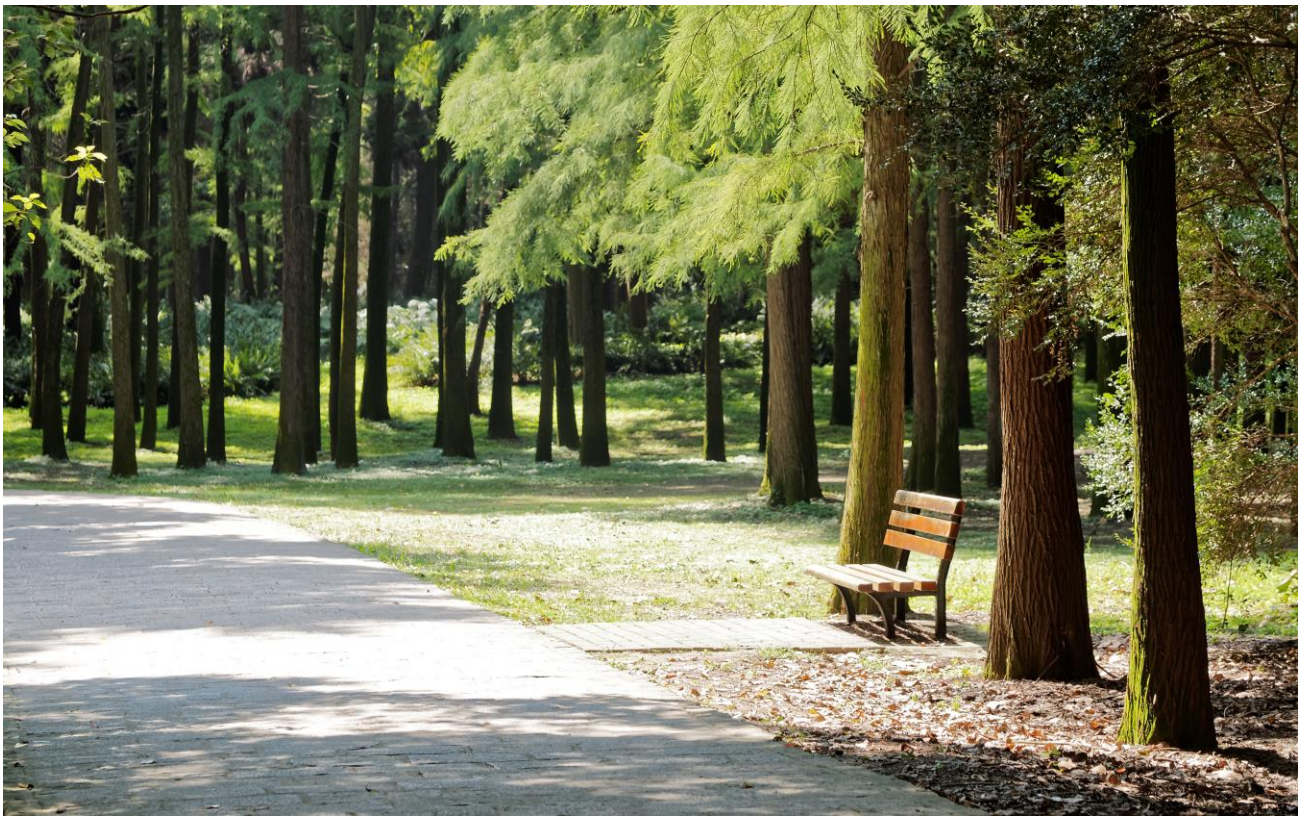
APPENDIX C: TECHNICAL SUPPORTING DOCUMENTS

APPENDIX C-3: ECOLOGY REPORT

PART 1/4



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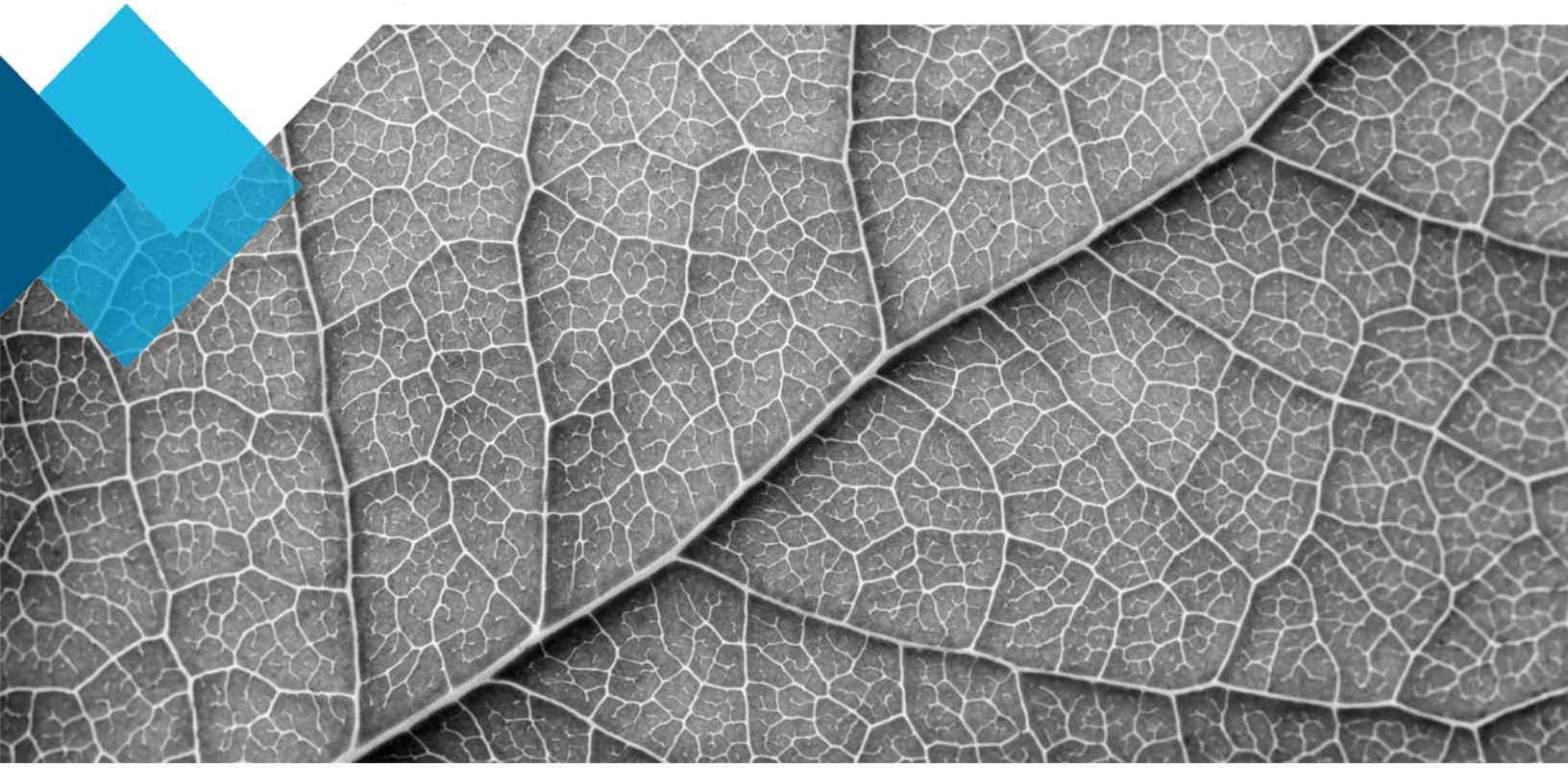
Hamilton LRT – Environmental Project Report Addendum

Ecology Update – Final Report

Steer Davies Gleave



Environment & Geoscience

FEBRUARY 24, 2017

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1 INTRODUCTION

1.1 Summary Project Description

The approved 2011 Environmental Project Report (EPR) identified the B-Line Light Rail Transit (LRT) route alignment to run from McMaster University to Eastgate Square, passing through the City of Hamilton's downtown.

