Environmental Impact Assessment

291 NORTH SERVICE ROAD, BURLINGTON, ON

Prepared for

King Paving Ltd.

July 2024
Project No. P2020-433

Prepared by

GeoProcess Research Associates Inc.
133 King Street West
PO Box 65506 DUNDAS
Dundas, ON L9H 6Y6

Table of Contents

1. Introduction 7
1.1. Site Location and Study Area Boundary 7
1.2. Proposed Development 8
1.3. EIA Triggers 8
1.4. Scoped Issues and Required Tasks 8
2. Planning Context 9
2.1. Context 9
2.1.1. Provincial Policy Statement 2020 9
2.1.2. Endangered Species Act 2007 11
2.1.3. Greenbelt Plan 2017 11
2.1.4. Growth Plan for the Greater Golden Horseshoe 2019 11
2.1.5. City of Burlington Official Plan 12
2.1.6. Halton Region Official Plan 12
2.1.7. Conservation Halton 13
2.2. Consultation Undertaken 13
2.3. Management Plans 14
3. Methods 14
3.1. Relevant Guidelines 14
3.1.1. Species at Risk Screening 14
3.1.2. Significant Wildlife Habitat Assessment 14
3.2. Background Studies 15
3.3. Field Surveys and Analysis 15
3.3.1. Floristic Studies 15
3.3.2. Tree Inventory 16
3.3.3. Breeding Bird Surveys 16
3.3.4. Amphibian Surveys 16
3.3.5. Incidental Wildlife Surveys 16
3.3.6. Bat Maternity Roost Assessment 17
3.3.7. Watercourse Characterization 17
4. Biophysical Inventory 17
4.1. Existing Conditions 17
4.1.1. Summary of Surveys 17
4.1.2. Physiography 18

4.1.3. Historical Conditions 18
4.1.4. Hydrological Features 19
Wetlands 19
Headwater Drainage Features 19
Falcon Creek 19
4.1.5. Vegetation 20
4.1.6. Breeding Birds 27
4.1.7. Amphibians Surveys 30
4.1.8. Bat Maternity Roost Assessment 31
4.1.9. Wildlife Surveys 32
4.1.10. Tree Inventory 32
4.1.11. Natural Heritage Systems 33
Wetlands 33
Watercourses 35
Woodlands 36
Areas of Natural and Scientific Interest (ANSI) 37
5. Species at Risk (SAR) and SAR Habitat 38
5.1. Screening 38
6. Significant Wildlife Habitat Assessment 41
7. Biophysical Analysis 42
7.1. Significance Assessment 42
7.1.1. Woodlands 42
7.1.2. Wetlands 43
7.2. Key Features 44
7.2.1. Significant Habitat of Endangered and Threatened Species 44
7.2.2. Significant Wetlands 45
7.2.3. Significant Coastal Wetlands 45
7.2.4. Significant Woodlands 45
7.2.5. Significant Valleylands 45
7.2.6. Significant Wildlife Habitat 45
7.2.7. Significant Areas of Natural and Scientific Interest 46
7.2.8. Fish Habitat 46
7.3. Development Constraints 46
7.3.1. Setbacks 47
7.3.1.1. Woodland Buffer 47
8. Outcome from Agencies 47
9. Description of Proposed Development 48
9.1. Overview 48
9.1.1. Natural Heritage System Buffers 48

9.1.2. Stormwater Management 49
9.1.3. Grading and Servicing Requirements 49
9.2. Timing 50
10. Impact Assessment 50
10.1. Impact Summary 50
10.1.1. Direct Impacts 57
10.1.2. Water Balance 58
10.1.3. Water Quality 59
10.1.4. Indirect Impacts 60
10.1.5. Cumulative Impacts 61
10.2. Mitigation Measures 61
10.3. Tree Protection Measures 62
11. Enhancement Opportunities 64
11.1. Woodland Corridor 64
11.2. Buckthorn Management 65
11.2.1. Monitoring 65
12. Policy Assessment 66
13. Conclusions and Recommendations 69
14. References 71
Maps 75
Appendix A Approved Terms of Reference 84
Appendix B Record of Consultation (Agencies) 85
Appendix C Significant Wildlife Habitat Screening 87
Appendix D Species at Risk Screening Sources 101
Appendix E Tree Inventory 103
Appendix F Files 104

List of Tables

Table 1. Applicable Policies of the Provincial Policy Statement 10
Table 2. Summary of Surveys. 17
Table 3. Description of ELC Communities Documented for King Paving 21
Table 4. Breeding Bird Survey Results 27
Table 5. Amphibian Survey Field Visits 30
Table 6. Results of GRA's Bat Maternity Roost Surveys 31
Table 7. Incidental Wildlife observations 32
Table 8. Existing Wetland Characteristics 33
Table 9. Woodland Tree Tally Surveyed on August 4, 2020 37

Table 10. Screening Results....38
Table 11. Significant Woodland Assessment....43
Table 12. Natural Heritage System Buffers....49
Table 13. Impact Summary....51
Table 14 Summary of Surface Runoff from the Development Site....59
Table 15. Proposed Native Species....64
Table 16. Policy Overview....66

List of Maps

Map 1. Key Map....76
Map 2. Existing Conditions....77
Map 3. Ecological Land Classification....78
Map 4. Biophysical Analysis Surveys....79
Map 5. Woodland and Wetland Limits....80
Map 6. Site Plan....81
Map 7. Tree Preservation (Map 7a-7e)....82
Map 8. Revegetation Layout....83

1. Introduction

GeoProcess Research Associates Inc. (GRA) was retained by King Paving Ltd. to complete an Environmental Impact Assessment (EIA) for the development of a new asphalt plant on a property leased from Halton Region, located at 291 North Service Road, Burlington, Ontario. The leased parcel plus the surrounding area of approximately 120 m is herein referred to as the "Study Area" (**Map 1**). The proposed asphalt plant site is owned by Halton Region and is located on the site of the closed Burlington Landfill. King Paving Ltd. intends to lease a portion of landfill property to develop an asphalt plant. As part of the lease agreement, King Paving will also design and construct a new Hickory Lane access road into the Regional Landfill Site on behalf of Halton Region. This EIA focuses on the new asphalt plant, with consideration given to the re-aligned Hickory Lane. The requirement for an EIA was identified in the October 2, 2019, pre-consultation letter from the City of Burlington and the Region of Halton's policies for lands within 120 m of the Regional Natural Heritage System (RNHS).

King Paving has been operating an asphalt plant at 1077 Howard Road, in the City of Burlington for many years. The City of Burlington has identified the location as important to the Aldershot area's future development, including it as a transit hub due to its proximity to Waterdown Road and Highway 403. As such, the City approached King Paving, asking that they relocate the asphalt plant from the current Aldershot site. King Paving has responded favourably to the City's request and, with the help of the City of Burlington and Halton Region, has identified the closed landfill as the preferred location. In relocating the plant, it provides several benefits, including:

- Allowing the City of Burlington to advance their planning for North Aldershot, including the construction of an important transit hub.
- Moving the asphalt plant away from residential neighbourhoods in Aldershot.
- Removing truck traffic from Waterdown Road within Aldershot.
- Relocating the asphalt plant to a disturbed brownfield site.
- Allowing King Paving to build what will be Canada's most high-tech and efficient plant, requiring a far smaller footprint and using less energy within its processes.

This EIA establishes the extent and function of the natural heritage system within the Study Area and considers the natural environment within the context of the policies of the City of Burlington, Halton Region, Conservation Halton, and the Province of Ontario. In completing this EIA, the potential impacts of the proposed development on key natural heritage features were assessed, and mitigation measures to protect and enhance the function and connectivity of these features were provided.

1.1. Site Location and Study Area Boundary

The Study Area is limited to the southwestern portion of the Regional Landfill site, which has been disturbed by former landfill operations, including the placement of fill/waste rock, access roads and a leachate collection system. The Study Area is accessed by Hickory Lane from the North Service Road and an internal landfill road network. The proposed development site is located adjacent to an Environmental Protection Area (EPA) and the Sassafras Woodlands Earth Science Area of Natural and Scientific Interest (ANSI) (**Map 2**).

The Study Area is approximately 50 m north of the 403 and is just west of the Mercedes Benz car dealership. The proposed extension of Hickory Lane will cross the former regional landfill site to the east of the proposed asphalt plant.

Natural Heritage Features within the Study Area include unevaluated wetlands, candidate Significant Woodlands, and surface drainage features which convey flow to Falcon Creek. The subject lands form part of the approved Regional Natural Heritage System (RNHS) for the Region of Halton. A portion of these natural heritage features, namely Falcon Creek and its floodplain, are regulated by Conservation Halton (CH). The Study Area was recently designated as a City's Natural Heritage System under the revised City of Burlington Official Plan (OP). However, it also maintains a designation as an Urban Growth Area.

1.2. Proposed Development

The proposed development includes the construction of a new asphalt plant with a small stormwater management pond (dry pond), all located in an area that is currently a rock and gravel fill pile. Access to the site will be coupled with a new Hickory Lane, which will provide access to the landfill in addition to the asphalt plant. Currently, no additional works along the North Service Road are proposed (i.e., widening of the North Service Road to accommodate a turning lane).

1.3. EIA Triggers

The proposed development is within the City of Burlington's Natural Heritage System and is adjacent to a Halton Region Natural Heritage System (RNHS). The EIA assesses whether the proposed development will result in any negative impacts on the Regional Natural Heritage System Key Features that occur on and adjacent to the site, as per Subsection 4.2.4 of the City's OP and Section 118(3)c) of the Halton Region's Official Plan (ROP).

1.4. Scoped Issues and Required Tasks

A pre-consultation letter from the City of Burlington dated February 12, 2020, identified that the Study Area is in proximity to an Environmental Protection Area and as a result, a site-specific Environmental Evaluation Report was identified to be completed 'to ensure that impacts on the natural environment are minimized through maximum impervious surface limits and setbacks from watercourses and natural features. This letter also requires that a Tree Inventory and Protection Plan be completed.

As determined through Terms of Reference (ToR), the EIA follows the Region of Halton Guidelines (draft update dated 2019), provides detailed mapping of the Study Area and results of the biophysical assessments, considers water quality impacts and historical land uses, assesses headwater and stormwater drainage features, and discusses a monitoring plan.

2. Planning Context

2.1. Context

2.1.1. Provincial Policy Statement 2020

The Provincial Policy Statement (PPS), 2020 is administered under Section 3 of the *Planning Act*. It came into effect on May 1, 2020, and replaced the 2014 PPS. The PPS applies to planning decisions made on or after that date. It provides policy direction for land use and development within the Province of Ontario and provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The policies of the PPS may be complemented by provincial and municipal plans and policies.

The PPS defines eight natural heritage features and provides planning policies for each, which are listed below. The function of Natural Heritage Features and Areas is further clarified by the definition of a Natural Heritage System, which is *"a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems."*

1. Significant wetlands
2. Coastal wetlands
3. Fish habitat
4. Significant woodlands
5. Significant valleylands
6. Habitat of endangered species and threatened species
7. Significant Wildlife Habitat
8. Significant Areas of Natural and Scientific Interest (ANSIs)

Sections 2.0 and 3.0 of the PPS deal with development and site alteration, and where these activities shall not be permitted. Section 2.0 policies surround the conservation of biodiversity, and protection of the health of the Great Lakes, natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits. Section 3.0 directs development away from areas of natural or human-made hazards to mitigate risks to public health or safety, and property damage from natural hazards, including the risks that may be associated with the impacts of a changing climate.

Policies in Section 2.1 are particularly relevant as they surround development and site alteration in and adjacent to *natural heritage features*. These policies and select others are outlined below, in Table 1.

Table 1. Applicable Policies of the Provincial Policy Statement

Policy Number	Policy
(2.1 - Natural Heritage) 2.1.2	The diversity and connectivity of natural features in an area and the long-term *ecological function* and biodiversity of *natural heritage systems* should be maintained, restored or where possible, improved, recognizing linkages between and among *natural heritage features and areas*, *surface water features* and *groundwater features*.
2.1.3	*Natural heritage systems* shall be identified in Ecoregions 6E & 7E[1], recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas*, and *prime agricultural areas*.
2.1.4	*Development* and site alteration shall not be permitted in: a) *significant wetlands* in Ecoregions 5E, 6E and 7E[1]; and, b) *significant coastal wetlands*.
2.1.5	Development and site alteration shall not be permitted in: a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E; b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River)[1]; c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River)[1]; d) *significant wildlife habitat*; e) *significant areas of natural and scientific interest*; and f) *coastal wetlands* in Ecoregions 5E, 6E and 7E[1] that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.
2.1.6	*Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.
2.1.7	*Development and site alteration* shall not be permitted in the *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.
2.1.8	*Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.
(2.2 - Water) 2.2.2	*Development* and *site alteration* shall be restricted in or near *sensitive surface water features* and *sensitive groundwater features* such that these features and their related *hydrologic functions* will be protected, improved or restored. Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore *sensitive surface water features*, *sensitive ground water features*, and their *hydrologic functions*.
(3.1 - Natural Hazards) 3.1.1	Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of: a) *hazardous lands* adjacent to the shorelines of the *Great Lakes - St. Lawrence River System* and *large inland lakes* which are impacted by *flooding hazards, erosion hazards* and/or *dynamic beach hazards*; b) *hazardous lands* adjacent to *river, stream* and *small inland lake systems* which are impacted by *flooding hazards* and/or *erosion hazards*; and c) *hazardous sites*.
3.1.3	Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards

2.1.2. Endangered Species Act 2007

The *Endangered Species Act (ESA) (2007)* protects habitat and individuals of wildlife species designated as Endangered, Threatened or Extirpated in Ontario. These designations are defined as:

- *Endangered:* A species shall be classified as an endangered species if it lives in the wild in Ontario but is facing imminent extinction or extirpation.
- *Threatened:* A species shall be classified as a threatened species if it lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
- *Extirpated:* A species shall be classified as an extirpated species if it lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.

Provincial Species at Risk are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO). The ESA protects species listed by COSSARO as Endangered, Threatened or Extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well as prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the ESA aimed at protecting areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. In addition, specific habitat regulations for some species have been developed that specifically define the extent and character of their protected habitat beyond what is stated in the general habitat regulation.

Activities that may impact a protected species or its habitat require the prior issuance of a Permit from the Ministry of Environment, Parks and Conservation (MECP) unless the activities are exempted under Regulation. The current (June 29, 2020) Ontario Regulation 242/08 identifies activities exempt from the Act's permitting requirements; these activities are subject to rigorous controls outside the permit process, including registration of the activity and preparation of mitigation plans. Activities that are not exempted under O. Reg. 242/08 require a complete permit application process.

2.1.3. Greenbelt Plan 2017

The Greenbelt Plan was originally enacted in 2005 and has since been updated (2017). It provides policies to protect the agricultural land base and the associated ecological and hydrological features and functions within the Greater Golden Horseshoe. Lands included in the Greenbelt Area are defined by O. Reg 59/05. Approximately 5.4 ha of Study Area is within the Greenbelt Plan Area, and it is designated as protected countryside overlayed by a natural heritage system. It is stated in section 3.2.5 of the Greenbelt Plan that in the case of wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes and significant woodlands, the minimum vegetation protection zone shall be 30 metres measured from the outside boundary of the key natural heritage feature or key hydrologic feature.

2.1.4. Growth Plan for the Greater Golden Horseshoe 2019

The Study Area is a part of the Greater Golden Horseshoe (GGH) (Regulation 416/05), one of North America's most dynamic and fast-growing regions. This Plan is issued under the authority of section 7 of the

Places to Grow Act, 2005. It was approved through an Order in Council made under that Act to come into effect on July 1, 2017. The GGH contains many of Ontario's most significant ecological and hydrologic natural environments and scenic landscapes, including the Oak Ridges Moraine, the Niagara Escarpment, and the other natural areas in the Greenbelt Area and beyond. This Plan requires the identification of water resource systems and the protection of key hydrologic features and key hydrologic areas, like the level of protection provided in the Greenbelt. Section 4.2.4 of the GGH identifies policies surrounding Lands Adjacent to Key Hydrologic Features and Key Natural Heritage Features.

2.1.5. City of Burlington Official Plan

Burlington's new Official Plan was adopted by City Council on April 26, 2018 and approved, with modifications, by Halton Region on Nov. 30, 2020. Section 17(27) of the Planning Act (R.S.O. 1990, as amended) sets out that all parts of an approved official plan that are not the subject to an appeal will come into effect on the day after the last date for filing a notice of appeal - that date being Dec. 22, 2020 for the new Burlington Official Plan. The record prepared for the Ontario Land Tribunal (OLT, formerly the Local Planning Appeal Tribunal or LPAT) by Halton Region on Dec. 23, 2020 states that 48 appeals to the Burlington Official Plan, 2020 were received. Since that date, four of the 48 appeals have been withdrawn by the appellant(s). All remaining appeals to the Burlington Official Plan, 2020 will be assessed by the OLT to determine their validity in accordance with their consistency/conformity test, and other factors. In the meantime, the City has prepared an interim working version of the Burlington Official Plan, 2020 and has made the appeals available for public access.

The following information is per the interim working version of the Official Plan:

As per Schedule C: *Land Use- Urban Area,* the southern half of the Study Area is designated as the City's Natural Heritage System. The northern half of the property is designated under Schedule K: *Land Use – North Aldershot* as an Environmental Protection Area with a piece of the Parkway Belt crossing west to east. Chapter 4 of the OP provides guidance pertaining to sustainable growth and protection of the City's natural heritage features. This chapter indicates that development or site alteration within or adjacent to the City's Natural Heritage System is prohibited unless it has been demonstrated through the EIA or equivalent study that there will be no negative impacts on the City's Natural Heritage System or on natural heritage features and/or their ecological and hydrologic functions or linkages.

The property is subject to section 8.2.4(3) (b) Site Specific Policies of the OP, which state: Section 2.4.3(b): *submission of a site-specific EIA for 291 North Service Road is required to ensure negative impacts are minimized through measures such as maximum impervious surface limits and setbacks from nature features*."

2.1.6. Halton Region Official Plan

On July 7th, 2021, Halton Regional Council adopted Amendment No. 48, "An Amendment to Define a Regional Urban Structure," to the Halton Regional Official Plan through By-law No. 31-21. This amendment, known as ROPA 48, is the first amendment made for the Region's Municipal Comprehensive Review and Halton Regional Official Plan (ROPA) update under Section 26 of the *Planning Act (1990)*. This amendment defines and provides direction on the regional urban structure and identifies components that include strategic growth areas (e.g., Urban Growth Centres, Major Transit Station Areas, Regional Nodes, and Employment Areas. This amendment is subject to final approval by the Minister of Municipal Affairs and Housing, which is a final decision not subject to approval.

ROPA 48 includes an update to the Regional Urban Structure mapping. This includes the addition of Map 1H to establish the Regional Urban Structure, and Map 6 to delineate the boundaries of the Major Transit Station Areas. Updates were made to reflect the Regional Urban Structure on Map 1, Map 1C, and Map 3.

Per Map 1, the Study Area is designated as falling within a Regional Natural Heritage System (NHS). Map 1C shows the Study Area as falling within the Employment Area. The new Map 1H displays a Major Transit Station Area to the southwest of the Study Area, near Waterdown Rd and Highway 403, while Map 3 includes Highway 403 as a Priority Transit Corridor. Updates through ROPA 48 that pertain to the Natural Heritage System (NHS) include that the planning horizon has increased beyond the year 2051 versus the previous horizon beyond 2031.

2.1.7. Conservation Halton

Under the Conservation Authority Act, R.S.O. 1990, c. 27, recently updated on April 1, 2024, Conservation Halton (CH) regulates all watercourses, valleylands, wetlands, shorelines of Lake Ontario and Hamilton Harbour and hazardous lands, as well as lands adjacent to these features. After consultation with the Conservation Authority, it was identified that the Study Area is traversed by tributaries of Falcon Creek. The Study Area also contains small wetland pockets immediately adjacent to the proposed development site, which CH has determined are not regulated features (Technical Review of Pre-Consultation Materials – 1st Submission, December 1, 2023). Additionally, wetlands in the surrounding landscape have recently been identified and evaluated as part of the City of Burlington Official Plan Update. The evaluation was reviewed and accepted by the Ministry of Natural Resources and Forestry (MNRF) in December 2020 and resulted in updating to the Grindstone-Falcon Creeks Wetland Complex.

As per Conservation Halton's policies, a permit is required before undertaking any development within regulated areas, and development must meet the Conservation Authorities' Policies and Guidelines, which include provisions for a regulated distance of 7.5 meters from the greater of the limit of flooding and erosion hazards and 30 meters from all wetlands. A wetland water balance will be required to ensure no impact on the hydrological function of adjacent wetlands.

2.2. Consultation Undertaken

The Environmental Impact Assessment Terms of Reference were reviewed by Conservation Halton and Halton Region staff, dated April 20, 2020, and comments were received and reviewed. Staking of the woodland occurred with the Region of Halton in August 2020. Additional meetings were held with Halton Region staff (landfill operations) to determine the operational needs of the proposed development as it relates to the operation of the landfill. Of particular importance was aligning Hickory Lane with the existing leachate collections system, providing access to the cleanout access ports. A second pre-consultation meeting was held with the City of Burlington, Halton Region and Conservation Halton staff on December 1, 2021, and a Pre-Application Public Consultation meeting was held on January 20, 2022.

An additional woodland staking occurred with Halton Region staff on February 8, 2024.

2.3. Management Plans

Cootes to Escarpment EcoPark System

The Cootes to Escarpment EcoPark System is a collaborative initiative of ten local government and non-profit organizations in the Burlington-Hamilton area, at the southwestern end of Lake Ontario. The program owns and or manages almost 1,900 hectares (4,700 acres) of natural lands in this area. The partners work together to protect, connect, and restore the natural lands, and to deliver sustainable recreation and education opportunities.

Final Management Plan for Waterdown-Sassafras Woods Heritage Lands

The final Management Plan for the Waterdown-Sassafras Woods Heritage Lands was developed in January 2017. Drafts of the Management Plans were reviewed by a Steering Committee, Stakeholder Advisory Committee and by members of the public who provided feedback at two public meetings. The purpose of the Management Plan was to develop a set of management directions for the Current EcoPark System Lands owned by Conservation Halton, City of Burlington, Halton Region and the Bruce Trail Conservancy. The plan directs the protection, enhancement, and communication of the important natural and cultural features within the Waterdown-Sassafras Woods Heritage Lands, one of the six core natural areas within the Cootes to Escarpment EcoPark System. This Management Plan is a compilation of detailed information about the Waterdown-Sassafras Woods Heritage Lands and the articulation of the partner agencies' joint vision for the holistic management of their lands. It provides a framework for future planning and implementation actions at the individual site level.

3. Methods

3.1. Relevant Guidelines

3.1.1. Species at Risk Screening

A screening for the possible occurrence of Species at Risk (SAR) was conducted for the Study Area based on Federal and Provincial status. This included a review of the Natural Heritage Information Centre (NHIC), the Hamilton Conservation SAR list; the Breeding Bird, Moth, and Butterfly Atlases; iNaturalist, DFO Aquatic Species at Risk Distribution Mapping. Conservation Halton was contacted, and although not directly contacted, Hamilton Naturalists Club records were included in the eBird atlas review. A Species at Risk Screening was sent to the Ministry of Environment, Conservation and Parks on June 24, 2020.

3.1.2. Significant Wildlife Habitat Assessment

A screening for Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and Significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (January 2015) was conducted for the Study Area. All potential SWH identified through this screening assessment were subsequently investigated during the field studies within the Study Area.

3.2. Background Studies

Literature and data pertaining to the Study Area were reviewed and evaluated to obtain natural heritage data and background planning policy information. A list of documents and information sources consulted for the purpose of this study is provided below:

- Provincial Policy Statement (2020)
- Endangered Species Act (2007) and Ontario Regulation 242/08
- Growth Plan for the Greater Golden Horseshoe (GGH)
- Green Belt Plan (2017)
- Halton Region Official Plan (approved 1995, consolidated 2018)
- City of Burlington Official Plan (approved 2008, updated 2019)
- Final Management Plan for Waterdown-Sassafras Woods Heritage Lands (2017)
- Natural Heritage Information Center Database information (current)
- Ontario Breeding Bird, Mammal and Herpetofauna Atlases (current)
- Ontario Butterfly Atlas
- Ontario Moth Atlas
- DFO Aquatic Species at Risk Distribution Mapping
- iNaturalist (current), including Ontario Nature's "Herps of Ontario" project for Herpetofauna

3.3. Field Surveys and Analysis

3.3.1. Floristic Studies

A three-season inventory of all floristic species was completed in the spring (May 14, 2020), summer (July 23, 2020), and fall (September 11, 2020) within the Study Area. Species nomenclature is based on the Ministry of Natural Resources "Southern Ontario Vascular Plant Species List – 3rd Edition" (Bradley, 2013). Species ranking was determined provincially by the Ministry of Natural Resources Natural Heritage Information Database (SRank).

Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 2008). Vegetation community boundaries were determined using desktop analysis and further refined in the field.

3.3.2. Tree Inventory

An assessment of all trees with a diameter at breast height (DBH) of 10 cm or greater within the property and within 6 metres of the development limit was completed in 2020 (refer to Table 2 for applicable survey dates). The results of this inventory and recommended protection measures are found in **Section 4.1.10**, **Appendix F** and **Map 7 and Map 7a-7e**. The following information was collected:

- **Tree #** - tree numbers correspond to Map 7, 7a-7e.
- **Species** - common and botanical names provided in the inventory table.
- **DBH** - diameter (centimeters) at breast height, measured at 1.4 m above the ground.
- **Condition** - condition of trees were assessed as follows:
    - **Trunk integrity (TI)**: conditions on trunk that might affect likelihood of failure based on factors including co-dominant stems, cracks, decay, poor taper, lean, response growth, abnormal or missing/dead bark, etc.
    - **Crown Structure (CS)**: condition on crown structure that might affect likelihood of failure including live crown ratio, presence of defects (included bark, weak attachments, cracks, decay, cavities), crown density.
    - **Crown Vigor (CV)**: an assessment of overall tree health classified as weak/under stress (poor), average vigor for its species and site condition with some signs of stress (fair), growing well and appears to be free of significant health stress factors (good).
- **Comments** - additional relevant detail.

3.3.3. Breeding Bird Surveys

Breeding bird surveys were undertaken by a breeding bird expert following the Ontario Breeding Bird Atlas (2001) protocol under appropriate weather conditions. These took place over 2 visits on June 9 and June 23, 2020, for a total of 6 hours of survey time.

3.3.4. Amphibian Surveys

Amphibian surveys were completed following the Marsh Monitoring Program protocol (Bird Studies Canada 2009). This required three visits between mid-April and the end of June when there were light winds and air temperatures of 5°C, 10°C and 17°C, respectively. These surveys were completed on April 27th, May 23rd, and June 6th, 2020.

3.3.5. Incidental Wildlife Surveys

Formal surveys for mammals, reptiles, and insects were not completed, but incidental observations were completed during other survey times.

3.3.6. Bat Maternity Roost Assessment

Bat maternity roost surveys occurred within the WODM4-4 community in 2021, following the updated MNRF (2017) protocol for Survey Protocol for Species at Risk Bats within Treed Habitats. This occurred on February 3, 2021. Per the MNRF (2017) protocol, this survey was suitable to identify maternity roost trees for *Myotis* bats since it occurred during leaf-off conditions.

3.3.7. Watercourse Characterization

An assessment of drainage features located to the east and west of the existing gravel pad was conducted to determine their form and function. The drainage features were assessed numerous times throughout the year (2020) to determine the flow regime. It was determined through site assessment and discussions with regional landfill site management staff that the main feature located immediately east of the development site is not natural, but rather a drainage ditch constructed to convey surface flow from the landfill cap. As a result, a formal fish habitat assessment of the feature was not conducted for this feature. A much smaller, discontinuous feature is located immediately west of the development site. This feature is also an artifact of the landfill operations and does not have a defined low-flow channel and only intermittently conveys flow.

4. Biophysical Inventory

4.1. Existing Conditions

The following section discusses the existing and historical conditions of the Study Area and summarizes the results of the field survey and analyses described in Section 3.

4.1.1. Summary of Surveys

GeoProcess Research Associates conducted field studies to characterize and inventory the natural heritage features and wildlife activity of the Study Area and surrounding landscape. A summary of the fieldwork details is provided below in Table 2**.**

Table 2. Summary of Surveys.

Activity	Visit Features	Date	Staff
Amphibian Call Counts	Visit 1: night temperature > 5°C	April 27th, 2020	Ken Glasbergen & Waverley Birch
	Visit 2: night temperature > 10°C	May 23rd, 2020	Jenn Reader
	Visit 3: night temperature > 17°C	June 6th, 2020	Jenn Reader
Breeding Bird Point Counts	Visit 1: morning temperature 14-16°C	June 9th, 2020	Don Graham (Consulting Biologist)
	Visit 2: morning	June 23rd, 2020	Don Graham (Consulting

Activity	Visit Features	Date	Staff
Floristic Studies	temperature 22-25°C		Biologist)
	Spring	May 14, 2020	Jenn Reader
	Summer	July 23, 2020	Jenn Reader
	Fall	September 11, 2020	Jenn Reader
Tree Inventories	Summer 2020	August 29-31st	Ben Angel & Waverley Birch
	Winter 2020	November 12th	Jenn Reader & Meghan Douglas
	Summer 2021	August 3rd	Meghan Douglas
Watercourse Characterization	Spring, Summer, Fall 2020	April 14, May 22, July 29, August 12	Ken Glasbergen
Wetland Staking	Summer	August 6, 2020	CH GRA
Woodland Dripline Staking	Summer	July 29, 2020	ROH GRA
	Winter	February 8, 2024	ROH GRA
Bat Maternity Roost Survey	Winter	February 3rd, 2021	Meghan Douglas

4.1.2. Physiography

The Niagara Escarpment, Lake Ontario, and the sloping plain between the escarpment and the lake make up the land area of Burlington, where the Study Area is located. The northeast-trending shore of Lake Ontario from Burlington to Toronto continues as a distinct bluff cut in red shale of the Queenston Formation for about 18 miles; Lake Ontario has gradually cut back into the red shale from Burlington to Oakville (Chapman and Putnam, 1984). An Environmental Investigation completed by EXP Service Inc. in 2015 included 11 borehole samples that were extracted from the adjacent property at 391 North Service Rd, which overlaps the current Study Area and found surficial topsoil underlain by native silty clay/clayey silt till, overlying shale bedrock.

4.1.3. Historical Conditions

The Study Area is located within the Burlington North Service Road landfill property. The landfill site was in use from 1972 until 1988 (City of Burlington, 2011) and is approximately 34.5 ha in size. While the site no longer accepts waste, the site continues to be monitored by Halton Region for groundwater contaminants and other environmental effects. The Burlington North Service Road site is built on shale, although a layer of clay is at the northern portion (City of Burlington, 2011). Seepage from the landfill is collected through a

series of toe drains located around the site's periphery. Seepage that is collected in the drain system is sent to the Burlington Skyway sewage treatment plan. The technology of lining landfill sites was not in effect when this site was in use, so leaching remains a continual issue. Therefore, constant monitoring of the landfill site is an important safeguard of the surrounding land and water.

4.1.4. Hydrological Features

Wetlands

The Study Area contains three buckthorn small inclusion wetlands associated with surface drainage to the west of the proposed asphalt plant.

Further to the west, the Falcon Creek Wetland complex is located along Falcon Creek. This wetland complex was recently reassessed as part of the City of Burlington Official Plan Update. The reassessment complexed a series of floodplain wetlands along Falcon Creek, determining that they form a Provincially Significant Wetland Complex. The floodplain wetlands are hydrologically dependent on Falcon Creek and are not influenced by the hydrology of the development area.

Headwater Drainage Features

One primary drainage feature traverses the "Study Area" and is best described as an anthropogenic drainage ditch created as part of the surface water management system of the landfill. The channel is located to the east of the existing gravel pad fill pile, which will be the location of the new asphalt plant. The channel is straight, with channel hardening and grade control measures found throughout the feature. The downstream bed and banks of the channel have been hardened with rip-rap. Several gabion basket grade control structures are located throughout the length of the channel.

Flow within the drainage feature is intermittent, present during the spring freshet and after larger rain events. The feature was observed as being dry during summer and fall visits. The feature does not support direct fish habitat. As the feature is part of the landfill infrastructure and not a natural headwater drainage feature, it was not assessed as a natural feature for the purposes of this EIA.

A very small drainage feature is located to the west of the gravel pad. This feature also drains the landfill site, conveying flow south to Falcon Creek. This feature is much smaller than the drainage feature to the east. It has no defined channel and flow is dispersed through vegetation. Flow is intermittent and only observed in the early spring after the freshet. Three small wetland pockets are located along this feature. These small wetlands are dominated by reed canary grass, phragmites, and European buckthorn, all species that do not require very wet conditions to persist. This feature does not provide any fish habitat functions and is identified as an anthropogenic feature resulting from the construction of the landfill.

Falcon Creek

Falcon Creek originates just above the escarpment in Waterdown Woods, conveying flow south to Burlington Bay. The creek is located approximately 125 m to the west of the proposed asphalt plant. It has a well-defined channel that has a bankfull channel width of approximately 3 m and a depth of approximately 0.5 m. The creek conveys permanent flow and supports a warm water small-bodied, cyprinid fish community. Long reaches of the creek are enclosed as it flows through the urbanized areas of Aldershot. Drainage from

the landfill and the proposed asphalt plant drain to Falcon Creek, prior to being conveyed under Highway 403.

4.1.5. Vegetation

A total of six ELC vegetation communities were delineated for the Study Area and are described below. Refer to **Map 3** for delineated ELC polygons.

Table 3. Description of ELC Communities Documented for King Paving

ELC Code	Classification	Vegetation	Comments
Deciduous Forest Community Series			
FODM3-1	Dry-Fresh Poplar Deciduous Forest Ecosite	Species composition for this community includes Trembling Aspen (*Populus tremuloides*) 63%, Shagbark Hickory (*Carya ovata ssp. ovata*) 16%, White Ash (*Fraxinus americana*) 14%, Red Oak (*Quercus rubra*) 5%, Black Cherry (*Prunus serotina*) 1% and Cottonwood (*Populus deltoides*) 1%. The understory and groundlayer are dominated by Common Buckthorn (*Rhamnus cathartica*) with pockets of Grey Dogwood (*Cornus racemosa*), Japanese Knotweed (*Reynoutria japonica*) and Tatarian Honeysuckle (*Lonicera tatarica*). The groundlayer is predominantly Garlic Mustard (*Alliaria petiolata*), Enchanter's Nightshade (*Circaea canadensis*), White Avens (*Geum canadense*) and regenerating Common Buckthorn.	Disturbance as a result of surrounding land use and high recreational use has impacted the ecological integrity of this unit resulting in high levels of non-native and/or invasive species, which in turn has impacted the forest structure (dense Buckthorn, limited native tree regeneration, low species richness evident in the groundlayer); dumping of debris and informal deer trails. Limited mature, native tree specimens exist, with the exception of a few Red Oak and Shagbark Hickory along the western limit of the woodland. Impacts from Emerald Ash Borer (EAB) were documented for all White Ash surveyed within the woodland.
FODM11	Naturalized Deciduous Hedgerow Ecosite		Located around a fenced storage yard. Predominantly planted coniferous trees.

ELC Code	Classification	Vegetation	Comments
Woodland			
WODM4 **Inclusion: MAMM1-3a*	Dry-Fresh Deciduous Woodland Ecosite **Inclusion*: *Mixed Mineral Meadow Marsh Type(a)*	This community is composed of White Ash, Manitoba Maple (*Acer negundo*), Black Locust (*Robinia psuedoacaia*), Trembling Aspen, Shagbark Hickory and Sugar Maple (*Acer saccharum*). The understory includes dense Common Buckthorn with occurrences of Japanese Knotweed, Grey Dogwood, Tatarian Honeysuckle, Garlic Mustard, White Avens, Riverbank Grape (*Vitis riparia*) and Canada Thistle (*Cirsium arvense*).	Woodlands contain equal to or greater than 35% tree cover but less than 60% cover, and, areas with a cultural legacy are typically dominated by invasive herbaceous, shrub and tree cover. Historically land use across the site has greatly impacted the form and function of these features. Current recreation use within the western woodland community has further impacted the property's features and function, resulting in degraded communities. Dense buckthorn exists throughout the entirety of the woodlands. Both woodlands exhibit impacts from Emerald Ash Borer (EAB), and as a result, a large portion of the canopy is composed of dead Ash with little to no epicormic branching. Informal deer trails were documented throughout the woodland features. Mountain bike trails exist within the western woodland.
Deciduous Thicket			
THDM2-4	Gray Dogwood Deciduous Shrub Thicket Type	Dominated by a dense thicket of Grey Dogwood with occurrences of Common Buckthorn. The groundlayer was of common native and non-native old field species such as Canada Goldenrod, Wild Carrot, Garlic Mustard, Wild Strawberry and regenerating Common Buckthorn.	Largely associated with the existing hydro corridor and extends off-property to the east and west. Informal deer trails throughout the feature and dumping of debris.

ELC Code	Classification	Vegetation	Comments
THDM2-5 **Inclusion: MAMM1-3b*	Buckthorn Deciduous Shrub Thicket Type **Inclusion*: *Mixed Mineral Meadow Marsh Type(b)*	Dominated by dense Common Buckthorn. The canopy is dominated by dead Green Ash (*Fraxinus pennsylvanica*) impacted by EAB. Additional species include Manitoba Maple, Multi-flora Rose (*Rosa multiflora*), Riverbank Grape, Grey Dogwood, Field Horsetail (*Equisetum arvense*) and Sensitive Fern (*Onoclea sensibilis*), Dame's Rocket (*Hesperis matronalis*), Tall Buttercup (*Ranunculus acris*), Wild Strawberry (*Fragaria virginiana*) and Coltsfoot (*Tussilago farfara*).	Located east and immediately adjacent to the proposed asphalt plant. Disturbed as a result of historical and existing land use resulting in a high percentage of non-native, invasive species, soil compaction and dumping of debris. Two soil samples were completed for this polygon, and silty clay soils were identified. The depth of samples was limited due to the soil texture and compaction. No mottling or water table was identified for the soil samples.
Meadow Series			
MEMM3	Dry-Fresh Mixed Meadow Ecosite	Dominated by common native and non-native species Smooth Brome (*Bromus inermis ssp. inermis*), Orchard Grass (Dactylis glomerata), Kentucky Blue Grass (*Poa pratensis*), Redtop (*Agrostis gigantea*), Canada Goldenrod (*Solidago canadensis*), Alfalfa (*Medicago sativa ssp. sativa*), Timothy (*Phleum pratense*), Common Milkweed (*Asclepias syriaca*), Ox-eye Daisy (*Chrysanthemum leucanthemum),* Alsike Clover (*Trifolium hybridum spp. elegans*), Canada Thistle, New England Aster (*Symphyotrichum novae-angliae*), and Wild Carrot (*Daucus carota*). Juvenile tree and shrub species are present in low numbers through this community, including Grey Dogwood, Common Buckthorn, Manitoba Maple and Staghorn Sumac (*Rhus typhina*).	This community occupies the areas along the access lanes, hydro corridor and small pockets within the thicket. Portions of this community have been managed by Hydro One.

ELC Code	Classification	Vegetation	Comments
Meadow Marsh Community Series			

ELC Code	Classification	Vegetation	Comments
MAMM3-1a (forms two small pockets)	Mixed Mineral Meadow Marsh Type	Composed of a mixture Common Reed (*Phragmites australis*), Reed-canary Grass (*Phalaris arundinacea*), Purple Loosestrife (*Lythrum salicaria*) with occurrences of Fowl Manna Grass (*Glyceria striata*) and Panicled Aster (*Symphyotrichum lanceolatum*).	Internal roadside drainage ditching and surface runoff have resulted in a small, linear, disturbed meadow marsh located west at the toe of the slope associated with the existing access road. The feature is directly associated with an informal deer trail. Silty clay dominated soils. No mottling is present within 1 sample.

ELC Code	Classification	Vegetation	Comments
MAMM3-1b	Mixed Mineral Meadow Marsh Type	Dominated by Reed-canary Grass, Common Reed with occurrences of Narrow-leaved Cattail, Purple Loosestrife, Panicled Aster, Joe Pye Weed (*Eutrochium maculatum*), Spotted Touch-me-not (*Impatiens capensis*), Fowl Blue Grass (*Poa palustris*), Common Buckthorn heavy along the limits of the wetland pocket and occurrences within the feature.	Small inclusion wetland pocket adjacent to the North Service Road within the road drainage ditch. Standing water present in spring, early summer. An amphibian survey station was established within proximity to this feature; no occurrences of amphibians were identified as calling during the three site visits. Silty clay to clay dominated soils. No mottling present within 2 samples. Informal trails from deer are present within the feature. Dumping of debris as a result of historical and current land use was documented.

4.1.6. Breeding Birds

The results of the breeding bird survey are presented in Table 4. In the species columns, each species is assigned a breeding level based on the highest level of breeding evidence observed by quadrant. A species observed, showing no breeding evidence or where no suitable habitat is present, is marked 'X'. The number recorded represents the highest one-day total for that species. Bird species were partitioned into 3 Wildlife Survey Quadrants, based on broad habitat characteristics and continuity (Map 4). These quadrants are:

Q1. Cultural Meadow
Q2. Cultural Thicket
Q3. Maple-dominated Deciduous Forest

These areas were thoroughly covered by walking and recording presence, abundance and level of breeding evidence (using Ontario Breeding Bird Atlas [OBBA] protocols).

Table 4 lists the COSSARO [provincial] and COSEWIC [national] rank [if any], as well as the Natural Heritage Information Centre [NHIC, MNR] S rank and the City of Hamilton Nature Counts status. COSSARO is the Committee on the Status of Species at Risk in Ontario [MNR], and COSEWIC is the Committee on the Status of Endangered Wildlife in Canada.

Table 4. Breeding Bird Survey Results

SPECIES	Q1	Q2	Q3	Breeding Level	Hamilton Status	COSSARO/ COSEWIC	Comment
Great Blue Heron		1		X	Uncommon		Flyover
Green Heron		1		X	Uncommon		Flyover
Canada Goose	8			X	Common		Flyover
Turkey Vulture		1		X	Uncommon		Flyover
Killdeer	2			A	Abundant		
Spotted Sandpiper	1			A	Common		
Ring-billed Gull	10	10		X/X	Abundant		Flyover
Mourning Dove		2		P	Abundant		
Ruby-throated Hummingbird		1		H	Uncommon		
Downy Woodpecker		1	1	H/T	Common		
Red-bellied Woodpecker			1	SM	Uncommon		
Northern Flicker			1	H	Common		
Eastern Phoebe			1	H	Uncommon		
Eastern Wood-pewee			1	SM	Common	SC/SC	See SAR discussion
Willow Flycatcher		6		T	Common		
Great Crested Flycatcher			1	H	Common		

SPECIES	Q1	Q2	Q3	Breeding Level	Hamilton Status	COSSARO/ COSEWIC	Comment
Red-eyed Vireo			2	T	Common		
Warbling Vireo		2		T	Common		
Blue Jay			1	H	Abundant		
American Crow			1	T	Common		
Barn Swallow	4	4		H/H	Common	THR/THR	See SAR discussion
Tree Swallow	1			X	Abundant		Flyover
Northern Rough-winged Swallow	2	2		X/X	Common		
Red-breasted Nuthatch					Uncommon		
House Wren		6		T	Common		
American Robin		4	4	FY/T	Abundant		
Gray Catbird		6		A	Abundant		
Brown Thrasher		1		SM	Uncommon		
European Starling	10	6		T/T	Abundant		
Cedar Waxwing		6	3	AE/P	Common		
Yellow Warbler		10		AE	Abundant		
Chipping Sparrow		2		P	Abundant		
Field Sparrow	1			A	Common		
Savannah Sparrow	1			SM	Abundant		
Song Sparrow	2	8		A/CF	Abundant		
Northern Cardinal		6	2	P/T	Abundant		
Indigo Bunting		4	1	T/T	Common		
Red-winged Blackbird	2	15		CF/A	Abundant		
Common Grackle	4	4		X/T	Abundant		
Brown-headed Cowbird	4	4	2	P/P/H	Abundant		
Baltimore Oriole		2	1	P/SM	Common		
American Goldfinch	4	6		P/A	Abundant		
House Finch	2			P	Abundant		

OBBA Breeding Evidence Codes

POSSIBLE

H-species observed in breeding season in suitable nesting habitat
S-singing male present or breeding calls heard in breeding season in suitable habitat

PROBABLE

P-pair observed in their breeding season in suitable habitat
T-permanent territory presumed through registration of territorial song or presence of adult bird in breeding habitat on at least 2 days, one week or more apart at the same place.
D-courtship or display between a male and female, or two males including courtship feeding and copulation.
V-visiting probable nest site.
A-agitated behavior or anxiety calls of adults
B-brood patch on adult female or cloacal protuberance on adult male
N-nest building or excavation of nest hole

CONFIRMED

DD-distraction display or injury feigning
NU-used nest or eggshell found [occupied/laid during atlas period]
FY-recently fledged young or downy young.
AE-adults leaving or entering nest site in circumstances indicating occupied nest
FS-adult carrying faecal sac
CF-adult carrying food for young
NE-nest containing eggs
NY-nest with young seen or heard

Species of Conservation Concern

Species status [for all fauna] was evaluated using the following sources:

- The COSEWIC list for national status designations (current list at time of report preparation);
- The Species At Risk Act for federally listed species (current at time of report preparation);
- The COSSARO list for provincial status designations (current list at time of report preparation);
- The NHIC / Biodiversity Explorer website for provincial rarity ranks (i.e. S-Ranks);
- The *Significant Wildlife Habitat Technical Guide* (OMNR 2000) – list of 'Area Sensitive' bird species

Of the 43 summer resident bird species (36) with some breeding evidence], the following species of conservation concern [e.g. species that are "designated" by COSEWIC and/or listed under the Species at Risk Act [SARA]; species "designated" by COSSARO, including Endangered and Threatened species listed and regulated under Ontario's ESA; and provincially rare species [NHIC S-rank of S1 to S3] were observed during field surveys.

- 2 species are listed **Species at Risk (SAR) in Canada** (by COSEWIC):
  - Eastern Wood Pewee – *Special Concern*
  - Barn Swallow – *Special Concern*

- 2 species are listed **Species at Risk (SAR) in Ontario** (by COSSARO):
    - Eastern Wood-Pewee – *Special Concern*
    - Barn Swallow – *Special Concern*

SAR Bird Discussion

Eastern Wood-Pewee – A total of 1 singing male was recorded in the deciduous forest (Q3). The woodland habitat here is considered ideal, the species is expected, and the entire woodland area is considered breeding habitat for the species. All observations were made within 100 m of the woodland edge.

Barn Swallow – A maximum of 4 individuals were recorded flying over the site's cultural meadow (Q1) and cultural thicket (Q2). No outbuildings that can provide suitable nesting habitat for this species occur on the site. The Barn Swallows recorded on-site are considered foraging visitants.

Potential SAR Bird Species Based on Suitability of Habitat

Wood Thrush [SC/THR] - Extensive visual/acoustic surveys did not detect this species despite the species' distinctive carrying song and the observer's experience with the species. It is considered not present on-site, but the deciduous forest provides suitable habitat, and the species may occur in future breeding seasons.

Red-headed Woodpecker [SC/THR] – Extensive visual/acoustic surveys did not detect this species despite the species' distinctive calls, appearance, and the observer's experience with the species. It is considered not present on-site, but the deciduous forest provides suitable habitat, and the species may occur in future breeding seasons.

Golden-winged Warbler [SC/THR] – Extensive visual/acoustic surveys did not detect this species despite the species' distinctive carrying song and the observer's experience with the species. It is considered not present on-site, but the cultural thicket provides suitable habitat, and the species may occur in future breeding seasons.

4.1.7. Amphibians Surveys

Amphibian surveys were completed following the Monitoring Marsh Protocol temperature requirements (See Table 5). Two survey stations were established and situated between all features, which have the potential to serve as breeding habitats. No amphibians were heard calling on any of the survey nights. The site is not that large, and if any frogs had been calling from habitats within the Study Area or adjacent to it, they would have been heard. No frogs could be heard calling from anywhere in the local area. Refer to **Map 4** for the location of the amphibian survey station.

Table 5. Amphibian Survey Field Visits

Visit #	Breeding Species	Date	Survey Temperature	Results
1	Early	April 27	10°C	No Frogs Calling
2	Middle	May 23	19°C	No Frogs Calling

Visit #	Breeding Species	Date	Survey Temperature	Results
3	Late	June 6	27°C	No Frogs Calling

4.1.8. Bat Maternity Roost Assessment

GRA performed a bat maternity roost survey within the FOD3-1 ELC community along the proposed development edge on February 2, 2021, following the updated MNRF (2017) protocol for Survey Protocol for Species at Risk Bats within Treed Habitats. The results are provided in Table 6 Per the MNRF (2017) protocol, the survey was suitable for identifying maternity roost trees for the Little brown Myotis and Northern Myotis since they occurred during leaf-off conditions. Note that all locations were recorded by GPS and can be found on Figure 4. CD refers to a co-dominant tree and MS to a multi-stem tree.