Metrolinx and the City of Hamilton have identified the need to revise the project to:

- Address design modifications to the 2011 EPR LRT (the B-Line,Steer Davies Gleave, 2011a) alignment, moving some sections from side-running at the edge of the street to centre-running in the middle of the roadway, generally between Dundurn and the Delta, and moving one section from centre-running in the middle of the road to side-running at the edge of the road, generally between Dalewood Avenue and Cootes Drive;
- Complete the assessment of a spur line (the A-Line) in mixed traffic along James Street North connecting the new West Harbour GO Station and potentially down to the City's redeveloping Waterfront area;
- Reconfigure the MacNab Street bus terminal and include a high order pedestrian connection from King Street B-Line to Hamilton GO Centre; and,
- Complete the assessment of an Operations Maintenance and Storage Facility (OMSF) where light rail vehicles would be maintained and stored, along with its run-in track in mixd traffic on Frid Street and Longwood Road to Main Street West, across the Longwood Road bridge (Note: the assessment of the Longwood Bridge rehabilitation and ancillary pedestrian and active transportation facilities will be completed as a separate addendum).

1.2 Purpose of the Ecological Update Report

The following document was developed in support of the EPR Addendum, currently being conducted by Steer Davies Gleave (SDG) on behalf of the City of Hamilton and Metrolinx. It provides a review and update of the ecological components of the EPR Addendum to include minor design modifications to the 2011 EPR LRT (the B-Line) alignment, complete the ecological assessment of the Spur line (A-line), and assess the new OMSF site. This portion of the update includes:

- Vegetation Communities;
- Wildlife and Wildlife Habitat;
- Fish and Aquatic habitat; and,
- Species At Risk.

The study Area includes the route alignment and stop locations along the B-Line from McMaster University to the Queenston Traffic Circle, the A-Line branch from Downtown to serve the West Harbour GO Station, and the OMSF identified east of Longwood Road along with the connection to the B-Line route via shared-running tracks on Longwood Road.

2 DETAILED OUTLINE DESCRIPTION

Below is a general description of the project components. **Figure 2.1** shows a graphical representation geographical extent of the project and project components. Further design details can be found in the Hamilton LRT Design Workbook 1 (SDG, 2016).

2.1 B-Line (McMaster University to Queenston Traffic Circle)

The B-Line commences at McMaster University, with a new combined LRT and bus terminal (serving local Hamilton Street Railway (HSR) buses and regional GO and other bus services) to be constructed in the northeast corner of the intersection of Main Street West at Cootes Drive.

The B-Line route follows the north side of Main Street West to Dalewood Avenue, where it transitions to the centre of the two-way roadway, then continues in the centre of the two-way section of Main Street West to Paradise Road, from which it continues on the north side of the one-way westbound section of Main Street West to Highway 403.

The LRT route then crosses Highway 403 (The Chedoke Expressway) and the associated ramps to/from King Street and Main Street via a dedicated LRT bridge, then follows the south side of King Street West over the CP rail line to Dundurn Street.

From Dundurn Street to The Delta, the existing one-way westbound King Street West/East is, apart from a few short lengths, converted to two–way running with LRT in the centre of the street.

From Dundurn Street the B-Line LRT route continues in the centre of King Street West to James Street, where it connects with the A-Line. Though not currently integrated with the LRT, the existing MacNab bus terminal is reconfigured to provide additional capacity for local buses.

The route continues along King Street East through Downtown and International Village, generally with a single traffic lane on one side of the route only.

From Wellington Street the route continues in the centre of King Street East to The Delta. An underpass is provided to allow the LRT to cross beneath the CP freight line crossing at East Bend Avenue. Road traffic will continue to cross at grade as at present.

From The Delta to Queenston Traffic Circle the B-Line runs in the centre of Main Street East.

A new off-street LRT and bus terminal is provided at Queenston Traffic Circle on the site of the former City Motor Hotel and the adjacent ‘Herbies’ site. The proposed layout allows for the LRT to be extended in future to Eastgate Square.

A total of fourteen LRT stops are provided on the B-Line alignment at McMaster University, Longwood Road, Dundurn Street, Queen Street, James Street, Catharine Street, Victoria Street, Wentworth Street, Sherman Avenue, Scott Park, Delta, Ottawa Street, Kenilworth Avenue and Queenston Traffic Circle.

2.2 A-Line (King Street to Waterfront)

The A-Line route runs from a terminus north of King Street along James Street North to the northern terminus at The Waterfront. The route is shared running with other traffic, except for the terminals at each end of the route.

Connections are provided between the A and B-Lines at the King Street / James Street intersection to allow A-Line vehicles to get to and from the OMSF via the B-Line route.

A total of five LRT stops are provided at MacNab Terminal, Cannon Street, West Harbour GO Station, Ferrie Street and The Waterfront.

2.3 Pedestrian Link to Hunter Street Go Centre

The pedestrian link from the A and B-Lines to the Hunter Street GO Station will be developed as part of the next stage of project development.

2.4 Operations, Maintenance and Storage Facility (OMSF)

A preferred site for the OMSF has been identified near Longwood Road, north of Aberdeen St.

This is connected to the B-Line route via shared-running tracks on Frid Street and Longwood Road. A delta junction at the Main Street/Longwood Road intersection allows light rail vehicles to enter and leave service from either direction (see **Figure 2.2**).

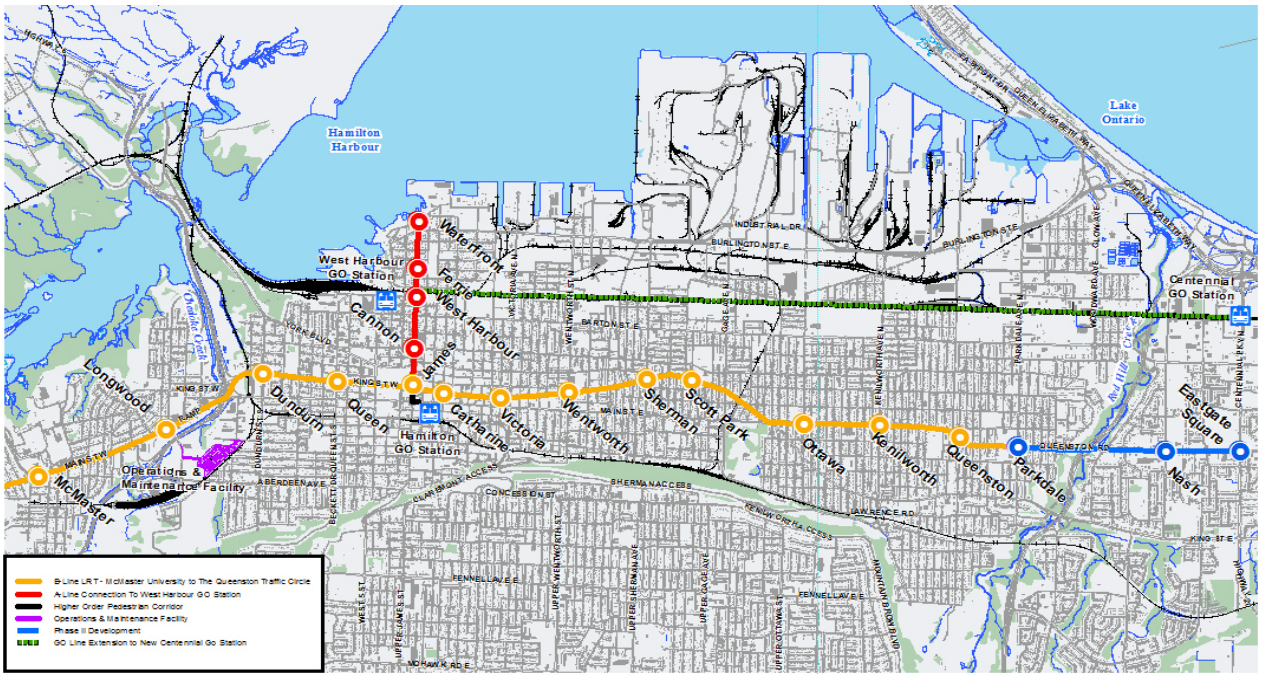

Figure 2.1: Hamilton LRT Project Overview

Legend

- Operations and Maintenance Facility (OMSF)
- Proposed LRT B-Line 2016
- Road
- Drainage

N

40 20 0 40 80 120 M

Scale: 1:2,000

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Hamilton LRT Environmental Assessment Addendum
Ecological Update

Operations Maintenance Facility (OMSF)

Date: 2017/02/15	File Number: 638045	Sub Code: ENVR
Figure: **2.2**		Rev. **0**

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3 EXISTING ENVIRONMENT

This section provides a description of existing environmental conditions in the study area for the Hamilton LRT ("study area"). The methodology to document existing conditions in the study area involved agency consultation, a review of background information and field investigations. A comprehensive list of the available background information sources reviewed prior to the initiation and development of the field investigation program for the project is presented below, and in Section 6- References. Previous environmental field work and background reviews were conducted for the A and B-Line in the Environmental Conditions Reports (SDG, 2011b and 2011c). This Addendum fills in data gaps from the previous reports and provides additional information for the route in areas of the A-Line Spur and B Line with design modifications, including an assessment of the OMSF.

3.1 Background Information Review

SNC-Lavalin conducted a review of background information and field surveys to characterize the fisheries, vegetation and wildlife habitat and communities within the study area for the EPR Addendum.

A detailed records review was conducted, and included the following, where available:

- Aerial photography;
- Ontario Species at Risk, May 2000, Committee on the Status of Species at Risk in Ontario (COSSARO);
- Natural Heritage Resources of Ontario Rare Vascular Plants, 1999;
- Department of Fisheries and Oceans Aquatic Species at Risk Mapping;
- Ontario Ministry of Natural Resources and Forestry (MNRF): Fish Collection Records;
- City of Hamilton Rapid Transit Initiative Terrestrial and Avian Ecology Report, Dillon Consulting Limited, March 2009;
- Hamilton RT Preliminary Design and Feasibility Study: B-Line Environmental Conditions Report (April, 2011);
- Hamilton RT A-Line Preliminary Design and Feasibility Study: Natural Environment Inventory and Impact Identification (December 2011);
- Hamilton Conservation Authority (HCA);
- Natural Heritage Information Center (NHIC) Biodiversity Explorer database;
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reports;
- Species at Risk in Ontario (SARO) List;
- Conservation Priorities for the Birds of Southern Ontario. 1999;
- Ontario Mammal Atlas. 1994;
- Ontario Breeding Bird Atlas (OBBA). 2007;
- Ontario Herpetofaunal Summary Atlas. 2000; and,
- Ontario Nature Reptile and Amphibian Atlas. Accessed September 16, 2016.

3.2 Vegetation Communities

3.2.1 Background Information and Existing Conditions

The majority of the study area is heavily urbanized with significant building structures along the central corridor (Dillon, 2009). Generally, few natural areas occur along the proposed B-Line or A-Line route.

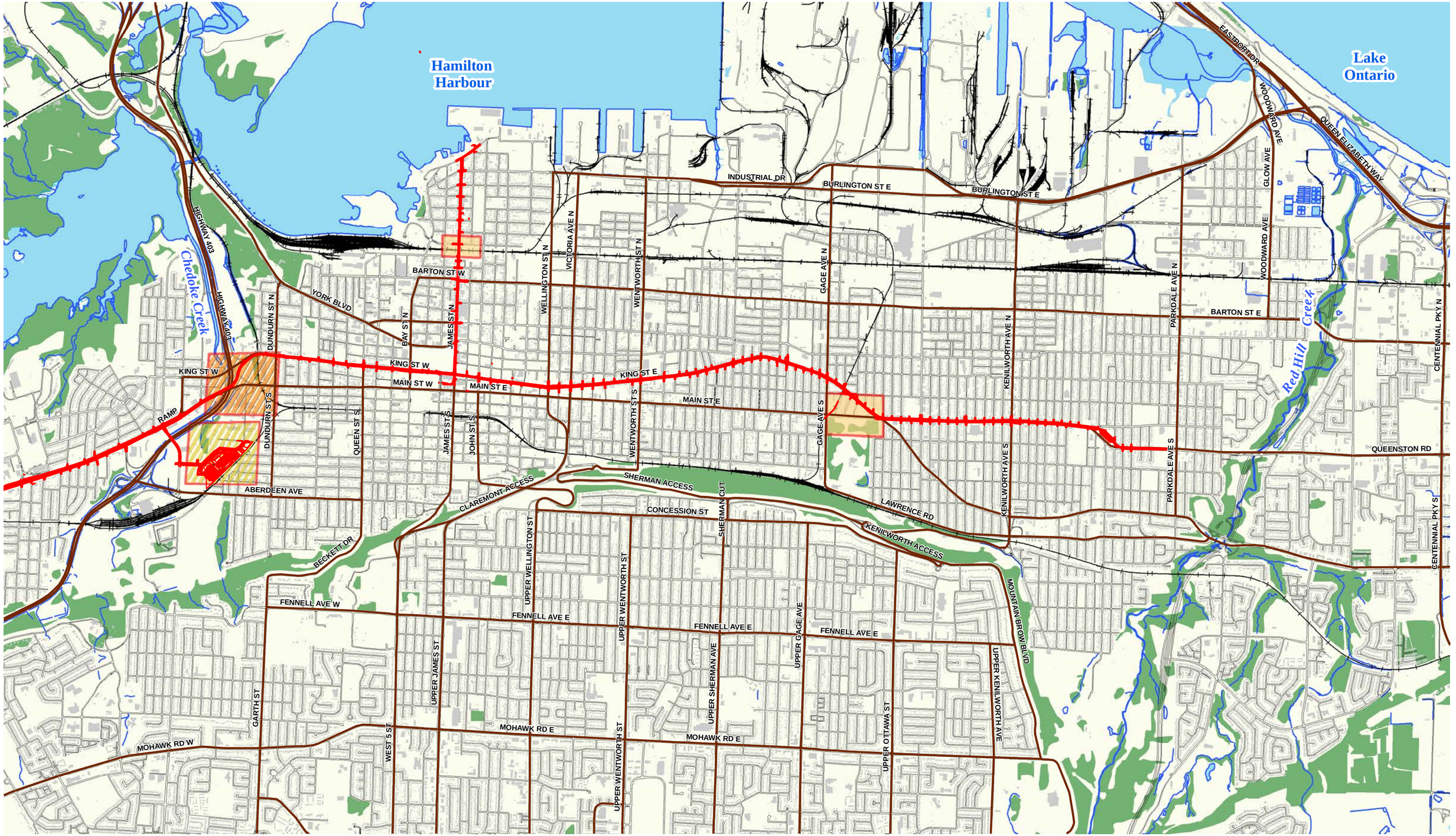
There is one main natural feature which is Chedoke Creek that drains from north to south, into Cootes Paradise. Other “natural” areas within the B-Line Corridor include Gage Park and Cathedral Park.