Table 6. Bat Maternity Roost Surveys

				Snag Attributes						
Tree #	Species	DBH (cm)	Ht Class *	Cavity	Loose Bark	Crack	Knot Hole	Other Snag Within 10 m	Decay Class *	Notes
1	shagbark hickory	34	3		Y			Y	1	
2	shagbark hickory	27, 26.5	3		Y			Y	1	CD
3	white ash	23	3	2		3			2	crack turns into chimney cavity 2m up
4	shagbark hickory	3*21-26.5	3		Y				1	squirrels' nest in canopy
5	shagbark hickory	6*13-18	4		Y				1	cluster of individuals
6	red oak	62	4	1		1		Y	2	broken limb created chimney cavity with access 1m above ground (10cm width)
7	shagbark hickory	21.5	3		Y			Y	1	loose bark at mid and canopy level
8	red oak	50,29, 33	4	3				Y	3	3 chimney cavities in the trunks, access

Tree #	Species	DBH (cm)	Snag Attributes: Ht Class *	Cavity	Loose Bark	Crack	Knot Hole	Other Snag Within 10 m	Decay Class *	Notes
										from 1-3m above ground, great habitat
9	willow sp.	4*13-34	3	3	Y	1			1	small cavities, crack 2m up from middle limb, squirrels' nest

* Where height (Ht) class 1 = above canopy, 2 = canopy height, 3 = just below canopy, and 4 = well below canopy.
Decay class 1 = healthy, live tree, 2 = declining live tree, part of canopy lost, and 3 = very recently dead, bark intact, branches intact.

4.1.9. Wildlife Surveys

Formal surveys for mammals, reptiles, and insects were not completed, but incidental observations can be found below in Table 7.

Table 7. Incidental Wildlife observations

SPECIES	Quantity	COSSARO/ COSEWIC	Comments
Birds			
Killdeer	1		Heard during amphibian survey
Woodcock	1		Heard during amphibian survey
Mammals			
Raccoon	1		Seen during BBS
Gray Squirrel	2		Seen during BBS
Eastern Chipmunk	2		Seen during BBS
Eastern Cottontail	3		Seen during BBS
White-tailed Deer	4		Seen in open areas at dawn during BBS
Herptiles			
Eastern Garter Snake	1		Seen during BBS
American Toad	1		Seen during BBS
Lepidoptera			
Monarch	1	Special Concern	Observed in suitable habitat

4.1.10. Tree Inventory

The tree inventory documented a total of 344 trees on and adjacent to the Study Area. The majority of trees identified are confined to woodland immediately to the east of the proposed asphalt plant. The trees

ranged in size from 10-47 cm DBH. Common trees surveyed for the property included trembling aspen (*Populus tremuloides*), declining white ash (*Fraxinus americana*), shagbark hickory (*Carya ovata*) and black locust (*Robinia psuedoacacia*).

Tree heath was good overall, with the exception of white ash, which has been heavily impacted by the invasive emerald ash borer beetle. Refer to **Appendix A** for a list of trees identified within this inventory and **Map 7 (a-e)** in Appendix A for their location.

4.1.11. Natural Heritage Systems

Wetlands

Wetlands documented on the Subject Property are limited to three small, inclusion wetlands associated with a surface water drainage immediately west and south of the proposed asphalt plant at the toe of the fill slope. These features were assessed as low quality, comprised almost exclusively of non-native, invasive species and providing limited wildlife habitat value. In addition, the proximity of these features to major roadways and highways and the resulting noise and light disturbances impact the overall wildlife function of these units, typically restricting usage to urban, generalist species. Amphibian surveys conducted for the property near these features did not find any occurrence of calling frogs or toads. Soil sampling found the soils to be comprised of red clay, with no evidence of mottling.

Table 8. Existing Wetland Characteristics

Wetland	Size (hectares)	Composition	Notes
MAMM3-1a	0.055	Pockets of dense Common Reed intermixed with Reed-canary Grass and Purple Loosestrife.	Forms two small linear pockets to the west of the proposed asphalt plant.
MAMM3-1b	0.14	It is contained within a dense Buckthorn thicket with a dead Green Ash canopy. Composed of a mix of Narrow-leaved Cattail, Common Reed, Reed-canary Grass and Spotted Touch-me-not.	Located along the drainage ditch adjacent to the North Service Road.

The Grindstone-Falcon Creeks Provincially Significant Wetland (PSW) complex is located approximately 120 m to the west of the Study Area. The PSW complex was accepted by the MNRF on December 23, 2020 and was assessed as part of the update to the City of Burlington Official Plan. These features were designated as significant due to their connectivity and origins in the headwater reaches of their watersheds on the slope of the Niagara Escarpment. Although these features are less than the required 2 ha size, rationale was provided within the evaluation record for the inclusion of wetland units under two hectares in size, which include:

- Supports wetland types or dominant forms that are rare or uncommon in the wetland complex and, therefore, add to the diversity of the complex.
- Sustain significant species/communities (i.e. provincially significant vegetation community, provincially, regionally, or locally significant or uncommon species.

- Are part of larger wetlands fragmented by roads or trails.
- Are headwater areas for watercourses that contribute spring baseflows or serve as groundwater seepage areas that contribute baseflows.
- Are hydrologically connected to other wetlands.
- Provide intervening wetlands habitat between larger wetlands in and outside the complex.
- Contain amphibian breeding areas.
- Contain native fish.

The small wetland pockets documented adjacent to the development site do not meet the abovementioned criteria. The features do not support significant communities or species, nor are they hydrologically connected to the PSW complex; rather, they are the result of surface runoff from the adjacent existing landfill access roads and North Service Road. As a result of the previous land use and current uses, impacts on ecosystem functions associated with these features were noted. It is anticipated, with the level of invasive species surrounding the Subject Property and existing and future uses surrounding the site, that these wetlands will continue to support non-native, invasive species without focused interventions.

The limits of the wetland were staked in the field with Conservation Halton on August 6, 2020. Follow-up assessments forming part of the field program further defined the limits of the wetland community. These assessments, including ELC, floristic assessments and soil samples, reduced the overall wetland limit. This reduction in the wetland limit followed the protocols and criteria provided within the Ontario Wetland Evaluation System (OWES) for Southern Ontario Manual 3.2 (2014), primarily the 50% wetland vegetation role of relative cover. Wetland species were largely isolated to the identified inclusions, and the occurrence of obligate wetland and facultative wetland species vastly reduced as the community transitioned to the drier THDM2-5 and WODM4 communities. As well, following the protocol defined in the OWES manual, the order in which vegetation should be assessed using the >50% wetland vegetation rule should follow the structural nature of the vegetation from upper layers to ground layers. For MAMM3-1(a) and (b), the upper layers are composed of obligate and facultative wetland graminoid and forb species, therefore meeting the criteria for >50% wetland vegetation. In the surrounding community, including a portion of the THDM2-5 community flagged as wetland, the majority of species were identified as facultative (estimated probability of 34-66% occurrence in wetlands) and facultative upland (with an estimated probability of 1-33% occurrence within wetlands) with a few occurrences of obligate and/or facultative wetland species. Following the criteria provided in the OWES manual, in wetlands composed of upper layers dominated by trees and shrubs, these layers are typically long-lived and, therefore, better reflective of long-term conditions. Within the THDM2-5 community, Common Buckthorn is the dominant species in the upper layer and is defined as a facultative upland species. The remaining species within this community are a mixture of wetness indices. Substrates varied only slightly across the site, with soils composed of predominantly clay and silty clay, much of which showed evidence of historic disturbance. Heavy clay resulted in pooling of water, primarily associated with the wetland areas.

The ecosystem values associated with the wetlands are limited as a result of their composition and structure. The OWES recognizes wetlands' roles in the functioning of natural ecological processes both within the immediate vicinity and downstream. Some characteristics include:

- Primary production
- Watershed protection
- Preservation of biodiversity
- Maintenance of three-dimensional vegetation systems necessary for much of animal life
- Maintenance of conditions essential for symbioses
- Natural cycles (carbon, nitrogen and water)
- Provision of species to support food chains

The dominant species composition of the Subject Property's wetland units does not contain the characteristics listed to support the functioning of natural ecological processes. Common Reed, Narrow-leaved Cattail, Reed-canary Grass and Purple Loosestrife form dense monocultures that outcompete native wetland plants, provide poor wildlife habitat and disrupt natural wetland function. In addition to these species, the surrounding floodplain and woodland are dominated by the non-native, invasive Common Buckthorn, another successful invader, that exhibits rapid growth, shade tolerance, high photosynthetic rates, and varying moisture regimes.

Further communications from Halton Conservation (December 1, 2023) confirmed:

> *Upon review of the information provided, the wetlands staked by CH on August 6, 2020, are deemed to not be regulated features.*

Watercourses

The primary watercourse proximal to the Study Area is Falcon Creek, conveying flow along the western limit of the Study Area. This feature is identified as supporting a warm water bait fish community, and it is located within a well-forested riparian community. Several wetland units located within the floodplain of the creek have been complexed together to form the Grindstone-Falcon Creek PSW complex. This feature is located approximately 120 m from the proposed asphalt plant.

Located directly to the east of the proposed asphalt plant, within the western edge of the FODM3-1 woodland community, is an anthropogenic drainage ditch, which has been confirmed by Halton Region staff as being created to manage surface water from the landfill site. This feature does not support direct fish habitat and is hardened through the use of rip-rap and gabion baskets.

A small surface drainage feature is located to the west of the proposed asphalt plant. This feature does not have a defined channel, as flow is conveyed in a dispersed manner through vegetation. As with the feature to the east of the fill (asphalt plant site), it is a feature resulting from the landfill. Flow was only present in this area during the spring melt, otherwise no flow was observed during any other site visits. Three small wetland pockets were identified along the flow path, as shown on Map 5.

Woodlands

A woodland is located immediately to the east of the proposed asphalt plant. An assessment of this feature was conducted to collect qualitative data to determine the extent and size of woodland per the Region of Halton Forest Conservation By-Law 121-05, which defines woodlands as follows:

(i) 1000 Trees, of any size, per hectare, or 500 such trees per 0.5 hectare.

(ii) 750 Trees, measuring over five (5) centimeters in Diameter at DBH, per hectare, or 375 such trees per 0.5 hectare.

(iii) 500 Trees, measuring over twelve (12) centimeters in Diameter at DBH, per hectare, or 250 such trees per 0.5 hectare, or

(iv) 250 Trees, measuring over twenty (20) centimeters in Diameter at DBH, per hectare, or 125 such trees per 0.5 hectares.

but does not include a Cultivated Fruit or Nut Orchard, a Plantation established for the purpose of producing Christmas trees, a tree nursery, or a narrow linear strip of trees that defines a laneway or a boundary between fields. In addition, the boundary of a woodlands shall be defined by the ecological limit of the Woodlands and not by Property boundaries. The woodland boundary shall include the area up to the drip line and the boundary of the woodland shall be deemed to cross any corridors, natural features, roads, trails, or paths up to and including twenty (20) meters in width.

An ROH woodland located in the Study Area was assessed to determine the extent of the feature per the criteria provided by the Region of Halton Tree By-law. A stand analysis was conducted based on vegetation form and cover, utilizing fixed area circular plots with a set radius of 5.64 m, including six total plots; two plots within compartment A in the northern portion of the feature and four plots within compartment B within the southern portion of the feature.

Plots were established in areas representative of the larger area where tree cover was present, as well as areas where large variations in canopy cover exist to confirm the presence/absence of woodland density. Variations in canopy cover exist in the southern portion of the feature due to impacts from Emerald Ash Borer (EAB) and from the disturbed overall condition of the property, resulting in a dense Common Buckthorn understory. Due to this variation in canopy cover and dense shrub thicket, multiple check plots were established to confirm the presence/absence of regenerating trees. For Ash in poor condition as a result of impacts from EAB, only trees with epicormic branching at the base greater than 50% were counted as a live stem. Refer to Map 5 for the location of the density plots.

For each plot, trees were inventoried based on species type and diameter class. To determine the number of trees per hectare, the total trees tallied were multiplied by the plot per hectare factor (100) based on the fixed area sample plot size. The limit of woodland for the Subject Property was established where multiple density plots met the criteria of a woodland per the By-Law. Within the feature, density was verified by the plot per hectare factor (100) based on the fixed area sample plot size multiplied by the number of trees tallied per plot divided by the number of plots per area.

The results of the assessment identified woodland in compartment A of the feature based on the overall size of the feature (over 0.5 ha) and the number of stems per hectare corresponding to the criteria set out

in the ROH Tree By-Law. Areas corresponding to compartment B of the feature do not meet the density per the By-Law for a woodland. Refer to Table 9 for the woodland tree tally and Map 5 for the limits of the woodland.

Table 9. Woodland Tree Tally Surveyed on August 4, 2020

Compartment A					
# Plots: 2	Start Time: 9 a.m.	r = 5.64m	100m^2	1/100ha	
Tree Tally (number of stems per 100m^2)					
		Diameter cm (dbh)			
Species	**≤5**	**>5 ≤12**	**>12 ≤20**	**>20**	**All Diam.**
At		3	11		14
Hs	8	11	3		22
Aw		2			2
Total Trees/ha		**800**	**700**		**1900**
Threshold trees/ha		750	500	250	1000
Compartment B					
# Plots: 4	Start Time: 10 a.m.	r = 5.64m	100m^2	1/100ha	
Tree Tally (number of stems per 100m^2)					
		Diameter cm (dbh)			
Species	**≤5**	**>5 ≤12**	**>12 ≤20**	**>20**	**All Diam.**
Aw	1	2	1	2	6
Wi				1	1
Mm				1	1
At		2			2
Hs		1		1	2
Cb				1	1
Total Trees/ha		**125**	**25**	**150**	**325**
Threshold trees/ha		750	500	250	1000

Areas of Natural and Scientific Interest (ANSI)

The Waterdown-Sassafras Woods Heritage Lands comprise 800 ha of land located in an area extending generally from Waterdown Road to Brant Street in the City of Burlington and from Highway 403 north to Mountain Brow Road and Dundas Street in the City of Hamilton. Of the 800 ha, 446 ha (or 56%) are currently owned and managed by four partner agencies: Bruce Trail Conservancy, City of Burlington, Conservation Halton, and Halton Region. The rest is owned privately. The Waterdown-Sassafras Woods is an Area of Natural and Scientific Interest for Life Science (ANSI) and is part of the Cootes to Escarpment EcoPark System. This area provides species at risk habitat and is used by the community for hiking along the Bruce and subsequent property trails. Long-term environmental monitoring occurs using Ecological Monitoring and Assessment Network (EMAN) protocol, and in 2016, a Cootes to Escarpment management plan was created with the purpose of enhancing the protection of important natural and cultural features and improving sustainable recreation, research, and education opportunities (Lefer. L et al., 2016).

This woodland is located to the east of the proposed asphalt plant. A woodland staking was completed with Halton Region staff on February 3, 2024, to determine the limits of this feature in relation to the development site. Map 5 provides the staked woodland limits.

5. Species at Risk (SAR) and SAR Habitat

The Endangered Species Act, 2007, S.O. 2007, was passed to protect the biodiversity of Ontario by using the best available scientific, community and aboriginal traditional knowledge and the precautionary principle as its doctrine. The purpose of the Act is to identify species at risk, protect species at risk and their habitats, and promote the recovery of species at risk and stewardship activities which assist in these goals. The Committee on the Status of Species at Risk in Ontario (COSSARO) functions to maintain an up-to-date database of information pertaining to species in Ontario and their classification. COSSARO advises the Minister of Natural Resources and Forestry, who makes and files a regulation that lists all plant and animal species classified by COSSARO as extirpated, endangered, threatened, or of special concern. This regulation is the Species at Risk in Ontario List, O. Reg 230/08. Ontario Regulation 242/08 provides general policies concerning exemptions and habitat specifications for those listed species, Species at Risk (SAR).

The results of the SAR Screening were submitted to the MECP and a response was received from the MECP on January 18, 2021, which did not require any further assessment. See the MECP correspondence appended to the report.

5.1. Screening

Screening for the possible presence of Species at Risk was conducted using the various sources of information that are detailed in Appendix D. Using the Make-a-Map: Natural Heritage Areas application, a screening for potential Species at Risk on or within a 1-kilometer grid of the Subject Property was completed. The following screening results were identified within the NHIC report for the 1 km^2 grid squares that overlap the study area (17NH9297, 17NH9397, 17NH9296, and 17NH9396) and the applicable supplementary sources. Two NHIC natural areas were also identified, a Colonial Waterbird Nesting Area and a Mixed Wader Nesting Colony. These natural areas are likely associated with areas closer to the shoreline of Lake Ontario.

Table 10. Screening Results

Common Name	Scientific Name	S-RANK	SARO Status	COSEWIC Status
American chestnut	*Castanea denata*	S1S2	END	END
Butternut	*Juglans cinerea*	S4	END	END
Eastern Small-footed Myotis	*Myotis leibii*	S2S3	END	-
Little Brown Myotis	*Myotis lucifugus*	S3	END	END
Tricolored Bat	*Ichthyomyzon fossor*	S3	END	END

Common Name	Scientific Name	S-RANK	SARO Status	COSEWIC Status
Barn Swallow	*Hirundo rustica*	S5B	SC	THR
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR
Chimney Swift	*Chaetura pelagica*	S4B, S4N	THR	THR
Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR
Least Bittern	*Ixobrychus exilis*	S4B	THR	THR
Louisiana Waterthrush	*Parkesia motacilla*	S3B	THR	THR
Bald Eagle	*Haliaeetus leucocephalus*	S2N, S4B	SC	NAR
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC
Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	THR
Monarch	*Danaus plexippus*	S2N,S4B	SC	END
Peregrine Falcon	*Falco peregrinus*	S3B	SC	NAR
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S4B	SC	END
Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR

Based on the results of the SAR screening and the observations made in field, the following species were brought forward for species site assessment:

- Little Brown Myotis- **Endangered** [HABITAT]
- Northern Myotis- **Endangered** [HABITAT]
- Tri-coloured Bat- **Endangered** [HABITAT]
- Barn Swallow **- Threatened** [OCCURRENCE]
- Monarch – **Endangered** [OCCURRENCE]
- Eastern Wood-pewee **– Special Concern** [OCCURRENCE]

Little Brown Myotis

This mammal species, a bat, was designated Endangered on January 23, 2013. Its population is widespread across Ontario and most of North America. It is nocturnal and hibernates from fall until spring, most often in caves or abandoned mines which are humid. In the active half of the year they roost in trees and buildings where they colonize to raise young. They have glossy brown fur and weigh between 4 -11 grams with a wingspan of 22-27 centimeters. A fleshy projection that covers the entrance to the ear which is long, thin and rounded at the tip distinguishes them from other bat species. They feed at night on insects and are most active in the hours just after sunset. White nose syndrome, caused by a fungus of European origination, threatens this species. It propagates in environments very similar to the hibernating environments use by these bats (humid and cold). Mass dies offs are possible at more than 75% of Ontario's hibernation sites due to the fungus' affect on hibernation cycles, metabolism and fat storage.

There were nine potential snag trees located with the FODM3-1 woodland as indicated by the leaf-off snag survey that occurred in January 2021.

Northern Myotis

The Northern Myotis is a species at risk, designated Endangered in January 2013, impacted by the white-nose syndrome. Prior to the spread of the fungal disease across North America, the North Myotis was found throughout forested areas across southern and northern Ontario, and throughout all Canadian provinces. This species, previously known as northern long-eared bats, had long, rounded ears with dull yellow-brown fur and pale grey bellies. They are approximately eight centimetres in length and have a wingspan of approximately 25 centimetres. This Myotis species is similar in looks to the little brown bat (*Myotis lucigufus*) save for the pointed tip at the northern myotis ear. Distinct from the little brown bat, this species prefers to roost under loose, exfoliating bark more often than within tree cavities during the summer rearing months. Hibernation throughout the winter occurs in obscure caves far from the summer foraging grounds and is the root location for the spread of the white-nose syndrome. Mass die-offs of up to 90 percent of overwinter populations occur in infected hibernacula. This emphasizes the importance of successful reproduction of remaining individuals in summer maternity roosting habitats.

There were nine potential snag trees located within the FODM3-1 woodland, as indicated by the leaf-off snag survey that occurred in January 2021.

Tri-coloured Bat

This species was enlisted on June 15, 2016, as Endangered due to the impacts of white nose syndrome on the population. This species is very rare, and their population is more scattered across the province as such. The species is similar in size to the myotis, but orange-red colouring in the muzzle, ears and forearms distinctly mark it. Tri-colouring on its back in black, yellow and brown, is indicated by its name. Similar to the myotis, this species is an aerial insectivore with summer roosting locations in forests and buildings and overwinter hibernation in caves. Unlike myotis, they typically hibernate by themselves rather than in a larger unit.

There was the presence of oak trees greater than 10 cm dbh, dead leaves, and squirrels squirrel nests within the FODM3-1 woodland. However, to more accurately survey for this species, a leaf-on survey is preferred as per the Survey Protocol for Species at Risk Bats within Treed Habitat (2017).

Barn Swallow

The Barn Swallow was listed on January 13, 2012, as Threatened. It is found throughout southern Ontario and to the north as far as Hudson Bay. This species uses almost exclusively human-made structures to mount their cup-shaped nests on. Males show a glossier colouring of steel-blue on their back and breast band, whilst females have a more pale underbelly and short tail feathers. The tail feathers form a distinct deep fork with a line of white spots across the end. Since the mid-1980's the population has been in decline due to causes not well understood. Modernization of buildings, especially barns, and the use of agricultural pesticides are probable threats.

Four individuals were observed flying over the Study Area. However, no outbuildings that can provide suitable nesting habitat for this species occur on the site. These individuals are considered foraging visitants.

Eastern Wood-pewee

The Eastern Wood-pewee was designated as Special Concern on the Species at Risk in Ontario List on June 27, 2014. An aerial insectivore forest bird, it is identified by its distinct "pee-ah-wee" song and is difficult to distinguish from related species by morphology. Individuals reach only 15 cm in length, and colouring is adapted to provide camouflage within the forest setting. It is one of many forest flycatchers which partition the forest canopy into different niches of foraging habitat. The most common habitat is intermediate-age to mature forest with limited understory vegetation, though it is also found along forest edges and within clearings of forests. The species is found throughout the eastern half of the continent, with its northern limit located north of the Great Lakes system. Threats to the species' survival are relatively unclear but may include overall land use conversion and loss of forest, a decrease in available prey, an increase in predators (urbanized squirrels and jays), and impacts related to the over-browsing of forests by White-Tailed Deer. Threats specific to migration and overwinter habitat in the south must also be considered.

A singing male was heard in quadrat 3 during breeding bird surveys. This quadrat is located outside of the Study Area and in a protected forest habitat.

Monarch

The Monarch was already assessed as Special Concern when the *Endangered Species Act* took effect in 2008. The Monarch is a showy orange and black butterfly with small white spots. These butterflies are relatively large, with a wingspan reaching 93-105 millimetres. The Monarch's caterpillar is easily recognized: It has black, white and yellow stripes and can be found feeding on milkweed plants. Throughout their life cycle, Monarchs use three different types of habitats. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats, where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico, where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery

The Study Area does not provide a suitable habitat as milkweed was an uncommon plant. The observed monarchs were likely foraging on wildflowers located in the area.

6. Significant Wildlife Habitat Assessment

Significant and/or sensitive wildlife habitat features and functions as delineated within the OMNRF Significant Wildlife Habitat Ecoregion Criteria Schedule for Region 7E (OMNRF 2015) were reviewed and evaluated for the Study Area. The document groups wildlife habitats into four main categories:

- Seasonal concentration areas of animals
- Rare vegetation communities or specialized habitats for wildlife
- Habitat for species of conservation concern
- Animal movement corridors

The screening found in **Appendix C** consisted of a review of the ELC codes and habitat criteria for candidate SWH. Any SWH in the Study Area or adjacent lands was noted in Column 4, and a rationale was provided in Column 5. In the case of potential SWH, Confirmed Defining Criteria Studies were reviewed, and applicable mitigation measures (in summary form) were also provided in Column 5. The following significant wildlife habitat was confirmed:

Shrub/Early Successional Bird Breeding Habitat: Breeding bird surveys confirmed the presence of 1 indicator species (Brown Thrasher) and two common species (Field Sparrow and Willow Flycatcher), which is a defining SWH criterion even though the THDM2-4 habitat is smaller than 10 ha.

7. Biophysical Analysis

The following section identifies the significance of the natural heritage features and functions as they relate to the Study Area. The analysis was used to evaluate the existing ecological features and functions of the Subject Property and identify any constraints or limitations to the proposed development. In addition to identifying constraints, opportunities are identified to implement mitigation or compensation measures to enhance the existing natural environment.

7.1. Significance Assessment

Based on the surveys and findings outlined above, the Study Area has been assessed for the presence of significant natural heritage features and functions as defined in PPS, RHOP and the Greenbelt Plan.