To date a number of environmental studies have been conducted covering the proposed B-line alignment, and A-Line branch from Downtown to serve the West Harbour GO Station. These include the Terrestrial and Avian Ecology Report (Dillon, 2009), the Hamilton Rapid Transit B-Line Preliminary Design and Feasibility Environmental Conditions Report (SDG, 2011b), and the Hamilton Rapid Transit A-Line Preliminary Design and Feasibility Natural Environment Inventory and Impact Investigation Report (SDG, 2011c). A review of the historic studies identified four areas of natural/semi-natural vegetation that occur in distinct locations within the corridor and were reviewed as part of these previous studies: Chedoke Creek Valley, Cathedral Park, Gage Park, and Red Hill Creek Escarpment Valley.

The remainder of the corridor is an urban section of downtown Hamilton, which contains individual tree plantings spaced intermittently along Main Street, King Street and Queenston Road, and Upper James St.

As part of the Ecological Update these previously assessed areas were considered in the context of the new LRT alignment. The reach of Chedoke Creek, Gage Park, and the remnant vegetation at the rail line crossing of James Street near Barton Street west previously studied are not impacted by any changes to the current layout. These areas were not reassessed in detail, though general surveys were conducted in these areas to confirm previous characterizations. Additionally the Red Hill Creek Escarpment Valley was not assessed as it has been placed in Phase II of the project and is not within the current development limits ending at the Queenston Traffic Circle.

As a result investigations were focused on Cathedral Park, where there are alignment alterations (line shifted further east into park) affect the previously assessed areas, and the new OMSF site, which has been identified east of Longwood Road., between Chatham Street to the north and Aberdeen Avenue to the south. The OMSF is connected to the B-Line route via shared-running tracks on Longwood Road which was also considered. **Figure 3.1** shows the 2016 vegetation study areas.



Legend:

2016 Vegetation StudyAreas

- Chedoke Creek/Cathedral Park
- OMSF
- Gage Park (Confirmation)
- Upper James Rail (Confirmation)

- Proposed LRT B-Line 2016/OMSF
- Major Road
- Roads
- Rail
- Drainage

- Buildings
- Waterbody
- Wetland
- Vegetation

N

0.5 0.25 0 0.5 1 Km

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Hamilton LRT Environmental Assessment Addendum - Ecological Update

Study Areas

Date: 2016/10/13	File Number: 638045	Sub Code: ENVR
Figure: **3.1**		Rev. **0**

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3.2.2 Designated Environmentally Sensitive Areas (ESA)

A review of NHIC, HCA, and City of Hamilton resources confirm the findings of the previous studies that there are no designated environmentally sensitive areas within 120 m of the proposed LRT alignment and associated facilities.

The NHIC database was searched for the presence of Areas of Natural and Scientific Interest (ANSI) near the OMSF and Line A and B. No ANSIs were identified within 120 m of the Study Area.

There were three Natural Areas located close to the Study Area that were identified during the NHIC search. The Dundas Valley and Dundas Marsh are an Important Bird Area (IBA) and the Niagara Escarpment Biosphere Reserve is an International Biosphere Reserve. Both of these areas are located outside of the Study Area.

The Cootes Paradise Drowned Valley is a life science ANSI, and a Provincially Significant Wetland (PSW), as defined by MNRF. It is also designated as a Linkage under Schedule B, a Significant Woodland in schedule B-2, and an ESA in schedule B-6 of the Urban Hamilton Official Plan (City of Hamilton, 2009). Schedules B-1 and B-4 of the Urban Hamilton Official Plan also note the designations by MNRF. A portion of the lands designated as ESA, and Core Area are found approximately 130 m to the north of the proposed B-line. Cootes Paradise marsh is also an important waterfowl staging habitat and the largest nursery habitat for fish in the Hamilton region.

3.2.3 Ecological Land Classification

The vegetation survey program completed as part of this study was conducted to update works completed for the A and B Line where applicable, and to include new survey information regarding the OMSF.

The Vegetation Study areas were surveyed to confirm and/or update and characterize the vegetation community types present and assess potential impacts related to the proposed development. Vegetation communities were assessed using the Ecological Land Classification (ELC) Protocol for Southern Ontario (Lee et al. 1998). These units were delineated based on a review of available aerial photography and refined through site investigation. Surveys were conducted on August 2, and August 11 of 2016. ELC investigations were carried out in accordance with the protocol, and wandering transects of the vegetation units were conducted to capture a comprehensive sampling of the vegetation present at the site.

Plant species were documented as they were encountered during the field surveys. A complete list of the vascular plant species found is presented in **Appendix B.1**. Nomenclature is based on the Ontario plant list (Newmaster et al. 2003).

A-Line

Existing vegetation communities along the portion of the A-Line proposed have not changed from those presented in the Hamilton Rapid Transit Preliminary Design and Feasibility Study. A-Line Environmental Conditions Report (SDG, 2011c).

B-Line

Existing vegetation communities along the portion of the B-Line proposed (including remnant natural communities near Cathedral Park, and Gage Park) have not changed from those presented in the B-Line Environmental Conditions Report (SDG, 2011b).

OMSF Site

The new OMSF site found east of Longwood Road., between Chatham Street to the north and Aberdeen Avenue to the south, is a heavily altered historic industrial site with remnant woodlots, thickets, and meadow associations intermixed with disturbed areas (see **Figure 3.2**). One remnant woodlot of some quality remains extending to the north along the Chedoke Creek valley system. This unit is not impacted by the proposed development, and no future development is planned at this time.

Cultural Units

The majority of the eastern portion of the OMSF site is occupied by remnant or regenerating culturally impacted communities resulting from previous site disturbance. Portions of this area are still in active use as storage for tree removal/wood chipping waste. Much of this area was previously cleared and covered with gravel for previous use. Many of these areas have been left unused and vegetation has begun to repopulate. Other portions, along fence lines and former access roads consist of remnant vegetation or re-growth from initial disturbance to woodland or thicket type communities typical of disturbed areas.

Legend

ELC Designations

- CUM1-1: Dry Moist Old Field Cultural Meadow
- CUT1-1: Sumac Cultural Thicket
- CUW: Cultural Woodlot
- FOD-4: Dry Fresh Deciduos Forest
- FOD5-3: Dry-Fresh Sugar Maple - Oak Deciduous Forest
- FOD7-2: Moist Ash Lowland Deciduous Forest Type

Butternut

Road

Drainage

N

40 20 0 40 80 120 M

Scale: 1:2,000

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Hamilton LRT Environmental Assessment Addendum
Ecological Update
Vegetation Classification

Operations Maintenance Facility (OMSF)
Ecological Land Classification (ELC)

Date: 2016/10/13	**File Number:** 638045	**Sub Code:** ENVR
Figure: **3.2**		**Rev.** **0**

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CUM1-1 (Dry Moist Cultural Meadow)

This community is found in the gravel portions of the site not currently in use, as well as along the margins of former access roads and parking areas where cover is typically denser. These communities include grass species such as Smooth Brome (*Bromus inermis*), Orchard Grass (*Dactylis glomerata*), Red Top (*Agrostis gigantea*), Kentucky Blue Grass (*Poa pratensis*), and Timothy (*Phleum pretense*). Other broadleaved vegetation is typical of disturbed areas and includes Dandelion (*Taraxacum officinale*), Birdsfoot Trefoil (*Lotus corniculatus*), Chicory (*Chichorium intybus*), Canada Thistle (Cirsium arvense), Garlic Mustard (*Alliaria petiolata*), Sweet White Clover (Meliotus alba), Queen Ann's Lace (*Daucus carota*), as well as perennial asters and goldenrods. Depressions and low lying areas within this portion of the site are dominated by Common Reed (*Phragmites australis*).

CUT1-1 (Sumac Cultural Thicket)

Found along the western edge of the gravel/cultural meadow portion of the site this community occupies a berm which is likely a remnant of original site grading. Tree cover is sparse in most places with higher concentrations along the fenceline with Manitoba Maple (*Acer negundo*), Siberian Elm (*Ulmus pumila*), and Black Locust (*Robinia pseudo-acacia*) the most common species. Staghorn Sumac (*Rhus typhinia*) dominates most areas of the community with other sub-canopy species including small Manitoba Maple and Siberian Elm. Understorey and ground cover is composed of small Staghorn Sumac, Riverbank Grape (*Vitis riparia*) as well as species found in the adjacent cultural meadow community.

CUW (Cultural Woodlot)

This community type is found around many of the fencelines and margins of the site where vegetation was not maintained as closely for previous site operations. Manitoba Maple is the predominant tree species with other common contributors being Siberian Elm, Black Locust, Black Walnut (*Juglans nigra*), Tree of Heaven (*Ailanthus altissima*), Balsam Poplar (*Populus balsimifera*), and Eastern Cottonwood (*Populus deltoides*). Shrub and understorey vegetation consists of Common Buckthorn (*Rhamnus cathartica*), Staghorn Sumac, Slender Willow (*Salix petiolaris*), and Tartarian Honeysuckle (*Lonicera tatarica*). Herbaceous ground cover consists of similar species to those found in the adjacent cultural meadow communities.

Forest Units

The below communities are principally associated with the remnant forest surrounding the Chedoke Creek valley. Some of these communities have been impacted by adjacent developments, especially on their margins, while some are more reflective of natural remnant communities.

FOD 4 (Dry Fresh Deciduous Forest)

This community is found in several locations, adjacent to an old parking area south of Chatham St., and along margins of the scrap metal facility (Elko Industrial Trading Corporation) and the west bank of Chedoke Creek. This community is characterized by the same tree community as the CUW units, reflecting past disturbance from adjacent land uses. Black Walnut is a larger contributor than in the CUW units, and Manitoba Maple is less frequent. Hawthorn species (*Crategus sp*.) are common near at the south limit near Aberdeen Avenue, and near the northern end of the Elko scrap metal facility there are several larger Red Oak (*Quercus rubra*) and Basswood (*Tilia americana*). Shrubs in this community typically consist of Common Buckthorn, Tartarian Honeysuckle, Choke Cherry (*Prunus virginiana*), and

Red Raspberry (*Rubus idaeus*). Herbaceous vegetation is dominated by goldenrod species (*Solidago sp.*), Virginia Creeper (*Parthenocissus quinquefolia*), and Garlic Mustard (*Alliaria petiolata*).

FOD 7-2 (Fresh Moist Ash Lowland Deciduous Forest)

This is lowland forest community associated with the Chedoke Creek valley bottomlands at the north end of the study area. The canopy layer is well developed and is predominantly Green Ash (*Fraxinus pennsylvanica*). Evidence of emerald ash borer activity was noted in many of the ash within the unit. Other canopy species include Manitoba Maple, Basswood, Tree of Heaven and Willow (Salix sp.). Butternut (*Juglans cinerea*) was also noted in this unit. The subcanopy layer is consists of Green Ash and Manitoba Maple. The shrub layer is dominated by Common Buckthorn with smaller contributions from Alternate-leaved Dogwood (*Cornus alternifolia*) choke cherry, Purple Flowering Raspberry (*Rubus odoratus*), Virginia Creeper, Garden Red Current (*Ribes rubrum*), Red Raspberry and Tartarian Honeysuckle. Notable ground cover species include Rough Avens (*Geum laciniatum*) and Coltsfoot (*Tussilago farfara*).

FOD 5-3 (Dry Fresh Sugar Maple Oak Deciduous Forest)

This community occupies most of the eastern Chedoke Creek valley slope. The canopy and subcanopy are mainly Sugar Maple (*Acer saccharum*) with smaller contributions from a variety of other hardwood species including Red Oak, American Beech (*Fagus grandfolia*), Basswood, Green Ash, Ironwood (*Ostrya virginiana*), Blue Beech (*Carpinus carolinia*) and Black Cherry (*Prunus serotina*). Butternut was also found within this unit. Shrubs in this community are predominantly Choke Cherry, with occasional Witch-hazel (*Hamamelis virginiana*), and Common Buckthorn. Herbaceous vegetation was fairly sparse and consisted mainly of grass and goldenrod species.

3.2.4 Vegetation Species at Risk

A total of 73 species were recorded during the field program and are included in an annotated species list in **Appendix B.1**. Of these 33 (45%) are non-native species most of which are typical of culturally impacted environments which have experienced some degradation over time due to anthropogenic pressures from historic development and encroachment. It should be noted that the species list, though relatively comprehensive, is not a complete list of the plants of the area. Nomenclature is primarily in accordance with Newmaster (1998), and secondarily with NHIC (2016).