7.1.1. Woodlands

Significant Woodlands are defined within the PPS (2020) as "*an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources.*"

Criteria for identifying and classifying Significant Woodlands are provided within the RHOP, which were derived from criteria set out by OMNRF. Criteria per section 277 of RHOP, Significant Woodlands are defined as "*Woodland* 0.5 ha or larger determined through a *Watershed Plan*, a Sub-watershed Study or a site-specific Environmental Impact Assessment to meet one or more of the four following criteria:

- The woodland contains forest patches over 99 years old.
- The patch size of the *Woodland* is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the *Escarpment Brow*, or 10 ha or larger if it is located outside the Urban Area but above the *Escarpment Brow*.
- The woodland has an interior core area of 4 ha or larger, measured 100m from the edge, or
- The woodland is wholly or partially within 50 m of a *major creek or certain headwater creek* or within 150m of the *Escarpment Brow*.

The resulting assessment and evaluation indicate the woodland feature located to the east of the proposed asphalt plant does not meet the criteria and standards of a Significant Woodland per the criteria provided in the RHOP and OMNRF Natural Heritage Reference Manual. Table 11 compares the Study Area's woodland versus the RHOP criteria for Significant Woodlands.

Table 11. Significant Woodland Assessment

Criteria	Woodland Characteristics	Meet RHOP Criteria
Contains forest patches over 99 years old	All trees are under 99 years of age	No
2 ha or larger if it is located in the Urban Area	Woodland is 0.42 ha in size	No
An interior core area of 4 ha or larger, measured 100 m from the edge	No interior core area	No
wholly or partially within 50 m of a *major creek or certain headwater creek* or within 150m of the *Escarpment Brow*	Drainage feature within the woodland, but the feature was created as part of the landfill, therefore not a naturally occurring watercourse.	No

The larger Sassafras Woods to the west of the property is classified as a Significant Woodland and part of the Regional Natural Heritage System.

7.1.2. Wetlands

The Subject Property supports three small inclusion wetlands associated with a surface drainage feature to the west of the development site. These features were assessed as low-quality features composed predominantly of non-native, invasive species providing minimal wildlife habitat value and ecosystem functions. The limits of these features were staked with CH on August 6, 2020.

The RHOP defines significant wetlands as follows:

(1) for lands within the Niagara Escarpment Plan Area, *Provincially Significant Wetlands* and wetlands as defined in the Niagara Escarpment Plan that make an important ecological contribution to the Regional Natural Heritage System.
(2) for lands within the Greenbelt Plan Area but outside the Niagara Escarpment Area, *Provincially Significant Wetlands* and wetlands as defined in the Greenbelt Plan.
(3) for lands within the Regional Natural Heritage System but outside the Greenbelt Plan Area, *Provincially Significant Wetlands* and *wetlands* that make an important ecological contribution to the Regional Natural Heritage System.
(4) outside the Regional Natural Heritage System, *Provincially Significant Wetlands*.

Based on the wetlands' overall quality, function and size, GeoProcess does not identify the wetlands as significant based on the above criteria. Due to their overall disturbed nature, as detailed in section 4.1.11, and lack of hydrological connections, these wetlands do not provide significant ecological function. Based on further information provided to Conservation Halton regarding the form, function, and soils, it was

determined that these wetland features do not meet the criteria for regulated wetlands and, as a result, will not be regulated by Conservation Halton.

7.2. Key Features

As part of the EIA, the identification of Key Features for incorporation into the regional NHS was completed for the Study Area based on existing regional policies and detailed site assessments. Key features are defined as key natural heritage features and hydrological features listed in section 115.3 as:

- Significant habitat of endangered and threatened species
- Significant wetlands
- Significant coastal wetlands
- Significant woodlands
- Significant valley lands
- Significant wildlife habitat
- Significant areas of natural and scientific interest
- Fish habitat

Refer to below for a description of Key Features.

7.2.1. Significant Habitat of Endangered and Threatened Species

Under the Endangered Species Act (2007), provincially Endangered and Threatened species and their associated habitats are protected. RHOP defines significant habitat of Endangered and Threatened species and habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or recovery of naturally occurring or reintroduced populations of endangered species or threatened species and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle.

A review of the Land Information Ontario database for SAR element occurrences within 1 km of the Study Area identified species listed in Table 10. GeoProcess' field program, which was completed in 2020, did not identify any SAR species within the Study Area. A snag survey completed on February 3, 2021, identified several snags associated with the FODM3-1 woodland that provide potential bat maternity roosting habitat.

A Species at Risk Screening was sent to the Ministry of Environment, Conservation and Parks on June 24, 2020. The assessment concluded that it was unlikely the proposed development would have any impact on SAR. A reply from the MECP was received on January 18, 2021, which did not require any further SAR assessments. The correspondence to and from the MECP has been appended to this report (Appendix E).

7.2.2. Significant Wetlands

The RHOP Key Features include significant wetlands (as designated by the MNRF) as well as wetlands that make a significant ecological contribution to the RNHS (ROP Section 115.3.6). The small wetlands located immediately to the west of the proposed asphalt plant are very small, highly degraded, dominated by non-native species, and isolated features that are not connected hydrologically across the landscape and, therefore, are not identified as significant. Amphibian surveys conducted for these wetlands did not identify amphibian usage during the 2020 survey windows. The Grindstone – Falcon Creek PSW complex located to the west of the site is a provincially significant feature.

7.2.3. Significant Coastal Wetlands

The Study Area is not on, or within 2 km of, the Lake Ontario shoreline. As such, no significant coastal wetlands are present on the Subject Property.

7.2.4. Significant Woodlands

The woodland to the east of the site was inventoried as part of EIA and further assessed for significance based on applicable policies and definitions. The assessment provided in section 7.1.1, did not identify the woodland on-site as significant based on criteria provided in the RHOP and per the definitions and criteria provided in OMNRF Natural Heritage Reference Manual (2005).

Sassafras-Waterdown Woods, to the west of the site, is a Significant Woodland.

7.2.5. Significant Valleylands

Falcon Creek and its associated valleylands are located to the west of the Subject Property and identified within the Regional Natural Heritage System with a portion designated as an ANSI and PSW. The Falcon Creek valley corridor would be considered a Significant valleyland feature.

7.2.6. Significant Wildlife Habitat

The screening, found in Appendix C, consisted of a review of the ELC codes and habitat criteria for candidate SWH. Any candidate SWH on the Subject Lands was noted, and a rationale was provided.

Based on the results of the SWH habitat screening and the observations made during field studies, the following candidate SWH were identified:

- Seasonal Concentration Areas of Animals
    - Bat maternity colony
- Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)
    - Shrub/Early Successional Bird Breeding Habitat

Candidate SWH for bat maternity colony is located outside the proposed development footprint within the protected woodland. Trees identified as potential roosting habitat should be retained within the proposed development plan.

Shrub/early successional bird breeding habitat is directly associated with HydroOne lands. The hydro-corridor is maintained by Ontario Hydro and is beyond the control of this application.

7.2.7. Significant Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSI) are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education (Ontario 1997).

The Sassafras-Waterdown Woods Provincial Life Science ANSI is located west of the proposed asphalt plant. This ANSI was formerly separated into two ANSI's, Sassafras Woods and Waterdown Escarpment Woods but was merged to reflect linkage function and proximity. This ANSI supports nationally, provincially and regionally significant flora and topographical features.

7.2.8. Fish Habitat

Fish habitat was not identified for the Subject Property. The drainage features identified on-site are intermittent, anthropogenic landfill draining features and do not support direct fish habitat.

Falcon Creek located to the west of the Study Area is a well-defined channel that conveys permanent flow and supports a warm water, small, bodied cyprinid fish community. This feature is outside the limits of the development, generally more than 100 m from the proposed asphalt plant.

7.3. Development Constraints

Secondary source information, in conjunction with field investigations conducted for the Subject Property, was used to identify environmental constraints such as watercourses, wetlands, woodlands, potential significant wildlife habitats, and SAR. As detailed above in Sections 7.1 and 7.2, the Study Area consists of Key Features, Conservation Halton regulated features and woodland. These features are identified as development constraints and include:

- RNHS Woodland
- Wetlands regulated by CH
- Candidate SWH associated with the RNHS Woodland
- Falcon Creek and its valley

7.3.1. Setbacks

The limits of the woodland and wetland were refined through staking exercises with the Region and CH. These limits are identified on Map 3. Candidate SWH is contained within the existing RNHS associated with the woodland.

7.3.1.1. Woodland Buffer

A 10-metre setback from the staked dripline of the woodland is typically provided to a woodland. A great deal of effort was made to reduce the size of the asphalt plant's footprint to avoid encroachment into the natural heritage features surrounding the development site. The asphalt plant is located more than 10 m from the woodland drip line of both the woodlands to the east and west of the development site. The 10 m setback is provided from the staked and surveyed driplines.

The realigned Hickory Lane will be located within the 10 m woodland setback. As Hickory Lane is being constructed for Halton Region, staff provided criteria for the road design, including the requirement to have access to the leachate collection system's clean-outs. As the leachate collection system runs within the dripline of the woodland, it has resulted in pull-off shoulders along Hickory Lane used to access the clean-outs falling within the woodland setback and a small encroachment into the woodland at one location. The development will result in the removal of one tree located along the dripline of the Regional Woodland; the rest are to be retained.

8. Outcome from Agencies

A number of discussions have occurred with both Halton Region and Conservation Halton staff. These discussions have focused on:

- Establishing a Terms of Reference for this EIA with Halton Region and Conservation Halton staff.
- Staking of the woodland limit with the Region staff.
- Staking of wetland limits with Conservation Halton staff.
- Discussions of Provincially Significant Wetland assessment with Conservation Halton staff.
- Discussion of site needs, with a particular focus on the Hickory Lane realignment and the Region's need for access to the leachate collection system cleanouts.
- Discussion regarding policy setbacks from natural heritage features.

The current site plan design was based on the information provided by the various agencies. The main considerations were in making efforts to keep the footprint of the plant as small as possible and situating the structural components of the plant on the existing gravel pad. Considerations for maintaining the existing woodlands and wetlands within the RNHS were important, along with maximizing the setbacks from these features to the furthest extent possible and enhancing the surrounding natural area, specifically the buckthorn thicket to the east of the site. Finally, the needs of the regional staff who operate the landfill

were important considerations, particularly when it came to the location and alignment of Hickory Lane, which is being constructed on behalf of the region.

The outcome of all these discussions and inputs is the proposed site plan, which looks to balance many competing needs within a small footprint.

9. Description of Proposed Development

9.1. Overview

King Paving is proposing to build a new, cutting-edge asphalt plant on a portion of the Halton Region City of Burlington closed landfill property (Map 6). This application also includes constructing a new Hickory Lane for Halton Region, that will provide access to the landfill for ongoing maintenance and to provide landfill maintenance staff with access to cleanouts along the leachate collection system.

The asphalt plant will include the following main elements:

- A combined entrance and exit using the new Hickory Lane to the North Service Road.
- Truck staging area immediately north of the plant.
- Material storage (primarily aggregate). On-site material storage is minimized as the plant operates as a just-in-time delivery, meaning base ingredients are brought into the site as needed, and fresh mixed asphalt is immediately placed in trucks for delivery.
- The 'plant' where aggregate is mixed with asphalt cement/binder and then loaded onto trucks.
- A stormwater management pond, which is a dry pond, to control site run-off.

The plant has been designed to have a small footprint of approximately 5,300 m^2, which is very small when compared to traditional asphalt plants. To achieve efficiencies in the plant, empty trucks will drive into the 'top' end of the plant, park under a hopper while it is filled with product and then drive out to North Service Road. This setup is very efficient and allows for quick cycling of trucks, reducing the need to have a large number of trucks marshalling at the plant.

The plant will operate from the spring until the fall when temperatures are above 4°C. An advanced air scrubber will be installed on the stack, reducing odours to near zero, and the only emission leaving the stack will be water vapour in the form of steam.

9.1.1. Natural Heritage System Buffers

Every effort has been made throughout the design stage of this project to provide the greatest buffers possible for the natural heritage features adjacent to the project site. It is recognized that the typical buffers for the Regional Natural Heritage System are not being provided for portions of this project. The reason is the very narrow corridor (approximately 40 m) in which the plant and Hickory Lane have been placed within. While typical NHS setbacks have not been provided, it is unlikely that the reduced setbacks will have a negative impact on the RNHS due to the highly disturbed nature of the surrounding features.

The plant is being constructed on a landfill site, which has highly altered the overall quality of the surrounding natural features. To balance all the needs and competing constraints of the property, reduced setbacks are being proposed.

Table 12. Natural Heritage System Buffers

Natural Heritage System	Buffer Provided	Rationale
Falcon Creek: Floodplain Hazard Stable Top of Bank Hazard	7.5 metres from the greater of the flood or erosion hazards	The proposed asphalt plant is greater than 7.5 m from the Falcon Creek Valley system
Provincially Significant Wetland	30 m for PSW	The proposed development limits are greater than 30 m from the mapped PSW limits.
Woodland	• 10 m to the woodlands to the west of the site • 10 m to the asphalt plant from the woodland to the east • No set to the east woodland for Hickory Lane	The location of Hickory Lane coincides with the existing landfill infrastructure that is located adjacent to and within the dripline of the woodland. The road was designed to provide access to that infrastructure (leachate collection clean-outs). The road follows an existing landfill gravel road.

9.1.2. Stormwater Management

Runoff from the plant area will be captured as overall flow and directed to a dry pond, which will provide quantity controls to pre-development rates. Quality control will meet Level 1 (Enhanced), 80% TSS removal as per Conservation Halton criteria, and will be achieved using an oil/grit separator unit installed at the outlet of the dry pond facility. The Function Servicing Report prepared by S. Llewellyn & Associates (June 2024) states that a HydroStorm HS10 will provide 83% TSS removal and 100% average annual runoff treatment. The pond will outlet to the landfill drainage feature found along the eastern side of the plant. The drainage ditch is lined with rip-rap and gabion baskets, therefore there is limited erosion risk in the downstream receiving system from SWM discharge.

9.1.3. Grading and Servicing Requirements

Sanitary servicing for the site will involve a private sanitary sewer connection from the plant to an existing 250 mm diameter municipal sanitary sewer on the North Service Road. Domestic water will be supplied to the plant from a 300 mm diameter watermain along the North Service Road.

The plant is proposed to be located primarily on a large fill pile that currently has a granular surface. Construction of the plant and SWM pond will require lowering the fill pile by approximately 2 m on average from its current elevation. In general, the plant falls within the existing fill pile footprint. However, there are a couple of locations where the plant facilities extend beyond the fill pile limits. Retaining walls have been used to reduce encroachment and grading beyond the fill pile limits. The SWM pond is proposed to extend beyond the toe of the fill pile. In this location, the edge of the pond will match the

existing grade. The new Hickory Lane will require piping of the drainage ditch located on the east side of the development. Hickory Lane will also require some fill placed within the staked dripline of the woodland. This is primarily the result of providing access to the leachate collection system cleanouts located within the woodland's dripline.

9.2. Timing

A formal schedule for the plant's construction has yet to be determined and is subject primarily to the approval process. King Paving is hoping to begin construction of the plant as soon as possible, in 2024 or 2025.

10. Impact Assessment

The following provides an analysis of the proposed asphalt plant's potential impacts on the surrounding natural environment. Impacts have been considered as direct, indirect and cumulative and are discussed separately. Primary impacts of concern which have been identified include:

- Direct loss of vegetation through overprinting
- Disturbance to wildlife through loss of habitat and/or plant operations
- Impacts on Falcon Creek, the receiving waterbody from site run-off, have also been considered from both a volume, peak flow and water quality perspective.
- Impacts on adjacent wetlands, including water balance assessment

10.1. Impact Summary

Impacts on the various natural heritage features associated with and adjacent to the Study Area were considered in the impact analysis. Table 12 presents the natural heritage components that were considered in this assessment, the proposed activity associated with that component, potential short-term and long-term impacts, recommended mitigation measures, and if any residual effects are anticipated. Potential impacts were assessed using field collected data and secondary source information, including an overlay of the proposed site plan to provide spatial context of the proposed asphalt plant to the surrounding natural heritage features.

Table 13. Impact Summary

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Short-term Impacts					
Construction Activity	Surrounding habitats	Grading, Servicing & Development	Release of dust as a result of construction activities.	Implement dust suppression measures during site grading when conditions are dry or strong winds are anticipated.	Dust's impact on the surrounding landscape should be minimal through the implementation of dust suppression. No residual effects are expected.
Construction Activity	Local and migrating wildlife	Grading, Servicing & Development	Noise from construction works on local and migrating wildlife.	Limited measures can be employed as a certain level of construction noise will occur. It is recommended that construction activities be limited at dawn and dusk during the active breeding season, May to early July, to reduce disturbance to calling birds.	Noise impacts on wildlife present within the surrounding landscape may occur. However, they will occur during the project's construction phase, which is a relatively short period. Once the construction activities are complete, noise associated with construction activities will end. The Subject Property is close to Highway 403, resulting in high ambient noise from large traffic volumes. As a result, much of the wildlife found within the local landscape is tolerant to disturbances, and the more noise-sensitive species would most likely be located further from the highway corridor and, by extension, the plant location. No residual effects are expected.
Construction Activity	Wildlife habitat	Site Clearing/Tree removal	Impacts on nests and nesting birds.	Undertake vegetation and tree clearing per the	Implementing applicable mitigation measures is expected to

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
				Migratory Birds Convention Act between September and March. If clearing is to occur during the nesting season, a nest survey should be completed by a qualified bird biologist to identify any nests which are not to be disturbed until the young have fledged.	reduce or eliminate impacts on migratory and breeding birds during construction.
Construction Activity	Falcon Creek	Grading, Servicing & Development	Sediment from the site migrating into the creek.	Installation, maintenance and inspection of erosion and sediment control (ESC) measures throughout the duration of site construction activities.	If proper ESC measures are implemented and maintained, there should be no residual impacts on Falcon Creek.
Construction Activity	Regional Forest	Grading, Servicing & Development	Soil compaction and rutting outside of the construction zone and damage to edge trees (i.e., outside of the construction zone)	The work zone along the woodland or any trees identified for preservation is to be clearly demarked with tree hoarding. Any roots encountered within the work zone are to be hand-trimmed and backfilled with topsoil.	Minimal residual effects are expected.
Long-term Impacts					
Artificial Light	Local and migrating wildlife	Development	Light pollution.	Lights directed downward will reduce the amount of ambient light issuing from the Subject Property. It is recommended that downward-casting lighting is used across the site. It is also	It is anticipated that under normal operations, there will be little outdoor lighting at the plant, and lights are recommended to be used only in the early evening and not be left on all night. As a result, lighting impacts are not

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
				recommended that all non-essential lighting be turned off at night when the plant is not operating. This will keep outdoor lighting to a minimum.	anticipated from this development.
Snow Storage	Natural Heritage Systems	Development	Salt runoff, change in soil chemistry.	Snow storage will likely be placed in the vicinity of the dry stormwater management pond. This will result in the snow melt being stored and treated by the SWM system prior to being released into the environment. Importantly, the plant will not be operating during the winter months, so the need to apply salt to maintain ice-free surfaces will be limited. As a result, salt use at the plant will be limited. It is also recommended that salt alternatives be used to reduce salt use.	Minimal residual effects are expected.
Vegetation	Habitat	Grading, Servicing and Development for the asphalt plant	The proposed development will require the removal of 73 trees within the development envelope to accommodate the proposed development. Of the 73 trees identified for removal, three are considered hazardous due to impacts from Emerald Ash Borer.	Tree clearing to comply with the Migratory Birds Convention Act. A landscape plan has been developed to include native tree and shrub plantings within the dry pond, the plant and along Hickory Lane (see landscape plan in the	To off-set tree removals, tree planting throughout the landfill site is being proposed. The tree and shrub plantings shown in the landscape plan compensate for the tree removal, and additional tree planting within the landfill site will add additional compensation. Additional plantings should focus

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
				appendix). A total of 105 trees and 85 shrubs are proposed for planting. Additional tree plantings are proposed within the landfill site and the number and location will be discussed with Halton Region operations staff.	along the slopes of the landfill adjacent to the RNHS to increase its overall size.
Natural Heritage System	Regional Woodland	Hickory Lane construction	Tree removal associated with the Hickory Lane footprint. 32 trees are identified for removal. Of the 32 trees identified for removal, four are considered hazardous due to impacts from Emerald Ash Borer.	Tree clearing to comply with the Migratory Birds Convention Act. Based on the proposed development, it is difficult to avoid all tree removals. As a result, tree planting offsets have been proposed, and the number and location within the landfill site will be confirmed with regional staff.	The overall impact of the tree removal and the corresponding off-setting tree planting will provide more tree cover in the local area. Landscape plantings and additional plantings within the landfill property will compensate for tree removal.
Natural Heritage System	Wetlands	Grading, Servicing and Development	Change in the hydrology of the wetland resulting in a shift in species composition. Increase in non-native species, resulting in a degradation of the wetland quality and ecosystem services	Maintain the existing wetland drainage contribution area.	The existing drainage area to the wetland communities will be maintained, and there is no anticipated change to the hydrologic conditions of the wetlands. The existing wetland pockets are dominated by non-native species, and it is highly unlikely that the proposed development will result in additional non-native, invasive

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
					species establishing in these features. A planting strategy is recommended that will include removing portions of the buckthorn thicket and planting walnuts in these openings. Over time, the allelopathic characteristic of the walnut should reduce the buckthorn and allow other species to flourish. Overall, due to the existing condition of the wetland pockets, it is very unlikely that the proposed development will have any residual effects.
Wildlife	Wildlife Habitat	Grading, Servicing and Development	Vegetation communities supporting wildlife habitat will be primarily retained.	Planting native trees and shrubs within setbacks, SWM pond, and along Hickory Lane will help increase native plant diversity within the site and support wildlife habitats. Undertake vegetation and tree clearing per the Migratory Birds Convention Act between September and March. Any tree clearing proposed within the migratory songbird window will require nest screening by a qualified biologist. Trees supporting songbird nests cannot be disturbed until the	Incidental wildlife observations were limited to local, generalist species commonly found within the identified vegetation communities and surrounding land area. Long-term residual impacts on populations of these species within the local area are not anticipated as the habitats supporting these species will be maintained, with an overall increase in plant diversity. Habitats supporting wildlife are well represented within the local landscape and will not be altered by this proposed development.

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
				young have fledge from the nest.	
Significant Wildlife Habitat	Candidate SWH: Bat Maternity Colony and Shrub/Early Successional Bird Breeding Habitat	Grading, Servicing and Development	No snag trees are to be removed for the construction of Hickory Lane, which may provide bat roosting habitat.	Compensation native plantings throughout the Study Area will enhance identified SWH.	SWH habitat is located outside the proposed development. Bat Maternity Colony is associated with the protected woodland, and Shrub/Early successional habitat is associated with Hydro One lands.

10.1.1. Direct Impacts

Direct impacts are those that are directly attributed to the proposed development activities, often occurring during the construction phase or associated with physically altering the landscape, removal of vegetation communities or changes to the surface and groundwater systems. Construction activity that includes grading, servicing, and site development can cause short-term direct impacts on surrounding habitats and possibly local and migrating wildlife. Direct impacts can have long-term impacts associated with:

- Transport of sediment to the adjacent Falcon Creek, causing excessive sedimentation of the watercourse and impacts on aquatic habitats.
- Noise impacts on local and migrating wildlife. Noise can reduce the ability of wildlife to hear other individuals, which can be particularly problematic during breeding season.
- Window strikes by birds.
- Change in surface runoff to the adjacent natural heritage features due to grade changes and increase in impermeable surfaces.
- Contaminant runoff to the adjacent natural heritage features due to changes in land use.

Site clearing and tree removal for development have the potential to impact nests and nesting birds. A total of 105 trees are identified for removal. GeoProcess recommends that trees be removed outside the breeding bird window (April to September) or conduct a screening for active nests before any removals. If active nests are found, trees are not to be cleared until the young have fledged the nest. By employing mitigation measures, direct loss of nesting birds can be avoided, and replacement tree planting can replace nesting habitat that is lost through site development.

The location of Hickory Lane, immediately adjacent to the regional woodland, does not provide the typical 10 m setback, which Halton Region typically requests. The woodland is dominated by Trembling Aspen, which is a pioneer species, tolerant of disturbance. Overall, this is a young community with a species composition that is better able to handle disturbances than a mature forest community comprised of oaks or maples. The woodland edge, which will be located immediately adjacent to Hickory Lane, may experience some degree of disturbance based on its proximity to the new road. To reduce stress on these trees, it will be important that care is taken when constructing the road to minimize disturbance to the root zone of the trees. Exposed roots should be hand-trimmed and backfilled with topsoil. It will also be important to carefully trim any limbs that may conflict with the construction activities and to pre-emptively remove the limbs if they may otherwise be damaged by the construction activities. With proper care and diligence, damage and stress to the trees can be maintained at a minimum, and long-term impacts on their health can be avoided. Overall, the construction of Hickory Land should not negatively impact the woodland as a whole, as the woodland is comprised of tolerant pioneer trees, and there is a drainage ditch between the road and the main woodlot.