The majority of the species observed (67) are listed as ‘secure, common and widespread’ in Ontario (S5, SE5) and the remainder (6) are listed as ‘apparently secure, uncommon but not rare’ in Ontario (S4, SE4).

A search of the NHIC element occurrence data for the area listed 27 historic species reports within the 1km blocks covering the proposed project. Twenty of the species reports were greater than 40 years old and included several species now considered extirpated by NHIC. **Table 3.1** lists the species occurrences from the last 40 years, none of which were observed during the field surveys.

Table 3.1: NHIC Occurrence Data – Vegetation

Scientific Name	Common Name	SRank	Last Observation	COSSARO	COSEWIC
Block Covering Site					
Castanea dentata	American Chestnut	S2	1993-08-09	END	END
Uvularia perfoliata	Perfoliate Bellwort	S1	2001-05-11	No status	No status
Shenopholis nitida	Shiny Wedge Grass	S1	1988	No status	No status
Crataegus brainerdii	Brainerd's Hawthorn	S2	1981-09-07	No status	No status
Crataegus pruinosa var dissona	Northern Hawthorn	S3	1981-09-05	No status	No status
Mertensia virginica	Virginia Bluebells	S3	1999-05-20	No status	No status
Carix albicans var. albicans	White-tinged Sedge	S3	1980-05-17	No status	No status

One (1) vegetation Species at Risk (SAR) was identified during field surveys. Butternut (*Juglans cinerea*), a species listed as Endangered both Federally and Provincially, was identified within the Sugar Maple-Oak forest unit currently designated as part of the conservation area for the site. Four (4) individual trees were found, and their approximate location is shown on **Figure 3.2**, above. It should be noted that no comprehensive survey, or health assessment of individual Butternut trees was undertaken as part of this assessment, and more individuals may be present within this unit.

3.3 Wildlife

3.3.1 Wildlife Habitat and Communities - Surveys

Potential habitat identified within the study area was completed through agency consultation, review of background information (aerial photography, databases, existing reports) and field surveys conducted by SNC-Lavalin Inc, and included remnant natural features, watercourses, and woodlands. Survey methodologies applied to assess wildlife habitat and presence/absence of wildlife include:

3.3.1.1 Amphibians – Frog Calling

A breeding amphibian survey was not completed as there is no suitable habitat within the Study Area.

3.3.1.2 Breeding Bird Survey

Breeding bird survey protocols were designed and completed based on recommendations given by the Forest Bird Monitoring Protocol (FBMP), and Ontario Breeding Bird Atlas (OBBA). The Forest Bird Monitoring Protocol recommends completing standardized point counts to survey an area for breeding birds. These point counts are required to be at least 250 meters apart and at least 100 meters from the edge of a habitat type. A review of the breeding bird surveys conducted during the 2009 Dillon, and 2011 A and B Line Feasibility reports were deemed to present a comprehensive assessment of the breeding bird presence/potential within the A and B Line portions of the study area given the minimal alterations in the current design. As a result, Breeding Bird surveys were focused on the new OMSF site, found east of Longwood Road., between Chatham Street to the north and Aberdeen Avenue to the south, and the connection to the B-Line along Longwood Road.

Due to the small size of the OMSF, point counts would be ineffective and impractical since only 1 or 2 point counts could be completed in the Study Area. An active search was determined to be the most

accurate and efficient way to sample the breeding bird species within the OMSF. This involved looking and listening for birds while moving between the different habitat types in the OMSF.

The purpose of these surveys was to categorize the resident breeding bird population. SNC-Lavalin conducted breeding bird surveys in June and July, 2016, closely following the survey protocol based on the Ontario Breeding Bird Atlas Guide for Participants (Bird Studies Canada, 2001). SNC-Lavalin biologists with experience in bird identification by sight and sound conducted the breeding bird surveys.

- Three formal visits were made to the OMSF for breeding bird surveys on June 16, 23 and July 8, 2016. Visits were separated by more than 6 days.
- Breeding bird surveys took place during suitable weather conditions (i.e. clear, sunny, with very little wind).
- Surveys were conducted from 30 minutes before sunrise (approximately 4:45 am in June) to no later than 10:00am.
- Due to the small size of the study area, it was traversed systematically on foot to record both breeding and non-breeding birds. SNC-Lavalin biologists did not use any invasive monitoring techniques (e.g., nest searches, call-playback surveys).

Breeding evidence was noted for each species observed in the Study Area. Breeding evidence is divided into four categories: confirmed (CONF), probable (PROB), possible (POSS), and none (NONE). Confirmed breeding evidence includes observations involving young or eggs; observations of adult birds carrying food, nesting material, or a fecal sac; observations of adult birds involved in a distraction display; or observations of adult birds exhibiting physiological evidence of a brood patch. Probable breeding evidence includes observations of a bird occupying territory for at least 7 days, visiting a nest site, or exhibiting territorial behaviour; observations of a pair in appropriate habitat; or observations of a pair copulating. Possible breeding evidence includes observations of a singing male or observations of a bird in suitable breeding habitat. Migrant or vagrant birds are considered to have no breeding evidence.

3.3.1.3 Mammals

Mammal surveys were conducted to enable the delineation of habitat and completion of wildlife inventory. Visual observations of area wildlife (including mammals and insects) were recorded during the site investigation at the OMSF and also during the site walk on Line A and B, including:

- Den sites, nesting, breeding, migratory stopover, overwintering areas, and all areas that are recognized as Significant Wildlife Habitat (per the Technical Guide, MNR, 2000) in compliance with the Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing, 2014);
- Comprehensive list of all wildlife observed in the project area, with their respective rank identified (e.g., local, provincial, national ranking);
- Opportunistic sightings or sign of mammal presence during field activities were also recorded.

Mammals were also documented according to incidental sightings including sight, smell, scat, trails, tracks, roadkill or other evidence of presence within the project area. Mammal surveys were conducted in concert with breeding bird surveys.

3.3.1.4 Species at Risk

The PPS defines the significant habitat of Endangered or Threatened species as the habitat, as approved by the MNRF, that is necessary for the maintenance, survival and/or the recovery of a naturally occurring or reintroduced population of Endangered or Threatened species, and where those areas of occurrences

are occupied or habitually occupied by the species during all or part(s) of their life cycle. The MNRF is mandated to ensure accurate database information for the identification, listing and conduct of ongoing assessments for significant Endangered species and their related habitats.

To determine presence/absence of SAR within the Study Area, background data was collected and reviewed from various published and non-published sources. Sources of information include the same documents as listed in Section 3.1.

The following legislation (federal and provincial) deal specifically with SAR and may be applicable to this project.

- ***Endangered Species Act*** (ESA) – Under section 9 of the ESA, species are afforded protection providing they are listed as Threatened, Endangered, or Extirpated on the Species at Risk in Ontario list. Section 10 of the ESA is in place to protect habitat of Threatened or Endangered species only; where no damage is permitted to the habitat of those species. A preliminary screening should be completed in consultation with the Ministry of Natural Resources and Forestry (MNRF); if the screening indicates the potential presence of a species protected under the ESA, there is a requirement to complete Information Gathering Forms to further assess the need for permitting under the ESA.
- ***Species at Risk Act*** (SARA) – Only species listed as Threatened, Endangered, or Extirpated under Schedule 1 are afforded both individual and habitat protection under the SARA. On provincial lands, SARA legislation does not apply except for Migratory Birds that also fall under schedule 1 of SARA (not including their habitat). Notably, prohibitions can be applied if provincial legislation or voluntary measures do not adequately protect federally listed species and their residence. Generally, compliance with provincial ESA legislation will satisfy the requirements under the SARA.
- ***Migratory Bird Convention Act*** – Provides protection for (listed) migratory birds in Canada through the conservation of populations, individuals, and their nests.
- ***Fish and Wildlife Act*** – Generally a hunting compliance document, this act lists specially protected species in Ontario, including mammals, birds, herpetofauna, and invertebrates. "A person shall not hunt or trap specially protected wildlife or any bird that belongs to a species that is wild by nature and is not a game bird". This includes the nests and eggs of birds not covered under the *Migratory Bird Convention Act*.
- ***Planning Act*** - Through the *Planning Act*, the Provincial Policy Statement states both that "Development and site alteration shall not be permitted in significant habitat of endangered species and threatened species" (2.1.3, [a]) and "Development and site alteration shall not be permitted in significant wildlife habitat (2.1.4, [d]), unless it has been demonstrated that there will be no negative impacts...".

3.3.2 Wildlife Habitat and Communities - Results

The following subsections provide a brief description of wildlife habitat and communities documented as a result of background review and field efforts to determine species presence/absence and habitat features.

3.3.2.1 Birds

During the 2016 field season, SNC-Lavalin biologists conducted three (3) breeding bird surveys at the OMSF. A total of thirty-eight (38) species were observed over the course of the breeding bird surveys and are detailed in **Appendix B.2**. It is suspected that all species observed were either breeding on site or in close proximity to the site as most species were observed on site during both surveys. A total of 122

bird species were documented in the larger area though a review of the Breeding Bird Atlas square summary sheets which are appended in **Appendix C.1**.

Barn Swallows (*Hirundo rustica*) (Migratory, SARA listing: Threatened; ESA listing: Threatened) were observed flying in and out of the Canadian Drawn Steel Company buildings which are located immediately adjacent to the OMSF. The Barn Swallows appear to be nesting inside the buildings and utilizing the OMSF lands as foraging habitat. Barn Swallow fledglings were observed perched on wires within the OMSF and being fed by adults (see **Photo 3.1**).

Photo 3.1: Barn Swallow fledglings waiting for a feeding from the adults

Of species documented in the subject properties of the detail design project area by SNC-Lavalin in 2016:

- 2 are regulated under the *Fish and Wildlife Conservation Act* as Game or Protected species;
- 25 are regulated under the *Migratory Birds Convention Act*.

Ontario Partners in Flight (PIF) and the Ontario Landbird Conservation Plan identify bird species of conservation concern in the Lower Great Lakes/St. Lawrence Region (Bird Conservation Region 13 or BCR 13). The purpose of the plan is to “guide landbird conservation efforts in order to sustain the distribution, diversity and abundance of birds in this settled landscape” (Ontario Partners in Flight, 2008).

The Landbird Conservation Plan has identified area sensitive bird species and these habitats typically coincide with interior habitat 100m in from forest edges. There are nine (9) area sensitive species as designated by Bird Studies Canada (Courturier, 1999) that were observed in the OMSF.

3.3.2.2 Mammals

Incidental wildlife observations for the OMSF/Line A and B included: White-tailed Deer (*Odocoileus virginianus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Eastern Coyote (*Canis latrans*) and Raccoon (*Procyon lotor*).

All of these mammals are common and secure in Ontario, and include species that are tolerant of human presence and disturbance, commonly found in urban and urbanizing landscapes.

No mammal species at risk or potential habitat were documented in the project area.

No reptiles were observed and the only amphibian observed/heard was Grey Tree Frog (*Hyla versicolor*).

3.3.3 Species at Risk

3.3.3.1 Screening Summary

A comprehensive list of all SAR with ranges overlapping the Study Area is available in **Appendix B.5**. The table lists provincial and federal species designations, describes preferred habitat of SAR, and includes determination of presence/absence of suitable habitat for SAR within the Study Area.

As part of the desktop review, a search of the MNRF NHIC database (2010b) was conducted to determine the existence and approximate location of recorded occurrences of SAR in the OMSF area. One (1) one square kilometer (1 km^2) quadrats (17NH8989) encompassing the Study Area was checked to ensure potential SAR were accounted for during field surveys. The area surrounding the OMSF is highly urbanized and habitats have been highly altered and/or degraded over the years that searching adjacent squares was deemed unnecessary. The search yielded thirty six (36) element occurrences, of which four (4) are listed as Endangered (END), one (1) Threatened (THR) and one (1) Special Concern (SC) on the Species at Risk in Ontario (SARO) (Ontario, 2013) and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) lists (Government of Canada, 2010). None of the element occurrences that are listed by COSSARO or COSEWIC are considered to reasonably be found within the Study Area as the occurrences are very old and the habitat in the area has been altered extensively since the occurrence record and that habitat is no longer available on site. Refer to **Appendix C.3** for complete NHIC records for these species.

In addition to a search of the NHIC database, the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada et. al, 2006), Ontario Reptile and Amphibian Atlas (Ontario Nature, 2011), and Atlas of Mammals (Dobbyn, 1994) were consulted to determine if there were any Endangered or Threatened species known to be present within the Study Area. The OBBA uses 100 km by 100 km blocks, further subdivided into 10 km by 10 km squares to compartmentalize geographical areas. The Study Area lies within the 10 km by 10 km squares identified as 17NH98 and 17NH88. Breeding evidence, based on the Breeding Bird Atlas tables, has been recorded in the general area for twelve (12) Species at Risk birds. A copy of the search results from the Ontario Breeding Bird Atlas is provided in **Appendix C.1**.

The MNRF and Hamilton Conservation Authority (HCA) were contacted for information pertaining to Species at Risk in the general area.

MNRF recognizes the presence of 60 SAR within the City of Hamilton (refer to **Appendix C.2**) for the full list.

From the species listed, SNC-Lavalin has further refined the data to present a summary of the SAR that may be present, or may have suitable habitat, within the project area. These species are discussed below under the appropriate taxa headings. For the purpose of this desktop exercise, the species at risk has been divided in to five (5) taxa: Birds, Herpetofauna, Mammals, Arthropods, and Vegetation.

3.3.3.2 Birds

Peregrine Falcons are known to nest at the Sheraton Hamilton Hotel (HCCP, 2016), that is located on King Street along the B-Line. In urban centres, Peregrine Falcons select ledges on tall buildings for nesting purposes and have strong nest-site fidelity. While the Project Works fall within the nesting territory of the Peregrine Falcons on the Sheraton Hamilton Hotel, it is unlikely that the scale of the works will impact the pair.

In addition to the Peregrine Falcon, SNC-Lavalin has identified three (3) additional SAR with suitable habitat present within the Study Area: Barn Swallow, Chimney Swift, and Common Nighthawk.