10.1.2. Water Balance

The proposed asphalt plant is located adjacent to Falcon Creek and a few small wetland pockets. Regard for runoff from the site into the adjacent Falcon Creek has been considered through a water balance assessment, which has been completed by S. Llewellyn & Associates. The water balance shows that the catchment area for the asphalt does not change in size, due primarily to the fact that the catchment is comprised of the fill pile and existing landfill roads, which is not changing post development. The only change is the percentage of impervious area, which will increase under the post-development conditions, which will see an increase of 0.94 ha of impervious area. This additional impervious area translates into 6052 m^3 of additional surface water generated from the site on an annual basis. A monthly breakdown shows that the smallest monthly increases will occur in the winter, with a fairly consistent increase occurring throughout the spring, summer and fall. Table 14 below shows the monthly breakdown of the additional surface water to be directed to Falcon Creek, which is a small volume when considered on a daily scale, and the fact that water will be discharged into Flacon Creek during and after rain events when flows will be elevated. The stormwater management for the site will control peak flows to pre-development levels. This means that the additional surface water should have no impact on flood flows within Falcon Creek. Overall, a greater volume of water will be discharged to Falcon Creek, but it represents a small increase over current conditions and should have no measurable impact on Falcon Creek. Discharge from the SWM pond will be directed to the eastern landfill drainage feature, which has been hardened through the installation of rip-rap and gabion baskets. The small flows discharging from the SWM pond should not cause any destabilizing of this receiving feature.

The small wetland pockets that are found adjacent to the plant will experience little to no change in the volume of surface water contributions as they are part of a surface drainage network for the landfill, which is independent of the catchment of the asphalt plant site. Based on catchment mapping provided by S. Llewellyn & Associates in their Functional Servicing Report, under current conditions, the proposed plant site location does not provide surface flow to these wetlands. It stands then that while surface flows from the site will be captured and treated in the SWM pond, and this will not ostensibly change surface flow contributions to the adjacent wetland features.

Table 14 Summary of Surface Runoff from the Development Site

Surface Runoff (m^3)					
Month	**Pre-Development**	**Post-Development**	**Increase (m^3)**	**m^3/day**	**L/s/day**
January	1128	1217	89	2.9	0.03
February	1136	1225	89	3.2	0.04
March	1245	1354	109	3.5	0.04
April	988	1328	340	11.3	0.13
May	645	1287	642	20.7	0.24
June	481	1059	578	19.3	0.22
July	547	1205	658	21.2	0.25
August	593	1306	713	23.0	0.27
September	535	1178	643	21.4	0.25
October	473	1043	570	18.4	0.21
November	604	1701	1097	36.6	0.42
December	1016	1540	524	16.9	0.20

10.1.3. Water Quality

Since an asphalt plant is being proposed in close proximity to an RNHS, including wetlands and Falcon Creek, consideration has been given to potential water quality impacts on the surrounding natural environment. Even though asphalt is a hydrocarbon-based product, the overall constituents that make up the product are mostly non-toxic and neutral in composition. The primary ingredient in asphalt is aggregate which is generally comprised of various sized gravels to which a binder is added to make asphalt. The following have been considered in the water quality assessment:

- Only a limited volume of ingredients will be stored on-site. All ingredients must be stored safely as per Ministry of the Environment requirements. Aggregate is the only constituent to be stored in open containers. All binding material is stored in closed containers with spill containment systems. The asphalt itself is not stored on-site, as it is mixed and immediately placed into trucks for delivery off-site. The plant has been designed to safely store material with very little environmental risk. The current asphalt plant run by King Paving by Waterdown Road has not had any spills or contamination as a result of operating the plant for many years at that location. Given that the new plant is designed to much higher environmental standards, there is little risk for contaminant releases to the environment from spills or storage.

- There will be no fuel storage on-site. As a result, the risk of a fuel spill at the plant is low.

- Engine fluids, brake pad dust or other metal/hydrocarbons may be deposited from the truck traffic cycling through the plant. The majority of these contaminants will be treated within the SWM system through the use of an oil and grit separator. The SWM discharge must meet an enhanced level of treatment prior to release to the environment. This is not anticipated to be a measurable source of contaminants to the environment. In reality, vehicle-associated contaminants entering Falcon Creek from the asphalt plant will likely be orders of magnitude smaller than those coming from the North Service Road and Highway 403.

- The asphalt process does not require water inputs or generate any wastewater effluent released into the environment. As a result, no wastewater is produced requiring treatment or release from the plant.

- Snow storage will likely be placed in the vicinity of the dry stormwater management pond. This will result in the snow melt being stored and treated by the SWM system prior to being released into the environment. It is also recommended that alternatives to salt are used to control ice during the winter. It is important to note that the plant does not operate when temperatures are below 4°C. Therefore, the need to apply salt to control ice will be greatly reduced. Overall, salt application on-site is predicted to be very limited.

In general, the activities associated with the operation of the asphalt plant pose a small risk to water quality contamination of Falcon Creek and the surrounding environment.

10.1.4. Indirect Impacts

Indirect impacts are those that occur as a secondary result of the proposed activity and are not necessarily direct results of the activity. These are usually associated with effects such as population growth or density changes or alterations or additions to road networks. Indirect impacts can include light pollution, causing confusion in migrating birds at night and potentially resulting in window strikes.

The proposed development is in an area of both urban development and a heavily used transportation network. As a result, indirect impacts such as an increase in ambient noise will likely not be an issue due to the high levels of ambient noise already present in the local area. The presence of the North Service Road, Highway 403 immediately south and the Meridian Brick plant and quarry to the west of the site will already have an influence on the wildlife usage on the property due to noise and interruptions/barriers to movement. The development of the site will not change or make this condition worse. Due to the heavy traffic use already in the area, the additional traffic associated with this development will likely not result in additional wildlife and vehicle interactions, as the traffic will be directed onto the North Service Road, which likely sees limited wildlife crossing due to its proximity to the 403.

Due to the overall low height of the plant and the fact that it does not operate throughout the night, lighting causing a disruption to migrating birds is not considered to be a concern. Lighting at night can attract insects from areas within the surrounding natural environments, causing a shift in their movement patterns. Lighting can also make it more difficult for nocturnal animals to hide and avoid predation. To minimize these potential impacts, it is recommended that outdoor lighting is minimized within the plant, that lighting is directed downward and shielded from side casting light, that lights are not left on all night, and that lights are shut off when the plant is not operating. The plant will not be operating over the winter months, during leaf-off conditions, which reduces the concern of light penetration into the adjacent woodlands during the shorter day periods of the year. Bird strikes are not considered to be a concern with the asphalt plant as there are only minimal windows in the structure. Overall, light impacts from the proposed development are considered to be minimal.

10.1.5. Cumulative Impacts

Cumulative impacts are changes to the environment due to past, present and reasonably foreseeable future impacts. The Study Area and surrounding landscape have experienced ongoing disturbance from historical and current land use, including landfill operations, major road networks, ongoing recreation use in the Falcon Creek valley and adjacent business development.

The progression of development within the vicinity of the Subject Property over time has resulted in the fragmentation of large-scale natural vegetation communities. This fragmentation of the landscape results in reduced connectivity between wildlife habitat units, reducing overall habitat resilience. The inclusion of an asphalt plant into the landscape will continue to add to this habitat fragmentation, although, on the whole, it will be a small incremental change given the lack of existing habitat within the proposed plant footprint. Noise from the plant will increase ambient noise levels, which could have an impact on the ability of wildlife to communicate (i.e., breeding birds). Again, given the existing ambient noise from the highway and the Meridian Brick Plant and quarry, the incremental increase in noise resulting from the plant will be small and likely will not change overall wildlife functions from the existing baseline conditions. So, while the plant will result in incremental increases in habitat fragmentation and ambient noise, the overall increases will be small, given the current background conditions. To mitigate habitat fragmentation and noise abatement from the brick plant, trees are proposed to be planted along the landfill's southern slopes. These trees will increase overall forest cover on the landfill property, strengthening the connection to the Falcon Creek valley. Overall, while some cumulative impacts are anticipated, large cumulative impacts are not foreseen from the construction of the asphalt plant.

10.2. Mitigation Measures

The following mitigation measures are recommended to avoid and minimize impacts. The measures have two distinct intended outcomes: mitigation to reduce the impact on the natural heritage system and mitigation to reduce the impact of active construction.

Natural Heritage System Measures

- Minimize outdoor lighting and direct it down and away from natural areas.
- Implement a planting plan for the SWM pond, the plant, and Hickory Lane using native species that are reflective of the local area.
- Implement tree plantings along the landfill slopes to increase local tree cover.
- Implement an invasive species management program to control the European buckthorn found east of the development site.

Construction Measures

General construction-related mitigation measures include the following:

- Clearing of vegetation within the Study Area as part of site preparation should be conducted in late summer or winter months (September-March) so as not to coincide with breeding bird season. If

clearing is to proceed within the breeding bird window, the Study Area should be screened by a qualified bird biologist to determine if any migratory songbirds are nesting within work zone.

- Topsoil removed during stripping is recommended to be stockpiled for reapplication post-construction.
- A construction work plan should designate specific locations for stockpiling of soils and other materials.
- Implementation of the erosion and sediment control plan is recommended to prevent releases of sediment into the adjacent natural areas.
- Inspection by a qualified person(s) to conduct regular monitoring of all sediment and erosion measures implemented to ensure they are in working order. Any deficiencies observed are to be recorded and immediately reported to the site contractor.
- Implementation of dust control measures is recommended to reduce dust impacts on the adjacent lands.

10.3. Tree Protection Measures

The following section identifies mitigation measures to be utilized to avoid and minimize effects of the proposed works on trees identified for preservation. Special mitigation measures have been recommended.

For trees identified for preservation. The following requirements will ensure the short and long-term preservation:

1. Trees identified for removal should be clearly marked with paint prior to their removal.
2. Trees identified for removal should be felled into the proposed construction area. Impacts to adjacent vegetation should be avoided during the felling process.
3. Pruning of low-lying branches may be required within the construction zone to accommodate construction equipment. In addition, any branches broken during the construction process should be properly pruned by a certified arborist as soon as possible after the damage has occurred.
4. Tree protection measures will have to be implemented prior to the commencement of construction (earthworks) to ensure trees identified for preservation are not impacted by the proposed works.
5. Tree protection fencing should be comprised of paige wire fencing (or orange snow fencing) supported on metal T-bars at 3 m centres. Fences should be erected for trees identified for preservation.
6. Tree protection barriers need to be inspected on a regular basis to ensure they meet the design requirements detailed within the tree protection report.

7. No machinery or disturbance of any type is permitted within the tree protection fence (tree protection zone). If disturbance within the TPZ is unavoidable, placement of ¾ in thick plywood over an 8-in deep mulch should be place in TPZ to avoid or reduce soil compaction.

8. Do not store construction materials, soil, waste material or dispose of liquid material within the TPZ.

9. Any grading within the root zone must be completed by hand (rake, shovel, wheelbarrow) to ensure tree roots are not damaged.

10. Special mitigation measures have been recommended within a TPZ due to the potential of damage to the rootzone by mechanical excavation, non-invasive digging by hand, hydro vacuum or air spade equipment is recommended and should be supervised by a certified arborist.

    i. Hydro vacuum equipment should use low pressure to expose roots. Water (or air) should not be aimed directly at the roots and kept a minimum of 10 inches away from contact with the roots.

    ii. Exposed roots should be cleanly cut with a sharp cutting tool only where needed. Larger roots (50 mm or greater) should be left across the trench to ensure tree stability is not impacted. Exposed roots should be protected from the sun and wind during construction and kept damp at all times.

    iii. Backfill with native soil in 150 mm lifts, tamping using feet (or equivalent) and watering backfill to achieve proper compaction for root growth (avoid soil compaction). Do not change the original grade by adding or reducing soil levels.

    iv. Installation of water, storm and sanitary connections on private property within TPZ should employ trenchless methods (boring, hydro-vac, air spade), where feasible to prevent impacts to the root zone of the associated tree.

11. A sign should be displayed on the tree protection fencing and placed on the hoarding in various locations which clearly identifies the TPZ and restrictions within the TPZ. Signage informs the public and reminds the contractors the significance of the TPZs and the efforts put forward by the client in tree preservation.

12. Top-soil removed during stripping recommended for reapplication post-construction.

13. A construction work plan should designate specific locations for stockpiling of soils and other material.

14. Upon completion of construction works, site grading should ensure proper drainage of surface water in order to maintain original/pre-construction soil moisture regime conditions.

15. Inspection by a qualified person(s) to conduct regular monitoring to ensure all tree protection and mitigation measures are implemented as intended.

11. Enhancement Opportunities

A total of 105 trees are proposed for removal and compensation and enhancement plantings will be provided through the landscape plan (105 trees and 85 shrubs), and within the landfill property with final numbers and location to be determined through consultation with Halton Region. The planting of native shrubs and trees will help reduce invasive species and improve genetic diversity of the landscape. Efforts will be made to improve the existing corridor functions of the Study Area so wildlife will have safer passageways and migratory birds can find refuge within the wooded areas. An improved forest corridor will also help offset pollution occurring from the nearby highways and can improve water filtration and runoff that enters tributaries of Falcon Creek. See the Landscape Plan in Appendix G for planting plan details within the SWM pond, plant and Hickory Lane.

11.1. Woodland Corridor

Additional plantings within the landfill property are proposed to help strengthen the RNHS and provide additional visual screening of the asphalt plant. The final location, numbers, and species to be planted need to be confirmed with Halton Region Staff. Table 16 provides a list of recommended trees and shrubs for the landfill plantings

Table 15. Proposed Native Species

Common Name	Scientific Name
Trees	
American Basswood	*Tilia americana*
Black Cherry	*Prunus serotina*
Red Maple	*Acer rubrum*
Red Oak	*Quercus rubra*
White Birch	*Betula papyrifera*
Silver Maple	*Acer saccharinum*
Sugar Maple	*Acer saccharum*
Trembling Aspen	*Populus tremuloides*
Shrubs	
Alternate-leaved Dogwood	*Cornus alternifolia*
Choke Cherry	*Prunus virginiana*
Downy Serviceberry	*Amelanchier arborea*
Nannyberry	*Viburnum lentago*
Round-leaved Dogwood	*Cornus rugosa*

11.2. Buckthorn Management

The SWM pond will be placed within the buckthorn thicket, located on the west side of the development site. This location will result in the overprinting of a portion of this community. An buckthorn management plan is being proposed to compensate for the overprinting of the buckthorn community. This plan aims to reduce the overall density of buckthorn currently present in this community. Due to the size of the buckthorn community and the high density of plants, comprising almost 100% of the shrub/tree stems, buckthorn control will be difficult and time-consuming. The approach proposed for the management of this species will leverage the natural toxicity produced by black walnut (Juglans nigra), with the aim of reducing the total effort required to reduce buckthorn at the site. Black walnut is allelopathic, meaning it excretes chemicals, which are contained in the roots, inner bark, nut husks, and leaves, into the environment. When exposed to the air and soil, this chemical, juglone, oxidizes and becomes biologically active, acting as a respiratory inhibitor to some plants. Through this process, black walnut can suppress vegetation growing under its canopy. By harnessing this natural process, the density of the buckthorn can be suppressed over time, and the continual growth and expansion of black walnut will provide an on going means of buckthorn suppression, requiring no additional interventions.

To control buckthorn, black walnuts will be planted throughout the buckthorn community. The first step will be to cut out blocks of buckthorn, areas approximately 10 m in diameter. It is recommended that the pesticide Roundup is dabbed on the fresh cut stump. Within each of these cut blocks six (6) black walnut should be planted, spaced approximately 3 to 5 m apart (**Figure 1**). In total, approximately 20 clearings should be created within the buckthorn community, spaced approximately 10 m apart from each other. **Map 8** shows the location proposed for the buckthorn management.

11.2.1. Monitoring

A multi-year monitoring program is proposed to measure the success of the buckthorn control plan. The monitoring program will consist of the following elements:

- Black walnut survival – cataloguing the survival of each planted walnut.
- Monitoring buckthorn regeneration within the cut blocks. This will be completed through visual inspection.
- Establish photo monitoring plots in each of the planting blocks.

Monitoring is recommended for a five-year period, and then a follow-up visit at year 10.

- Years 1 to 3: Check the survival of planted black walnuts and replace any dead trees. Cutback any regenerating buckthorn.
- Years 4 to 5: Photo monitoring, as black walnut should be well established and able to survive without further interventions.
- Year 10: Photo monitoring in each plot. Visual inspection for buckthorn regeneration/suppression and regeneration of black walnut.

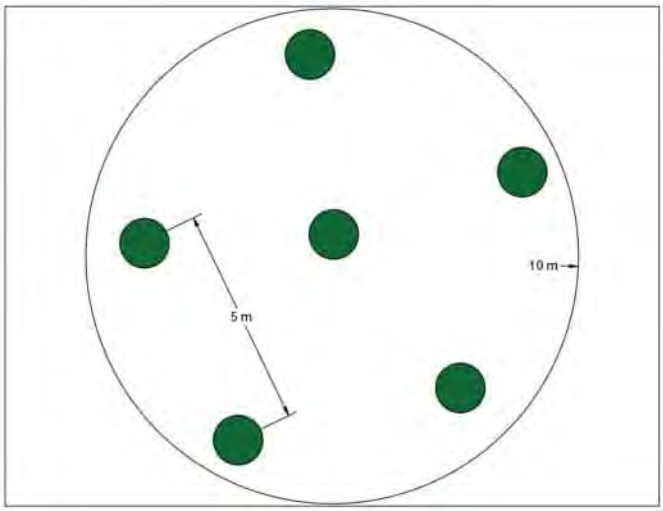


Figure 1 Approximate planting pattern for black walnuts within the 10 m cut block

12. Policy Assessment

The following section provides a policy rationale for the proposed development and outlines how the plan conforms with the applicable natural heritage policies. This section demonstrates how the proposed development complies with existing environmental policies and legislation at the provincial and municipal levels.

Table 16. Policy Overview

Applicable Policy	Policy	EIS Findings & Recommendations
Provincial Policy Statement (2020)		
Habitat for Threatened or Endangered Species	Does not permit development or site alteration in habitat for threatened or endangered species.	Conforms as there is no habitat for threatened or endangered species present.
Provincially Significant Wetlands	Does not permit development or site alteration in Provincially Significant Wetlands.	It conforms to the Grindstone Falcon Creek PSW, located west of the development footprint. The PSW is located greater than 50 metres from the proposed development.
Significant Valleylands	Does not permit development or site alteration in Significant Valleylands.	Conforms as Falcon Creek and its associated valleyland are located to the west of the development envelope. No intrusion into the valleyland and associated 15-metre setback will occur as part of the development

Applicable Policy	Policy	EIS Findings & Recommendations
Significant Wildlife Habitat	Does not permit development or site alteration in Significant Wildlife Habitat.	Conforms as candidate SWH, including Bat Maternity Colony and Shrub/Early successional bird breeding habitat, was identified within the Study Area. The potential bat maternity snag habitat is located outside the asphalt plant footprint. Bat usage of these trees has not been confirmed. Shrub/Early successional habitat is directly associated with the Hydro One corridor, and as such, protection is subject to the Hydro One management plans.
Significant Areas of Natural and Scientific Interest (ANSI)	It does not permit development or site alteration in ANSIs.	Conforms as Sassafras Woods ANSI is located to the west of the development footprint. No development or site alteration is proposed within this feature and the associated 10 m vegetation protection zone.
Fish Habitat	Does not permit development or site alteration within Fish Habitat.	Conforms as no fish habitat was identified for the Subject Property.
Halton Region Official Plan (2021)		
Regional Greenlands and Natural Heritage Policies	Key Natural Heritage Features including Significant Woodlands, wetlands, streams, fish habitat. Development and site alteration is not permitted within a Key Natural Heritage Feature and associated vegetation protection zone.	The limit of the natural heritage features on-site were staked with Halton Region. ROP policies recommend a setback from the staked dripline of the regional woodlands. The existing leachate collection's piping is located immediately adjacent to and within the dripline of the woodland. Continued access to the cleanouts to this pipe is required for long term maintenance and monitoring. As a result, the alignment of Hickory Lane was designed to provide access to the cleanouts, limiting the ability to provide a setback to

Applicable Policy	Policy	EIS Findings & Recommendations
		the woodland. The asphalt plant is located more than 10 m from the dripline of the woodland's limit. The EIA recommends mitigation measures and native plantings to limit the impact on the natural features. If care is taken to protect the woodland and minimize stress to the trees along the development interface when constructing Hickory Lane, no net negative impacts to the Regional Woodland are anticipated, in conformance with the Region's policies. A 10 VPZ is maintained between the development and the woodlands to the west of the proposed development.
City of Burlington Official Plan (2020)		
Natural Heritage Policies	Environmental Protection Area per the OP include environmentally sensitive areas, significant creeks or streams regulated by DH, natural Escarpment features, ANSI's, PSW's, land below the staked top of bank or in ill-defined areas, land that is publicly owned and used for open space or conservation The OP indicates that development or site alteration within or adjacent to the City's Natural Heritage System is prohibited unless it has been demonstrated through the EIS that no negative impacts will occur. Section 2.4.3(b) submission of a site-specific EIA for 291 North Service Road is required to ensure negative impacts are minimized through measures such as	Based on the findings of the EIA, the proposed development was designed to utilize the existing footprint of the previous development and minimize any impacts on natural heritage features. Based on the design and mitigation measures employed, the EIA has demonstrated that there will be no net negative impacts on the adjacent natural features.

Applicable Policy	Policy	EIS Findings & Recommendations
	maximum impervious surface limits and setbacks from natural features.	
Halton Region Conservation Authority 162/06		
CH regulations and policies	CH regulates development and interference with wetlands and alterations to shorelines and watercourses.	A permit is required for development within regulated areas. Falcon Creek and its floodplain are the only regulated features associated with the development proposal. A small encroachment into the regulated may be associated with Hickory Lane's entry at the North Service Road. CH will need to be contacted to determine if a permit is required.

13. Conclusions and Recommendations

This Environmental Impact Assessment was completed for the Study Area located at 291 North Service Road, Burlington, Ontario. The property includes an existing entrance laneway (Hickory Lane) that provides access to existing infrastructure adjacent to an Environmental Protection Area (EPA) to the west. The property is approximately 50 m from Highway 403 to the south and adjacent to a Mercedes car dealership to the east. This impact assessment and evaluation were conducted to investigate the conformity of the site plan to the applicable land development policies of the relevant authorities. Based on the work undertaken by GeoProcess, the following summary and conclusions are provided:

- The Study Area is designated as a Business Corridor and Natural Heritage System in the Burlington Official Plan.
- The Study Area contains and is adjacent to the Sassafras Woodlands Earth Science Area of Natural and Scientific Interest (ANSI).
- This report includes an assessment of the key natural heritage features and their functions, including their connectivity to the greater landscape and natural heritage system.
- The background data and survey work identified two Species at Risk on the site (Barn Swallow and eastern Wood-pewee). Further assessment has determined that only forging habitat is present for the Barn Swallow, while there is breeding habitat for the Eastern Wood-pewee; this habitat is not present within the development footprint but within Sassafras Woods, which will not be impacted by the proposed development.

- Significant Wildlife Habitat was identified as potentially occurring through the screening of the site for the Little Brown Myotis, the Northern Myotis and the Tri-coloured Bat. The proposed development does not result in the removal of any of the snag trees identified as potentially supporting SAR bat habitat. In addition, the proposed development will not impact the SAR bat roosting habitat within the natural areas adjacent to the asphalt plant.

- An impact assessment for the proposed development has been completed, and mitigation measures have been provided to avoid impacts on the important natural heritage features. This includes incorporating enhancement measures through native plantings within the natural heritage system. Overall, no net negative impacts to the adjacent natural areas are anticipated from the proposed development.

- Development of the site will not impact the small wetland pockets located adjacent to the proposed asphalt plant. These features are comprised predominantly of non-native species, including a dominance of European buckthorn, which is not a wetland indicator species. A water balance of the site has demonstrated that no changes to the hydrology of the wetlands is likely to occur. The EIA concluded that these features should not be included in the Falcon Creek PSW complex.

- Provincially Significant Wetlands located along Falcon Creek are located more than 50 m from the proposed development site and will not be impacted by the proposed development.

- The SWM pond location will encroach into the buckthorn thicket. To offset for this encroachment, a buckthorn management plan has been proposed, which utilizes black walnut for long-term buckthorn control. The plan is to replace the buckthorn thicket with a black walnut woodland over time.

- The site plan conforms to the natural heritage policies and regulations of the Halton Region, the City of Burlington, and Conservation Halton.

14. References

Bird Studies Canada (BSC), 2009. Marsh Monitoring Program Participant's Handbook for Surveying Amphibians. Prepared by Bird Studies Canada in cooperation with Environment Canada and the US Environmental Protection Agency, February 2009, 16 p.

City of Burlington. 2008. Official Plan of the Burlington Planning Area. (Text and maps were updated in December 2019).

City of Burlington. 2011. State of the Environment Report IV. Prepared by the Burlington Sustainable Development Committee

Exp Services Inc. 2015. Environmental Investigations 391 North Service Road, Burlington Ontario. Project Number HAM-00800836-A0

Gillespie, J.E, and Wiklund, R.E. 1971. Soils of Halton County. Report No. 43 of the Ontario Soil Survey. *Ontario Department of Agriculture and Food, Toronto*.

Hamilton Conservation Authority. 2006. Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, Regulation Ontario Regulation 161/06. Consolidated February 8, 2013.

Hamilton Conservation Authority. 2011. HCA Planning and Regulation Policies and Guidelines. November 2011.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological land classification for Southwestern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.

Lefer. L et al. 2016. Waterdown-Sassafras Woods Heritage Lands Management Plan. Cootes to Escarpment EcoPark System.

Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch. Queen's Printer for Ontario. October 2000.

MNRF. (2017). Survey Protocol for Species at Risk Bats within Treed Habitats. Ontario Ministry of Natural Resources, Guelph District. 13 pp.

MNRF. (2010). Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp

Ontario Breeding Bird Atlas. 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists, Don Mills.

Ontario. 2005. Greenbelt Plan. Toronto: Ministry of Municipal Affairs and Housing.

Ontario. Natural Heritage Information Centre (NHIC). *NHIC website.* Ontario Ministry of Natural Resources and Forestry. Retrieved from: https://www.ontario.ca/page/natural-heritage-information-centre

Ontario. Ministry of Natural Resources and Forestry. *Species at Risk in Ontario (SARO) List.* Ontario Ministry of Natural Resources and Forestry, 2017. Retrieved from: https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

Ontario. Ministry of Natural Resources. *Significant Wildlife Habitat Technical Guide.* Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Sciences Section. Ottawa: Queen's Printer for Ontario, 2000.

Ontario. Ministry of Natural Resources. *Southern Ontario Vascular Plant Species List: 3rd Edition.* Southern Science & Information Section, Ontario Ministry of Natural Resoirces. Ottawa: Queen's Printer for Ontario, 2013.

Ontario. Ministry of Natural Resources and Forestry. January 2015. *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E.* Peterborough, ON: OMNRF.

The information contained in this document is confidential and intended for the internal use of King Paving Ltd. only and may not be used, published or redistributed in any form without prior written consent of GeoProcess Research Associates.

Copyright July 16, 2024 by GeoProcess Research Associates
All rights reserved.

Environmental Impact Assessment

291 North Service Road, Burlington, On

Prepared for King Paving Ltd.

July 16, 2024

Prepared by:



Ken Glasbergen, MSc., ERPG
Senior Ecologist, Principal

Disclaimer

We certify that the services performed by GeoProcess Research Associates were conducted in a manner consistent with the level of care, skill and diligence to be reasonably exercised by members of the engineering and science professions.

Information obtained during the site investigations or received from third parties does not exhaustively cover all possible environmental conditions or circumstances that may exist in the study area. If a service is not expressly indicated, it should not be assumed that it was provided. Any discussion of the environmental conditions is based upon information provided and available at the time the conclusions were formulated.

This report was prepared exclusively for King Paving Ltd. by GeoProcess Research Associates. The report may not be relied upon by any other person or entity without our written consent and that of King Paving Ltd. Any uses of this report or its contents by a third party, or any reliance on decisions made based on it, are the sole responsibility of that party. GeoProcess Research Associates accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

Project Number P2020-433

Maps



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 04, 2024

0 200 400 600 800 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.

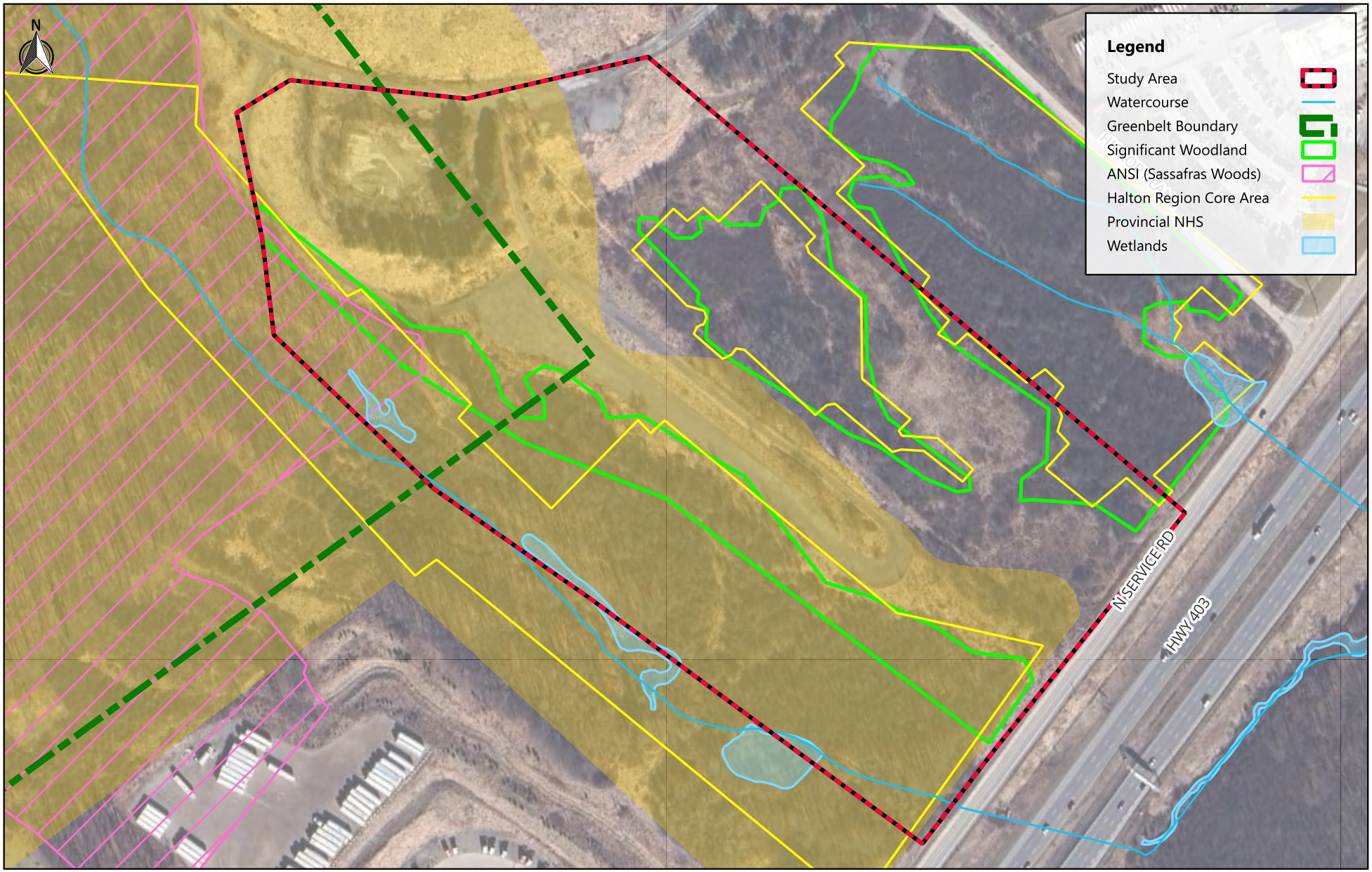
Map 1.

Key Map

Environmental Impact Assessment
291 North Service Road, Burlington

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

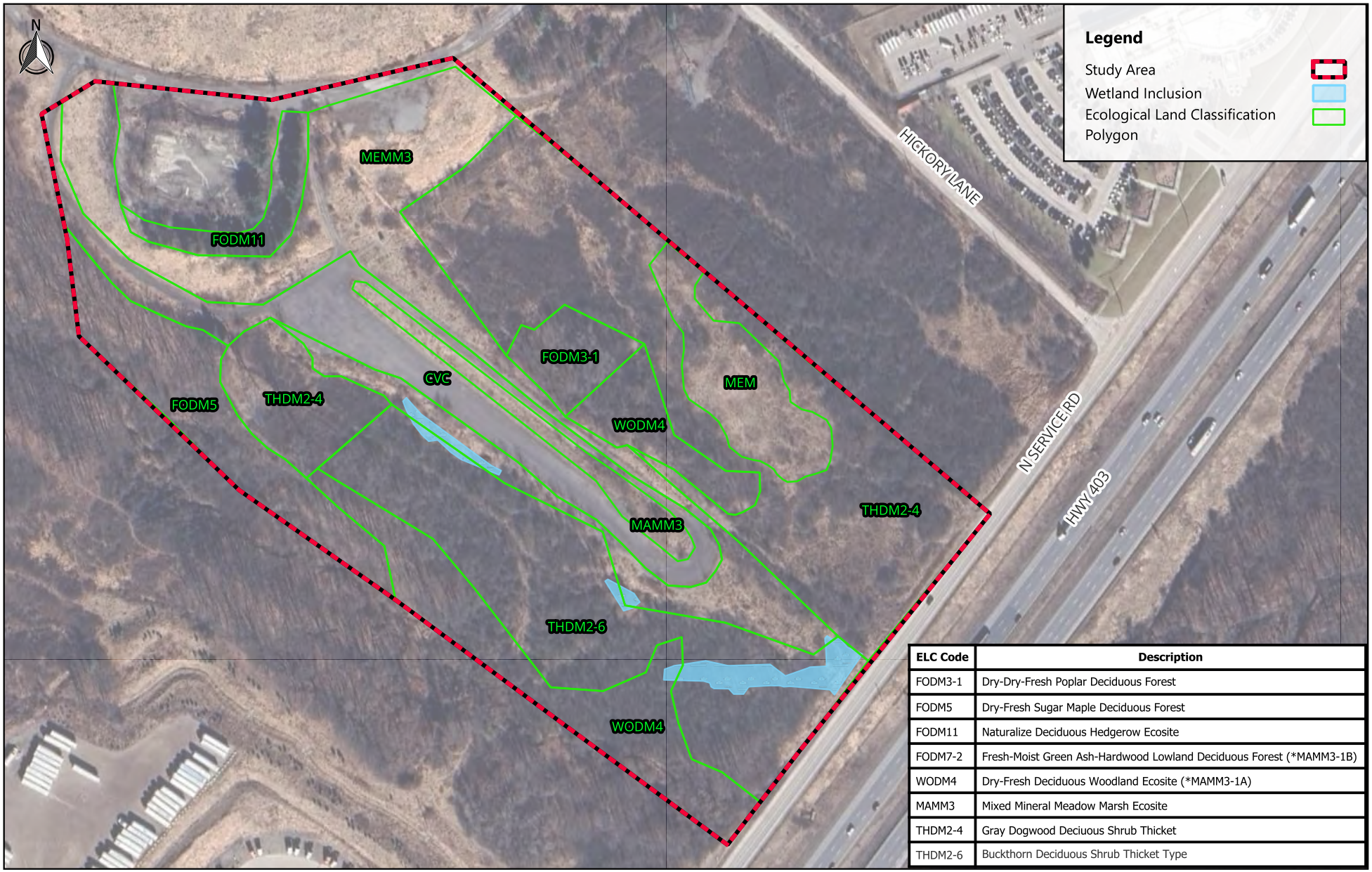
Map 2.

Existing Conditions

Environmental Impact Assessment
291 North Service Road, Burlington

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



ELC Code	Description
FODM3-1	Dry-Dry-Fresh Poplar Deciduous Forest
FODM5	Dry-Fresh Sugar Maple Deciduous Forest
FODM11	Naturalize Deciduous Hedgerow Ecosite
FODM7-2	Fresh-Moist Green Ash-Hardwood Lowland Deciduous Forest (*MAMM3-1B)
WODM4	Dry-Fresh Deciduous Woodland Ecosite (*MAMM3-1A)
MAMM3	Mixed Mineral Meadow Marsh Ecosite
THDM2-4	Gray Dogwood Deciuous Shrub Thicket
THDM2-6	Buckthorn Deciduous Shrub Thicket Type

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

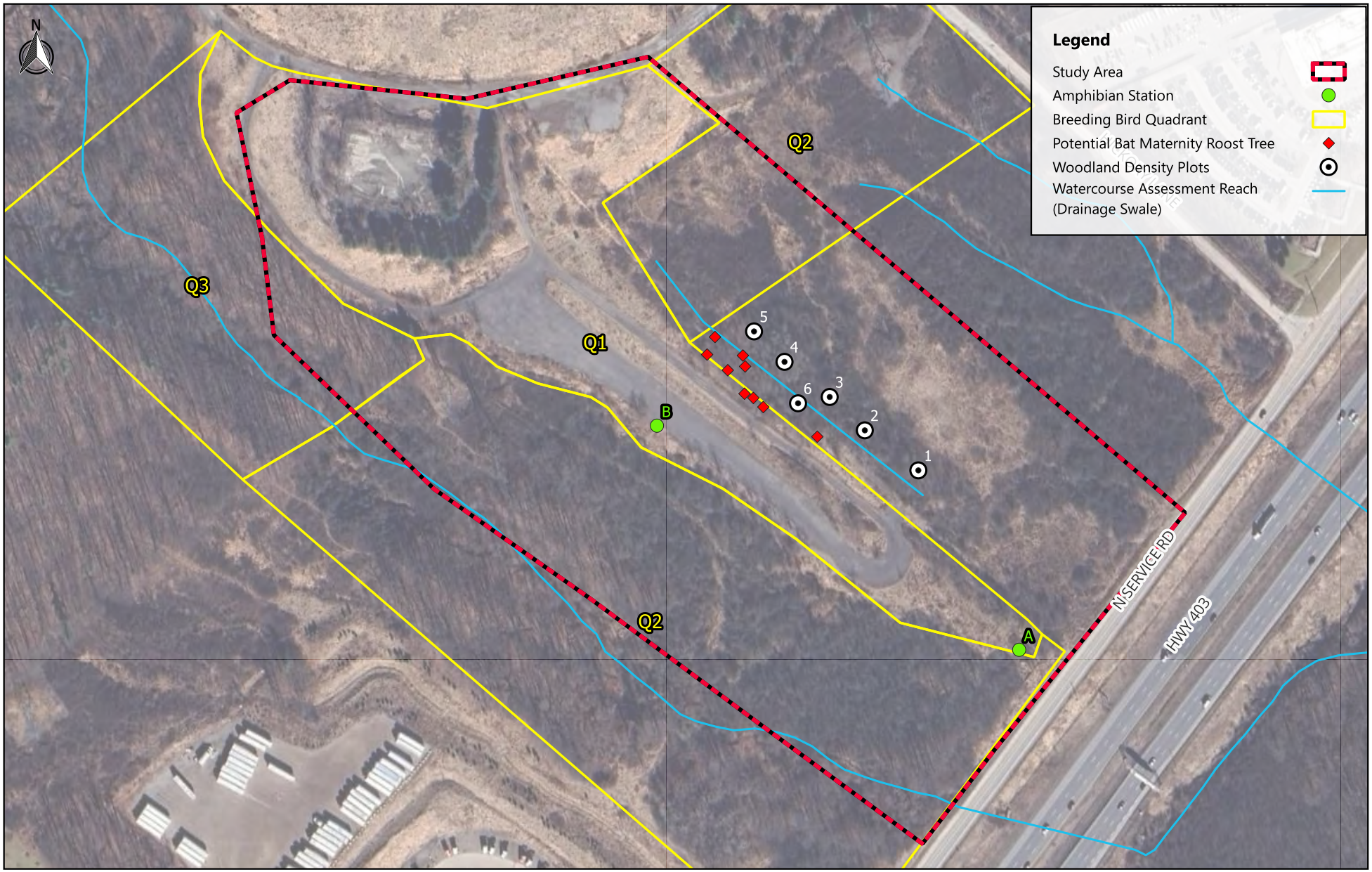
Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

Map 3.

Ecological Land Classification

Environmental Impact Assessment
291 North Service Road, Burlington
King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

Map 4.

Biophysical Analysis Survey Locations

Environmental Impact Assessment
291 North Service Road, Burlington
King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

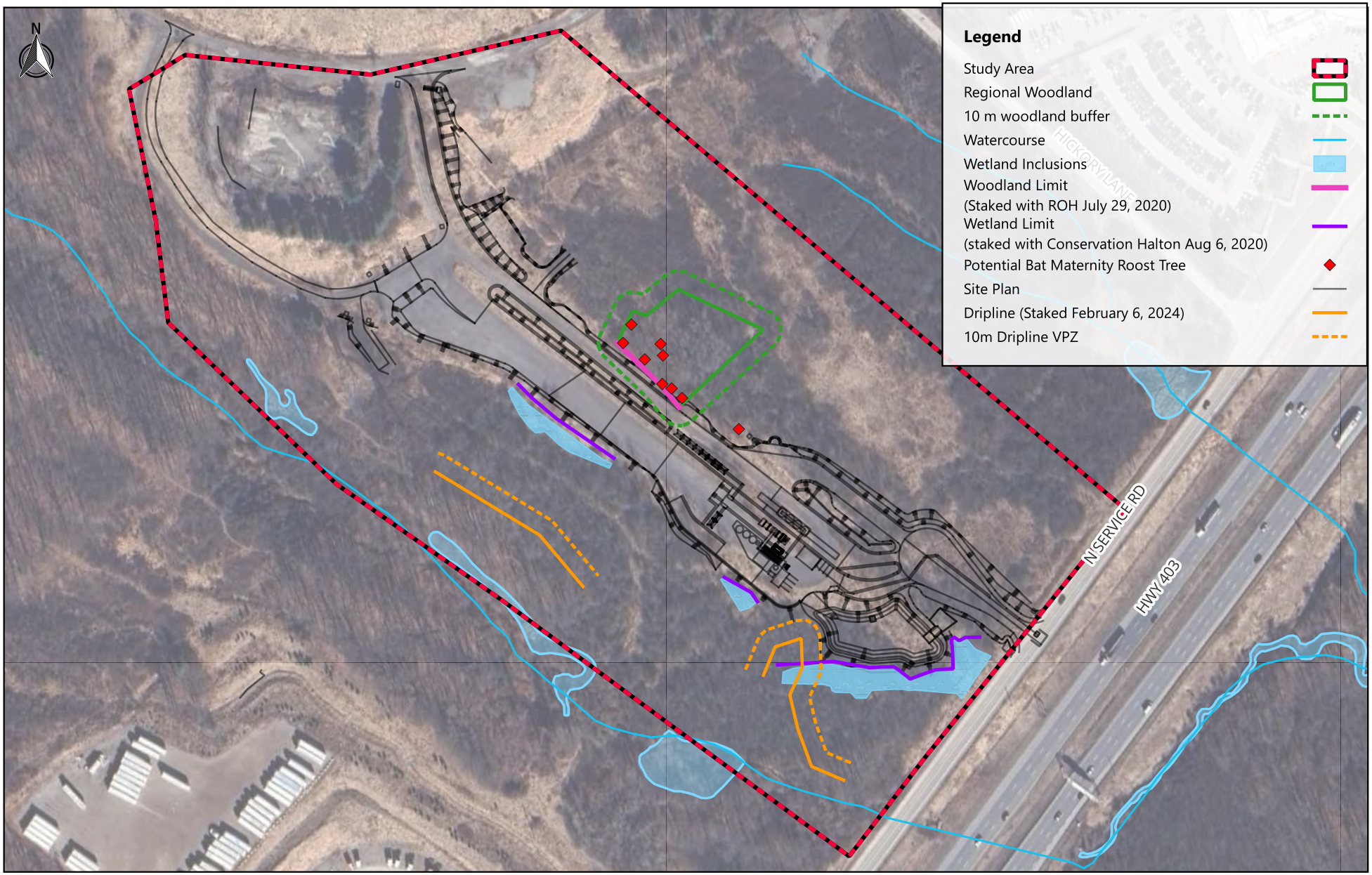
Map 5.

Woodland and Wetland Limits

Environmental Impact Assessment
291 North Service Road, Burlington

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

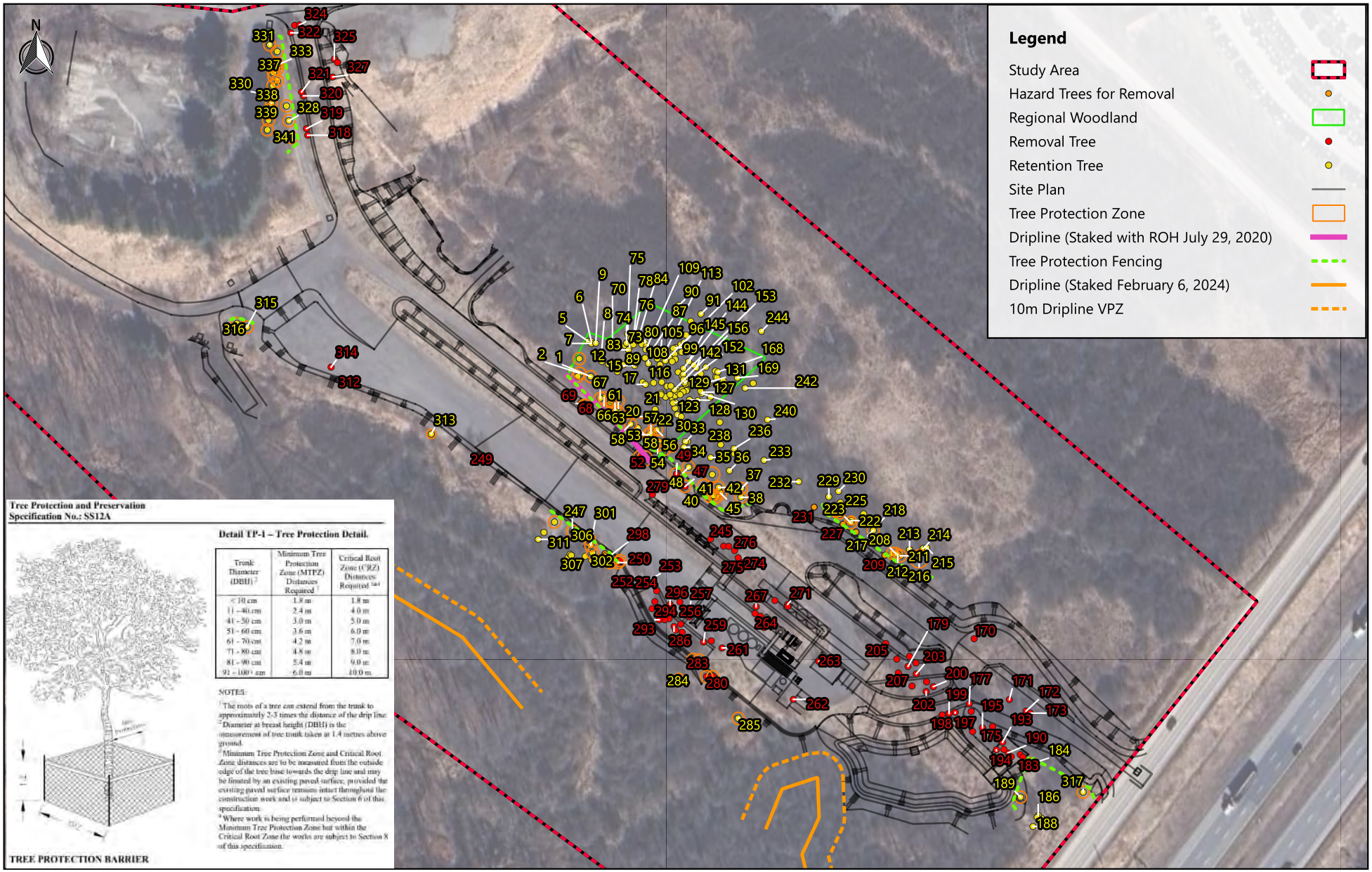
Map 6.

Site Plan

Environmental Impact Assessment
291 North Service Road, Burlington

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migratory Birds Convention Act, 1994.