Barn Swallows are known to nest in artificial structures in urban areas, including barns, garages, houses, bridges, and culverts. Barn Swallows have been observed flying in and out of the Canadian Drawn Steel Company buildings which are located immediately adjacent to the OMSF. The Barn Swallows appear to be nesting inside the buildings and utilizing the OMSF lands as foraging habitat. Barn Swallow fledglings were observed perched on wires within the OMSF and being fed by adults.

Chimney Swifts are commonly found in urban areas near buildings and will nest in hollow trees and, more often, chimneys. The B-Line is situated within an older section of the City of Hamilton with suitable nesting structures for this species. A survey of the chimneys associated with the buildings that have been identified as potentially being required as part of the LRT stations was conducted in early June, 2016. The A and B Line were walked and the buildings that are currently scheduled for demolition for the RT Stations were assessed for suitable chimneys for Chimney Swift nesting and roosting. The survey identified eight (8) suitable chimneys and these are noted on **Figures 3.3 to 3.9**. On the evening of July 5, 2016 a single Chimney Swift was observed entering a chimney at 75 Queenston Road. A full Chimney Swift nesting survey was not conducted as part of this study and will need to be conducted by a qualified avian biologist prior to any building removals.

Common Nighthawks are highly adapted to urban settings and are known to roost and/or nest along railways and gravel rooftops. There is likely suitable habitat for this SAR available within the Study Area. Notably, the Common Nighthawk is listed as Special Concern under the *ESA*, therefore its habitat is not protected on provincial or private lands. Note that it is also illegal to disrupt the bird or its nest during its breeding period per the *Migratory Bird Convention Act*. A one night call playback survey for Common Nighthawk was conducted on July 5, 2016 at the OMSF and no birds were detected flying over or within the OMSF.

The remaining avian species listed in **Appendix B.5** are dependent on forest, field, and marsh habitats. As these habitat types are not present within the Study Area, it is unlikely that any of the birds are using this area.

3.3.3.3 Herpetofauna

Records from the MNRF exist for Blanding's Turtle, Spiny Softshell and Snapping Turtle for the Hamilton area associated with Cootes Paradise and Hamilton Harbour. These species are highly dependent on large rivers, lakes and/or wetlands; habitats that are not present within the Study Area. These species will not be affected by the Project works.

Timber Rattlesnake historic records are identified for the area on NHIC. Timber Rattlesnakes are considered extirpated in Ontario, having not been recorded in the region since 1941. This species preferentially inhabits forested areas with rocky outcrops – habitat that is not present within the Study Area.

The majority of the herpetofauna listed in **Appendix B.5** are dependent on the proximity of lacustrine, riverine, and ephemeral habitat. Of these, the Milksnake is the only species that may be detected within the Study Area; owing to its diverse set of habitat preferences. Although it prefers fields and rocky outcrops; it has been known to hibernate in the foundations of older buildings. Notably, as it is listed as Special Concern under the ESA, no habitat protection is afforded to the Milksnake; it is, however, a Specially Protected Reptile under the *Fish and Wildlife Act*.

3.3.3.4 Mammals

In Ontario, the Woodland Vole is a rodent that occupies a variety of habitats, though it is often associated with dry deciduous forests. The Biodiversity Explorer reveals a record of a Woodland Vole within 1km of the Study Area; however, this record pre-dates 1955, and Woodland Voles have not been detected in the Hamilton area since. There is no suitable habitat for this species within the Study Area.

There are four (4) species of bats now listed on the ESA as Endangered including: Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*).

Some of the buildings that have been identified for removal along Line A and B may provide suitable habitat for the Little Brown Myotis. Bat surveys will be required for any building removals that will take place within this corridor. Little Brown Myotis is a cavity-roosting species and stays wherever it is warm. It roosts in natural cavities under loose bark and in crevices, and in buildings where it can be found in attics, behind shutters or siding, or under shingles (Kurta 1995). Communal roosting occurs only on cooler nights. Nursing females do not use these night roosts but prefer to roost separately in maternity colonies, which can get quite large (Naughton 2012). Maternity roosts are usually in or around buildings such as barns, houses and churches, or more natural sites like tree cavities, exfoliating bark, crevices in cliffs, and small caves. A female is site loyal and will return to her maternity roost every year (Kurta 1995).

Bat surveys that followed the MNRF Bat Survey Methodology were not conducted. One evening of active acoustic surveys was conducted at the OMSF on July 5, 2016 and only a single Eastern Red Bat (*Lasiurus borealis*) was detected.

3.3.3.5 Arthropods

Both arthropods identified in **Appendix B.5** are lepidopterans (butterflies) (Monarch and West Virginia White) listed as Special Concern under provincial legislation. To this effect, their habitat is not protected under the ESA. The Monarch prefers habitat with Milkweed (Asclepius spp.), and fields with other wildflowers. It is possible that Monarchs forage within the OMSF however none were observed during the

field investigations. The West Virginia White, however, is a butterfly of moist woodlands; it is unlikely that this species would be encountered within the Study Area.

3.3.3.6 Vegetation

One SAR vegetation species was observed during the field surveys. Four (4) Butternut trees were found in the Chedokee Creek valley system within the deciduous forest units north of the OMSF footprint during ELC and general vegetation survey activities (Figure 3.2). Butternut is listed as an Endangered Species both federally and provincially. Given that the scope of the current surveys was focused on vegetation classification and general vegetation survey, there is a potential for more butternut to be found in this area. A focused butternut/health assessment survey should be conducted as part of the tree inventory during detailed design.

Legend

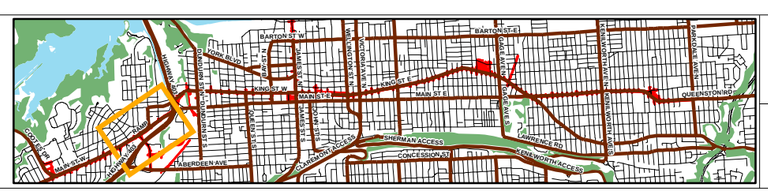
Potential SAR

- No Potential
- Potential

Aquisition

- No
- Yes

- Proposed LRT Line
- Road
- Drainage



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Scale: 1:2,000

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Hamilton LRT Environmental Assessment Addendum
Ecological Update
Wildlife SAR Surveys

Potential SAR Structures (Chimney Swift/Myotis)

Date: 2016/10/13	**File Number:** 638045	**Sub Code:** ENVR
Figure: **3.3**		**Rev.** **0**

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Legend

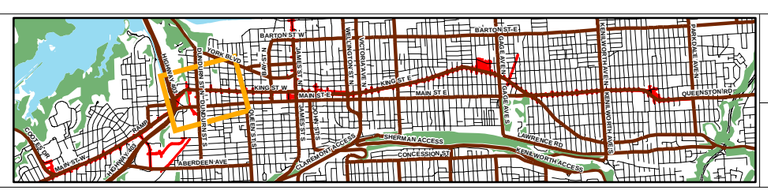
Potential SAR

- No Potential
- Potential

Aquisition

- No
- Yes

- Proposed LRT Line
- Road
- Drainage



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