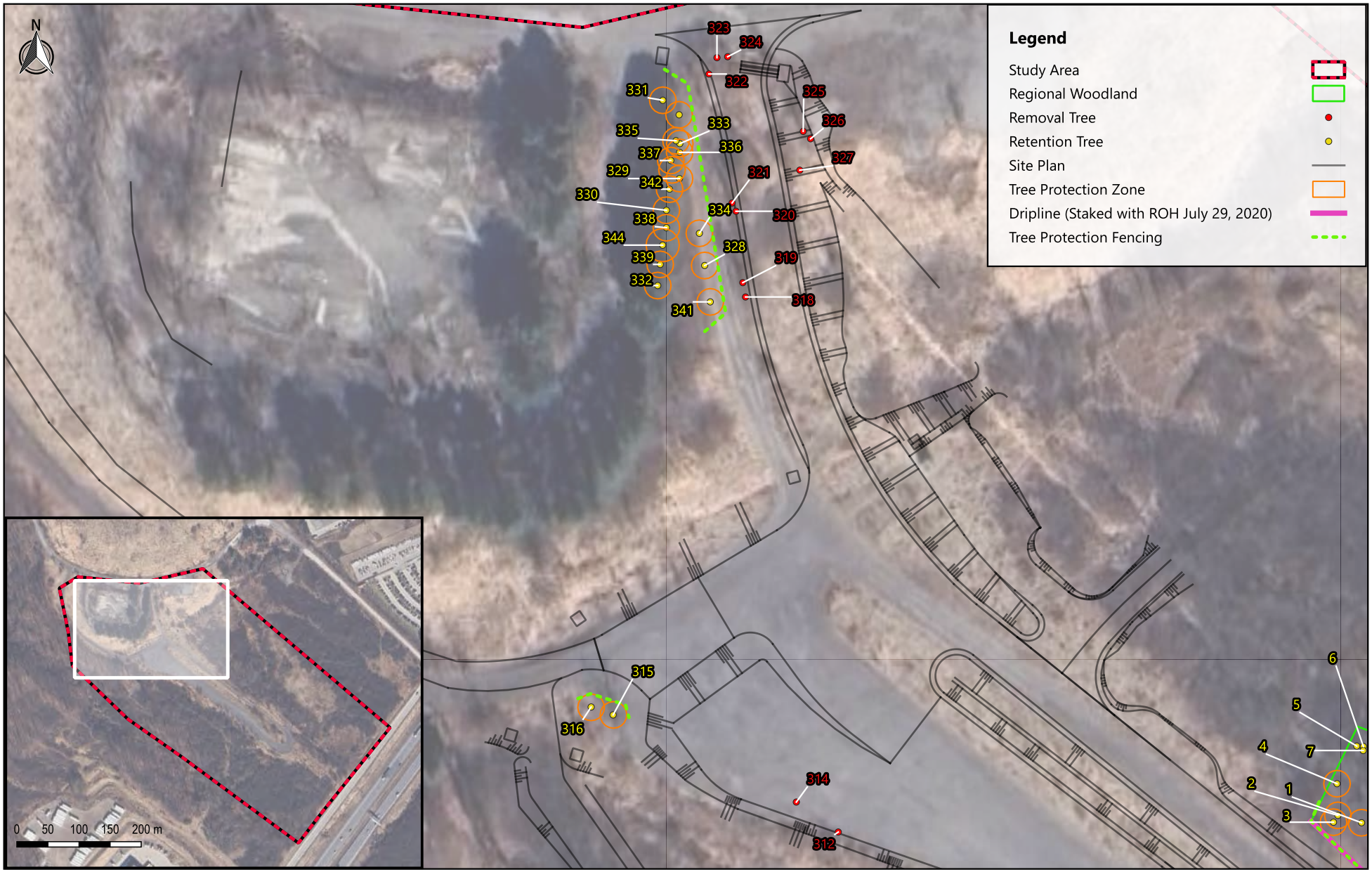
Map 7.

Tree Preservation Plan
Overview

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migartory Birds Convention Act, 1994.

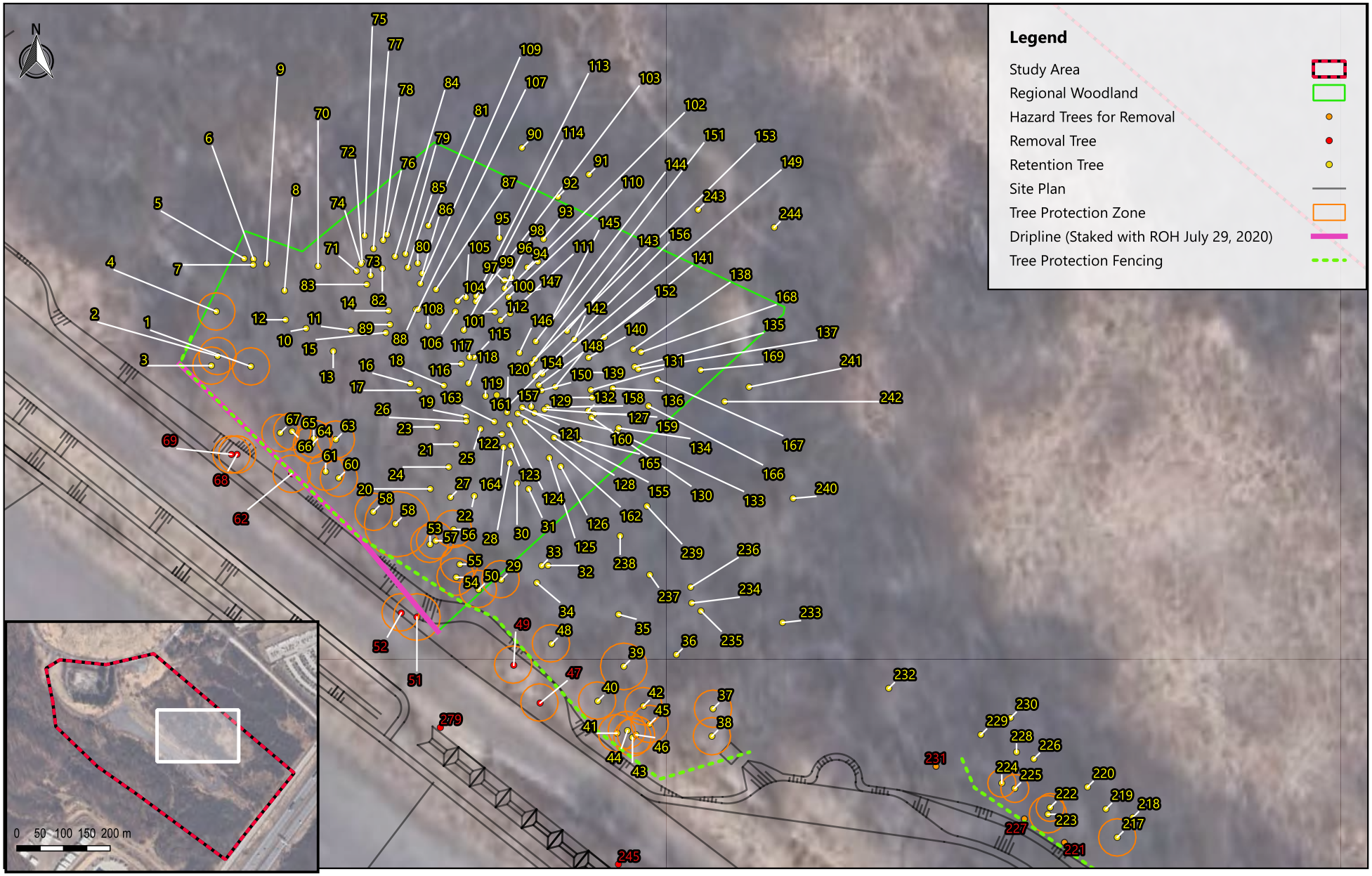
Map 7a.

Tree Preservation Plan
Northwest Corner

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 10 20 30 40 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migartory Birds Convention Act, 1994.

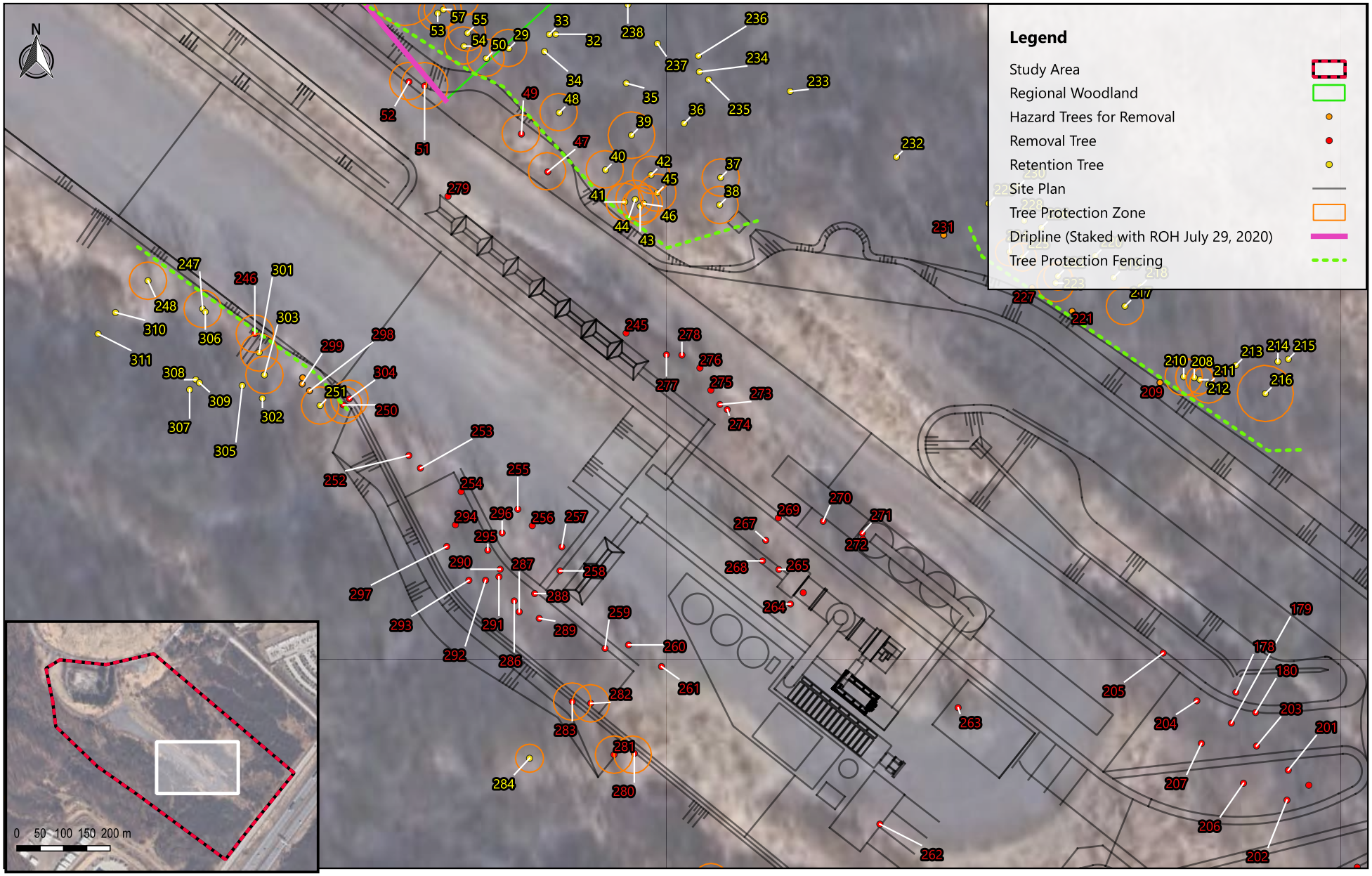
Map 7b.

Tree Preservation Plan
Northeast Woodland

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 10 20 30 40 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migartory Birds Convention Act, 1994.

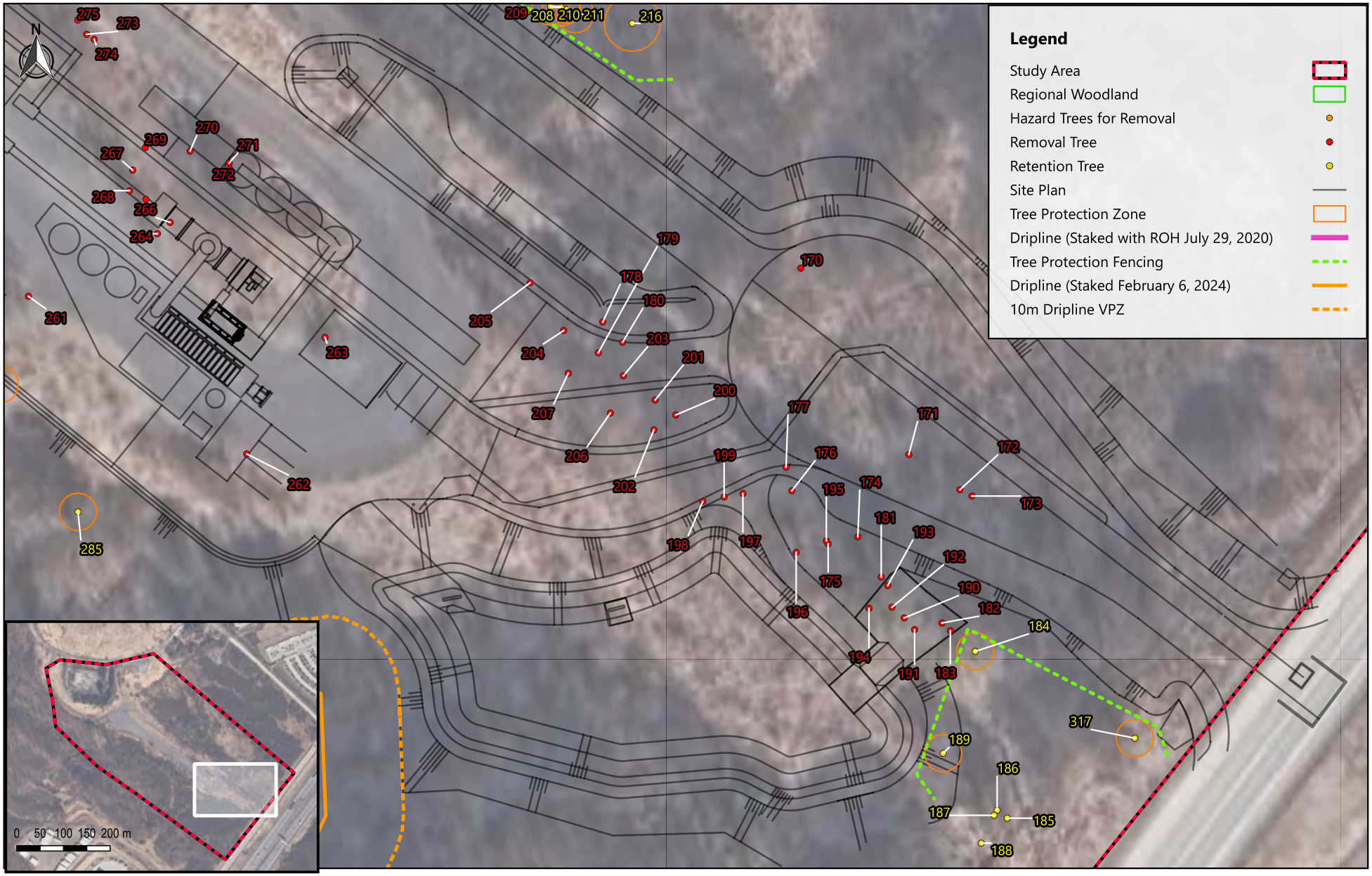
Map 7c.

Tree Preservation Plan
Asphalt Plant

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 10 20 30 40 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migartory Birds Convention Act, 1994.

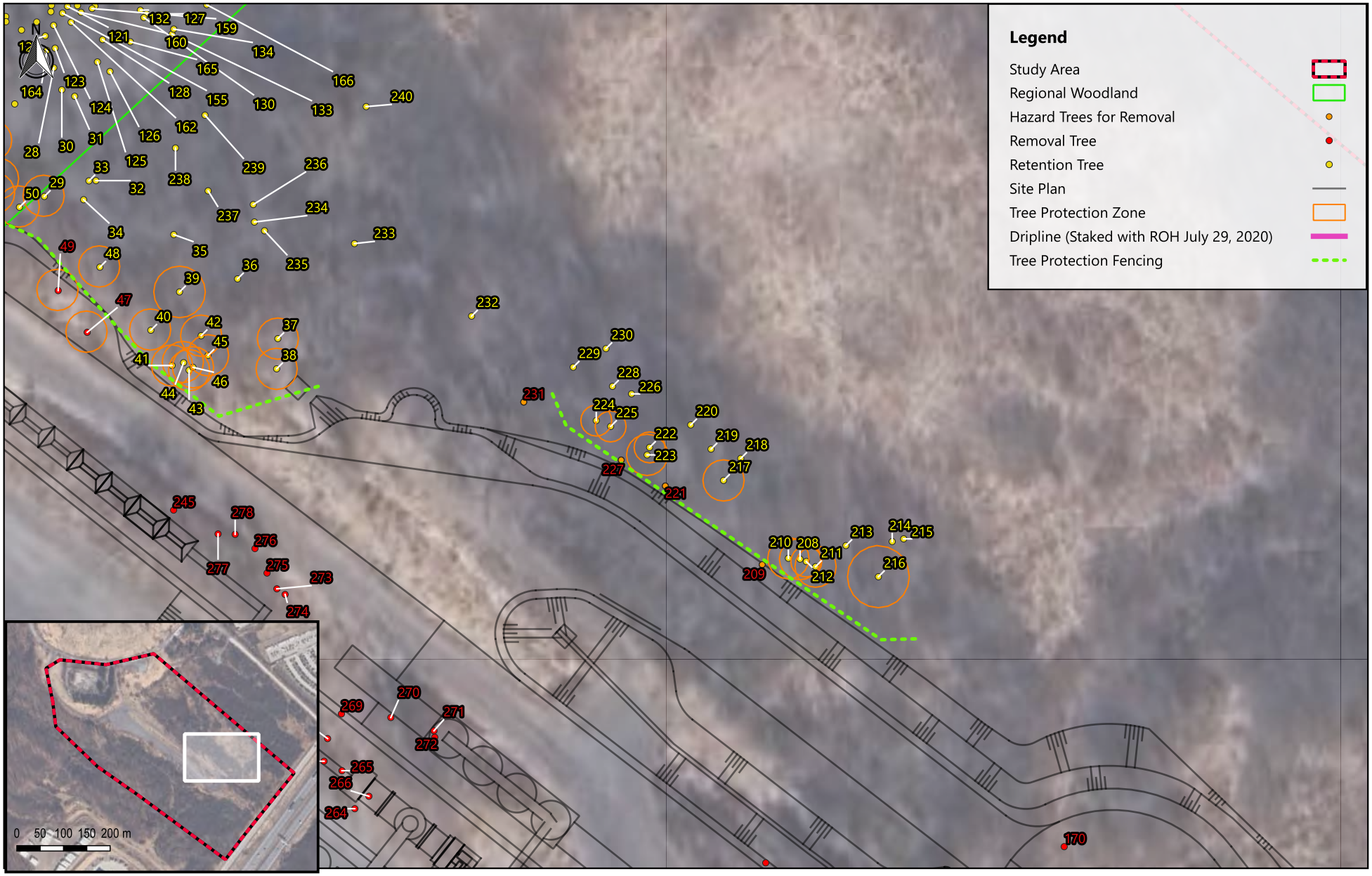
Map 7d.

Tree Preservation Plan
Southeast Corner

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 10 20 30 40 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migartory Birds Convention Act, 1994.

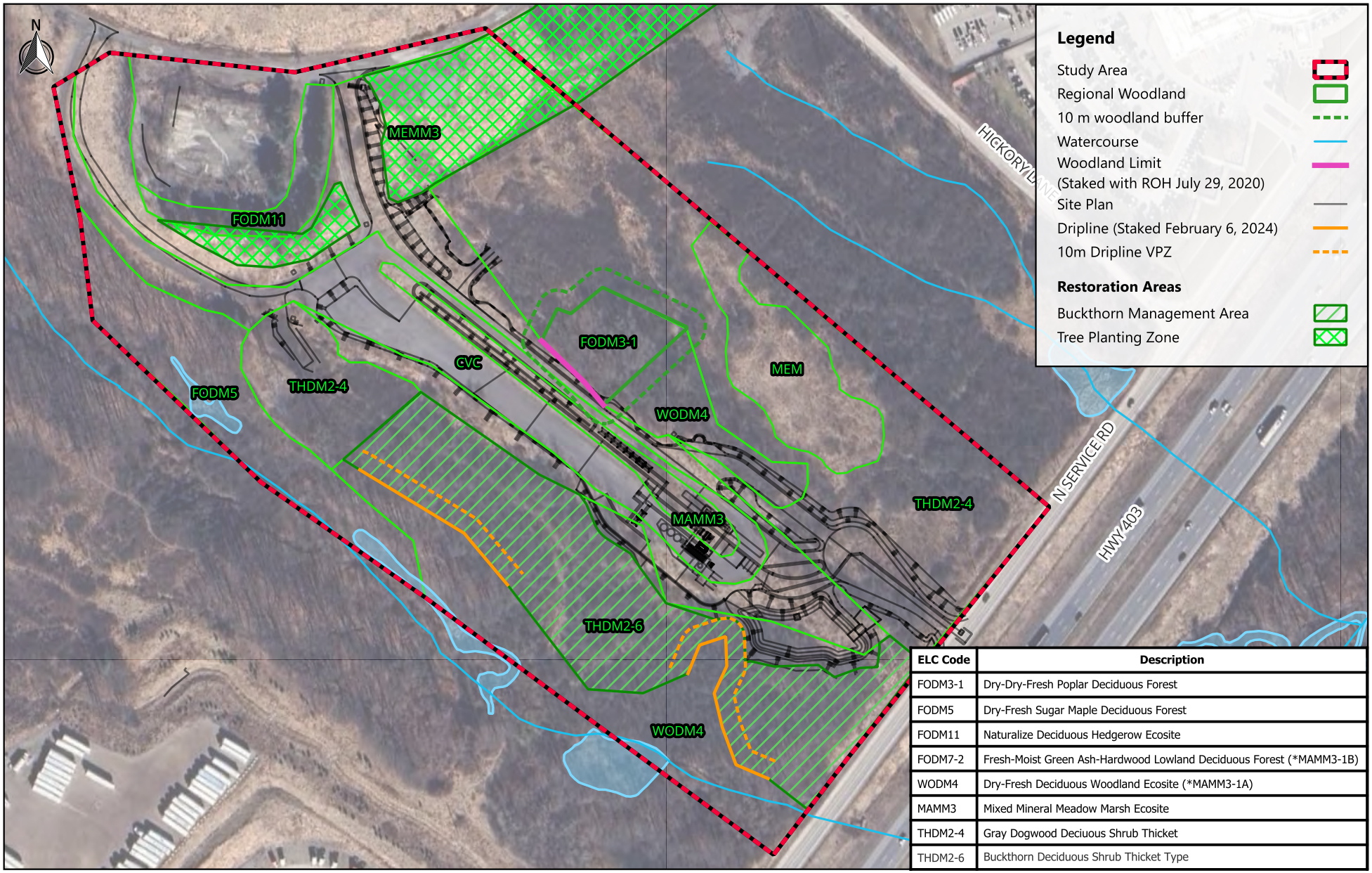
Map 7e.

Tree Preservation Plan
Southeast Woodland

Tree Preservation Plan
291 North Service Road

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



ELC Code	Description
FODM3-1	Dry-Dry-Fresh Poplar Deciduous Forest
FODM5	Dry-Fresh Sugar Maple Deciduous Forest
FODM11	Naturalize Deciduous Hedgerow Ecosite
FODM7-2	Fresh-Moist Green Ash-Hardwood Lowland Deciduous Forest (*MAMM3-1B)
WODM4	Dry-Fresh Deciduous Woodland Ecosite (*MAMM3-1A)
MAMM3	Mixed Mineral Meadow Marsh Ecosite
THDM2-4	Gray Dogwood Deciuous Shrub Thicket
THDM2-6	Buckthorn Deciduous Shrub Thicket Type

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jun 21, 2024

0 50 100 150 200 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
[1] Imagery from Google Earth.
[2] Contains information licensed under the Open Government Licence – Ontario.

Map 8.

Restoration Plan

Environmental Impact Assessment
291 North Service Road, Burlington

King Paving Ltd.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz

Appendix A

Approved Terms of Reference

EIA Terms Of Reference

GeoProcess RESEARCH ASSOCIATES
Knowledge Research Consulting

July 18, 2023

Adam Huycke, MCIP, RPP, CPT
Senior Planner
Planning Services
Legislative & Planning Services
Halton Region

Re: Environmental Impact Assessment Terms of Reference - Updated
291 North Service Road, Burlington, Ontario

GeoProcess Research Associates Inc. (GRA) has been retained by King Paving to complete an Environmental Impact Assessment (EIA) for a proposed development at 291 North Service Road, Burlington, Ontario. This is herein referred to as the "Subject Property". The property is owned by the Region of Halton and part of the former Burlington Landfill site. The site will be leased to King Paving for the use as a new Asphalt Plant. The "Study Area" is limited to the southern portion of the Regional Landfill site, which includes the proposed development site and the realigned Hickory Lane (Halton Region's access road to the closed dump). See Figure 1, Key Map, for the Study Area location. The proposed development includes the construction of a new asphalt plant with material storage and the realignment of Hickory Lane. The works will include a new entrance into the property from the North Service Road. Minor works along the North Service Road are required (i.e., 1.5 m widening of the North Service Road to accommodate a turning lane). The site is adjacent to a Halton Region Natural Heritage System (RNHS), which is the trigger for the EIA.

A pre-consultation letter from the City of Burlington dated February 12, 2020, identifies the requirements for a development application for the Subject Property. The City identifies the Subject Property in proximity to Environmental Protection Area and as a result, a site-specific Environmental Evaluation Report has been identified to be completed "to ensure that impacts on the natural environment are minimized through maximum impervious surface limits and setbacks from watercourses and natural features." This letter also requires that a Tree Inventory and Protection Plan be completed.

The Greenbelt Plan (2017) and Growth Plan (2019) NHS boundaries also occur adjacent to the proposed development, in the north-west portion of the Study Area. Key Features that form part of Halton Region's NHS that are on or adjacent to the Subject Property include Candidate Significant Woodlands, and Sassafras - Waterdown Woods Life Science ANSI (within 120 m of Study Area). Potential unmapped Key Features include unevaluated wetlands, habitat of endangered or threatened species, significant wildlife habitat, and fish habitat. A portion of these natural heritage features, including tributaries of Falcon Creek and wetlands are regulated under Ontario Regulation 162/06 Halton Conservation Authority: Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses. The Subject Property is also located within the Cootes to Escarpment EcoPark System.

PO Box 65506 Dundas
DUNDAS, ON, L9H 6Y6
905.466.6721
www.geoprocessresearch.com

GeoProcess understands that the size and status of the wetlands staked on August 6, 2020 have not been confirmed and that the conservation authority is recommending a conservative approach whereby wetlands are assumed to be Provincially Significant Wetlands (PSW). The EIA will provide an assessment discussing the applicability of complexing the features into the existing PSW.

Based on GRA's initial investigation of the property and applicable Provincial, Regional, City of Burlington and Conservation Halton policies and regulations, Falcon Creek and associated natural lands are proximal to the Municipal Environmental Protection Area. These natural heritage features will be the focus of the environmental studies undertaken by GRA. The structure of the EIA will follow the newly adopted Halton Region EIA Guidelines (2020).

Figure 2 provides the most recent Site Plan and the Conservation Halton (CH) staked wetland limits (August 6, 2020), including 15 m, 30 m and 120 m setback limits. The development concept in this figure is preliminary and refinements will be supported by the EIA and conform to Provincial, Regional, Municipal and Conservation Authority plans and policies.

1. EIA Study Elements

The following provides the proposed study elements required to complete the EIA. The EIA will accurately define the boundaries of the local natural heritage features, the extent and treatment of the required buffers to determine an appropriate development limit and recommended mitigation measures to reduce/eliminate any predicted impacts to the natural heritage system. Overall, the EIA is intended to demonstrate that the proposed development will not result in any negative impacts to the previously outlined regional Natural Heritage System Key Features that occur on and adjacent to the site, as per Section 118(3)c) of the Halton Region's Official Plan (ROP).

1.1. Background Review

A review of the existing background information will be completed. This will include a review of all relevant Federal, Provincial and Municipal Act, Policies and Regulations (i.e., Provincial Policy Statement, Places to Grow Plan, 2019, Greenbelt Plan, 2017, Halton Region, City of Burlington, CH Regulations, etc.) and any existing reports associated with the Subject Property or adjacent lands, if accessible.

Existing ecological databases such as Bird Studies Canada, the Ontario Reptile and Amphibian Atlas, and Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) will be reviewed. A desktop Species at Risk (SAR) and Significant Wildlife Habitat (SWH) screening will be completed using all available background documents, including information acquired from the Ministry of Environment Conservation and Parks (MECP).

All species identified through the field inventories will be ranked using federal, provincial and local rankings.

1.2. Ecological Studies

Characterization of the Natural Heritage features and functions of the Subject Property will include:

Amphibian Surveys: Amphibian surveys will follow the Marsh Monitoring Program protocol, which requires three visits between mid-April to the end of June. Surveys will be completed at the proper air temperature triggers (5^{o}C, 10^{o}C and 17^{o}C) and under the correct weather conditions (light winds).

Breeding Bird Surveys: The breeding bird surveys will follow the Ontario Breeding Bird Atlas (OBBA 2001) protocol. Visits will occur a minimum of seven days apart. All visits will occur between sunrise and 10 am in appropriate weather conditions (light winds, no heavy rain, good visibility).

Snag Surveys: Snag surveys will be conducted during leaf off following the Ministry of Natural Resources and Forestry current bat habitat survey protocol for Species at Risk Bats within Treed Habitats (MNRF, 2017). Surveys include an assessment of all trees with a diameter at breast height (dbh) of 10 cm or greater, live, or dead, with loose or naturally exfoliating bar, cavities, hollows or cracks. Completed data forms and locational mapping will be provided for any identified snags.

Floristic Studies: Vegetation characterization of the vegetation within and 120 m from the Subject Property will be completed following the Ontario Ministry of Natural Resources Ecological Land Classification (ELC) protocol. The characterization will include a two-season inventory (spring – May to June; summer – July to August, which will be completed in 2020. A full botanical species list, and where applicable, a map showing rare or uncommon vegetation communities or species will be provided.

Tree Inventory Survey: An assessment of all tree resources with a diameter at breast height of 10 cm or greater on the Subject Property will be completed in the context of the proposed development plan. A full tree inventory table and figure specifying tree locations and recommended protection measures will be provided were opportunities exist. This inventory will be restricted to the specimens located on the property and within 3 metres of the property limit.

Woodland Staking: Delineation of the woodland limits will occur during a staking exercise with Halton Region and City of Burlington staff to appropriately determine the necessary buffer and its treatment. The limits will be surveyed, and the surveyed line will be included on all figures.

Significant Woodlands Assessment: Following the tree inventory and woodland dripline staking, a Significant Woodlands Assessment will be completed for all woodland areas greater than 0.5 ha. This assessment will be completed in concordance with Section 277 of the Halton ROP.

Headwater Drainage Feature Assessment: A headwater drainage feature assessment will be completed for the small surface drainage feature found immediately east of the proposed asphalt plant, following CVC/TRCA (2014) guidelines. Their flows will be considered in the stormwater management discussion, as outlined below (“Non-Ecological Studies”).

Wetland Staking: Delineation of the wetland limits will occur during a staking exercise with CH staff to appropriately determine the necessary buffer and its treatment. The limits will be surveyed, and the surveyed line will be included on all figures.

Significant Wetlands Assessment: Following staking, wetlands on site will be assessed to determine if they would be considered Significant Wetlands under Section 276.5 of the Halton Region Official Plan.

Species at Risk Screening: An assessment and screening of potential Species at Risk will be conducted for the Property based on Federal and Provincial status. The screening will be based on a review of the Natural Heritage Information Centre, the regional list and any addition lists provided by the MECP.

Significant Wildlife Habitat Assessment: A desktop analysis of Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and Significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (January 2015) will be conducted for the Subject Property. Potential SWH will be assessed during field studies.

Biophysical Analysis: An assessment of the biophysical significance of Natural Heritage Features and functions in the study area will be completed as per Halton Region EIA Guidelines (draft 2019). This will include characterizing ecological function, linkages, and enhancement opportunities that may be possible through the proposed development. The connectivity of key features on the property to the north with the features on the subject property will be assessed and relevant policies (Greenbelt Plan 2017, Growth Plan 2019) reviewed to aid in determining appropriate buffers for natural heritage features on the Subject Property. A detailed map will provide constraints and opportunities based on the findings of these analyses.

Incidental Wildlife Surveys: Formal surveys for mammals, reptiles and insects are not proposed but all incidental observations of these species will be recorded.

Non-Ecological Studies: In addition to the ecological characterization of the Subject Property, the EIA will include a discussion regarding stormwater management (including headwater drainage feature flows), servicing and site grading plans, flood hazards, surface water quality associated with the proposed development, and potential for downstream hydrological and erosion impacts within Falcon Creek.

1.3. Water Balance

A water balance will be completed for the development site and the small wetlands located immediately adjacent to the development site. The feature based water balance will consider inputs of water both from surface and groundwater sources as per the available data. Water quality will be discussed as the available data allows.

2. Proposed EIA Structure

Following Region of Halton Guidelines (draft update dated 2019), the EIA report will have the following structure:

1. Introduction
    - 1.1. Site Location and Study Area Boundary
    - 1.2. Proposed Development
    - 1.3. EIA Triggers
    - 1.4. Scoped Issues and Required Tasks
2. Planning Context
    - 2.1. Context
        - 2.1.1. PPS 2020
        - 2.1.2. Endangered Species Act 2007
        - 2.1.3. Greenbelt Plan 2017
        - 2.1.4. Growth Plan for Greater Golden Horseshoe 2019
        - 2.1.5. City of Burlington Official Plan
            - 2.1.5.1 City's Official Plan (1997, amended)

2.1.5.2 City's Official Plan (2020, Region approved)
2.1.6. Halton Regional Official Plan
2.1.7. Conservation Halton Regulation 162/06
2.1.8. Cootes to Escarpment EcoPark System
2.1.8.1. Final Management Plan for Waterdown-Sassafras Woods Heritage Lands
2.2. Land Use Designations
2.2.1. Current
2.2.2. Proposed
2.3. Consultation Undertaken
3. Methods
3.1. Relevant Guidelines
3.2. Background Studies
3.3. Field Survey and Analyses
4. Biophysical Inventory
4.1. Existing Conditions
4.1.1. Summary of Surveys
4.1.2. Physiography
4.1.3. Historical Conditions
4.1.4. Hydrological Features
4.1.4.1. Wetlands
4.1.4.2. Headwater Drainage Features
4.1.4.3. Falcon Creek
4.1.5. Vegetation
4.1.6. Amphibians
4.1.7. Breeding Birds
4.1.8. Snag Surveys
4.1.9. Wildlife
4.1.10. Tree Inventory
4.1.11. Significant Wildlife Habitat Assessment
4.1.12. Species at Risk (SAR) and SAR Habitat
4.1.13. Natural Heritage Systems
5. Biophysical Analysis
5.1. Significance Assessment
5.1.1. Woodlands
5.1.2. Wetlands
5.2. Key Features
5.3. Natural Heritage Systems
5.4. Development Constraints
5.5. Outcomes from Agency Consultation
6. Description of Proposed Development
6.1. Overview
6.1.1. Natural Heritage System Buffers
6.1.2. Stormwater Management
6.1.3. Grading and Servicing Requirements
6.2. Timing
7. Impact Assessment
7.1. Impact Summary

7.1.1. Direct Impacts
7.1.2. Water Balance
7.1.3. Water Quality
7.1.4. Indirect Impacts
7.1.5. Induced Impacts
7.1.6. Cumulative Impacts
7.2. Mitigation Measures
7.2.1. Natural Heritage System Measures
7.2.2. Construction Measures
7.3. Residual Impacts
8. Enhancement Opportunities
9. Policy Assessment
10. Monitoring Plan **If Required*
10.1. Pre-Construction
10.2. During-construction
10.3. Post-construction
11. Conclusions and Recommendations
12. Closing
13. References
14. Appendices
14.1. Approved TOR
14.2. Record of Consultation
14.3. Data Tables
14.4. Figures
14.5.Supporting Materials
14.6. Files – Final Submission
14.6.1. GIS
14.6.2. Data Tables

3. Closing

The proposed EIA will characterize and assess the natural heritage features, and their functions, located on and adjacent to the Subject Property. Further, the EIA is intended to demonstrate that the proposed development will not result in any negative impacts to the Regional Natural Heritage System Key Features that occur on and adjacent to the site, as per Section 118(3)c) of the Halton Region's Official Plan (ROP).

An assessment of the impacts and recommended mitigation measures will be provided within the context of the proposed development at 291 North Service Road in Burlington, ON. The EIA will provide an analysis of the required buffers and the developable limit of the Subject Property. Detailed mapping of the study area and results of the biophysical assessment will also be included. This Terms of Reference provides the approach and study elements which will be followed throughout the study process.

If you have any questions regarding this submission, please do not hesitate to contact us.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC

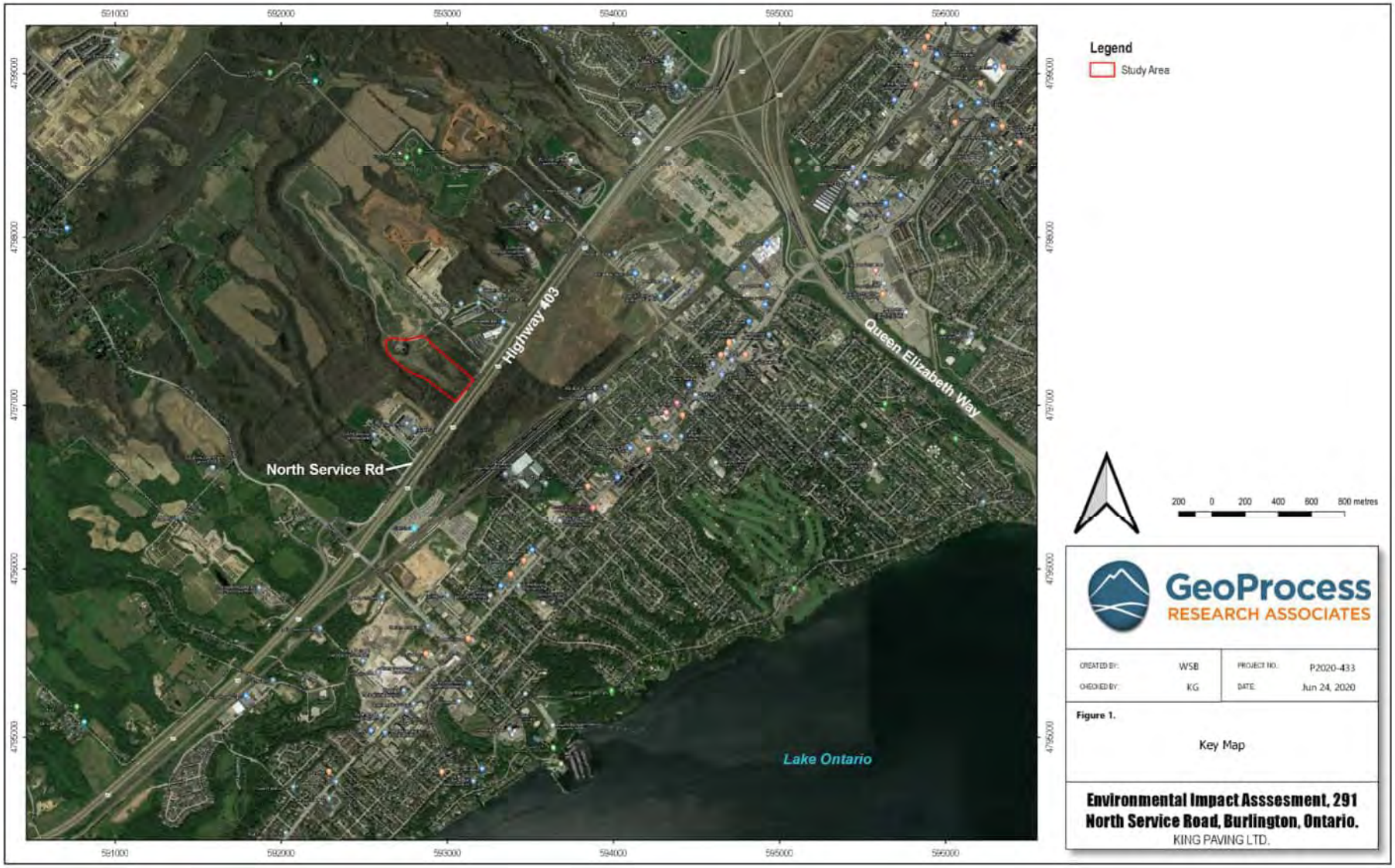


Ken Glasbergen, M.Sc.
Senior Ecologist, Principal

c.c. Brynn Nheiley, City of Burlington
Emma DeFields, Conservation Halton
Adam Huycke, Halton Region

Figures

PO Box 65506 Dundas
DUNDAS, ON, L9H 6Y6
905.466.6721
www.geoprocessresearch.com


Legend
Study Area
Highway 403
Queen Elizabeth Way
North Service Rd
Lake Ontario
200 0 200 400 600 800 metres
GeoProcess
RESEARCH ASSOCIATES
CREATED BY: WSB
CHECKED BY: KG
PROJECT NO. P2020-433
DATE: Jun 24, 2020
Figure 1.
Key Map
Environmental Impact Asssesment, 291 North Service Road, Burlington, Ontario.
KING PAVING LTD.



NO.	DATE	BY	REVISIONS

DESIGN	DESIGN	CHK'D		DATE
DRAWN	DRAWN	CHK'D		OCT. 21, 2022

APPROVALS

STAMP

S. LLEWELLYN & ASSOCIATES LIMITED
CONSULTING ENGINEERS

Tel. (905) 631-6978
Website: www.sla.on.ca
email: info@sla.on.ca

3228 South Service Road, Suite #105 East Wing, Burlington, Ont., L7N 3H8

CLIENT
KING PAVING AND CONSTRUCTION COMPANY
3385 HARVESTER ROAD, BURLINGTON ONTARIO

PROJECT NAME
NORTH SERVICE ROAD
ASPHALT PLANT
BURLINGTON, ONTARIO

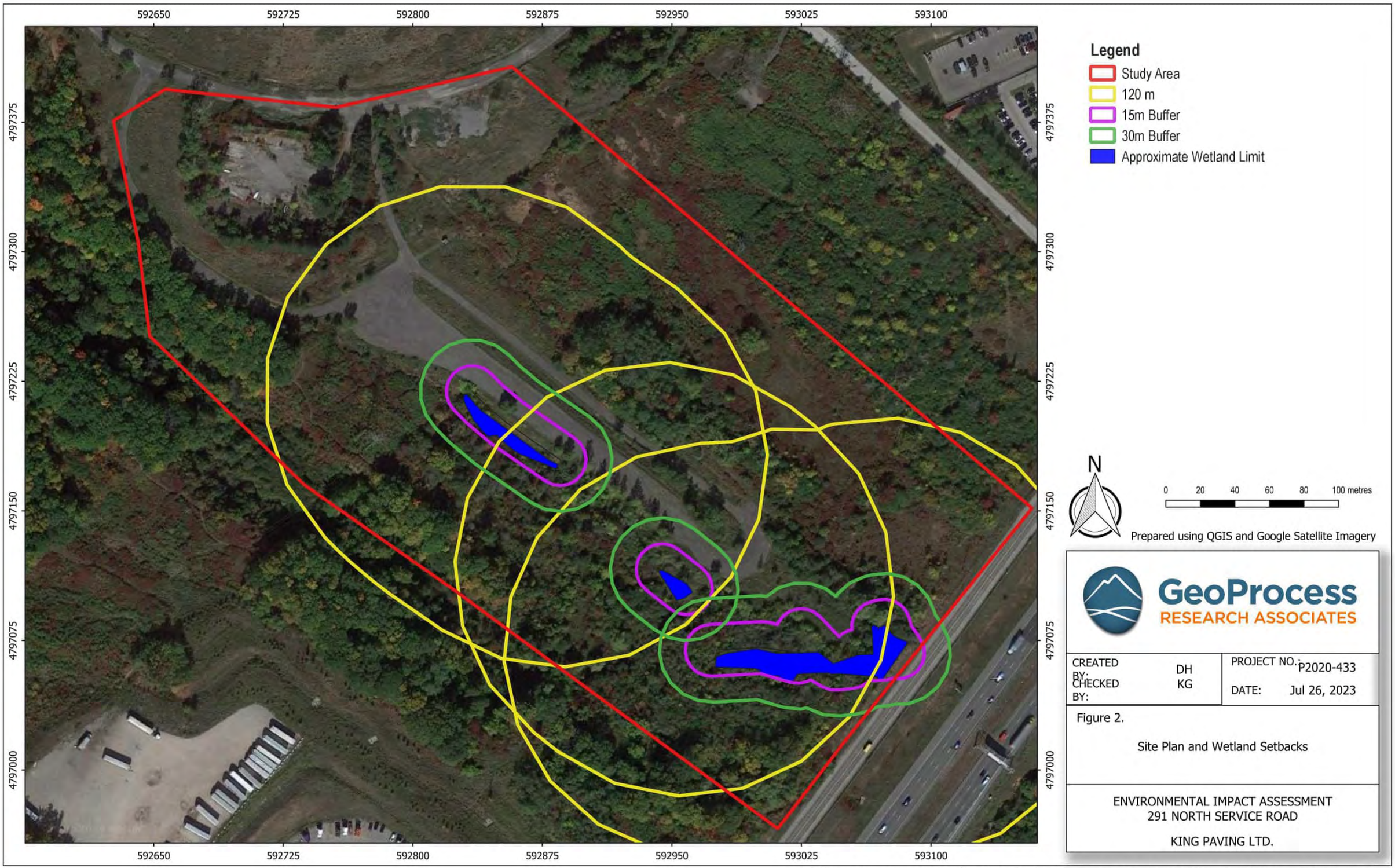
TITLE
CONCEPTUAL SITE LAYOUT

PROJECT No. 20036

DRAWING No. C-100

SCALE 1: 750

0 5 15 25 50 75



Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	Jul 26, 2023

Figure 2.

Site Plan and Wetland Setbacks

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD

KING PAVING LTD.

G:\Shared drives\Projects-2020\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\Basemap.qgz

Appendix B

Record of Consultation (Agencies)

MEMO

June 24, 2020

Ministry of Environment, Conservation, and Parks
c/o Nikki Boucher
Species at Risk Specialist

Re: Species at Risk Screening
291 North Service Road, Burlington, Ontario

Dear Ms. Boucher,

GeoProcess Research Associates Inc. (GRA) has completed the following Preliminary Screening for Species-at-Risk for an Environmental Impact Assessment (EIA) at 291 North Service Road, in Burlington, Ontario. King Paving is proposing to build an asphalt plant on a portion of the former Burlington Landfill site. The following information follows the MECP Client's Guide to Preliminary SAR Screening, and corresponding checklist. Refer to the figure below for the site location.



PROJECT NO. P2020-433

PO Box 65506 Dundas
DUNDAS, ON, L9H 6Y6
905.466.6721
www.geoprocessresearch.com

SAR Data Sources Searched

All information listed below was obtained from the listed data source, obtained on June 24, 2020.

Natural Heritage Information Centre (NHIC)

The following results come from the NHIC report for the four 1 km^2 grid squares that overlap the study area (17NH9297, 17NH9397, 17NH9296, and 17NH9396).

OGF ID	Element Type	Common Name	Scientific Name	SRank	SARO Status	COSEWIC Status	ATLAS NAD83 IDENT	COMMENTS
996961	WILDLIFE CONCENTRATION AREA	Colonial Waterbird Nesting Area		SNR			17NH9297	
996961	WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony		SNR			17NH9297	
996961	SPECIES	Eastern Meadowlark	Sturnella magna	S4B	THR	THR	17NH9297	
996961	SPECIES	Forked Panicgrass	Dichanthelium dichotomum	S2			17NH9297	
996961	SPECIES	Butternut	Juglans cinerea	S2?	END	END	17NH9297	
996961	SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	17NH9297	
996961	SPECIES	Bristly Buttercup	Ranunculus hispidus	S3			17NH9297	
996961	SPECIES	Largebract Tick-trefoil	Desmodium cuspidatum	S3			17NH9297	
996971	WILDLIFE CONCENTRATION AREA	Colonial Waterbird Nesting Area		SNR			17NH9397	
996971	WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony		SNR			17NH9397	
996971	SPECIES	Forked Panicgrass	Dichanthelium dichotomum	S2			17NH9397	
996971	SPECIES	Butternut	Juglans cinerea	S2?	END	END	17NH9397	
996970	WILDLIFE CONCENTRATION AREA	Colonial Waterbird Nesting Area		SNR			17NH9396	
996970	WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony		SNR			17NH9396	
996970	SPECIES	Forked Panicgrass	Dichanthelium dichotomum	S2			17NH9396	
996970	SPECIES	Butternut	Juglans cinerea	S2?	END	END	17NH9396	
996960	WILDLIFE CONCENTRATION AREA	Colonial Waterbird Nesting Area		SNR			17NH9296	
996960	WILDLIFE CONCENTRATION AREA	Mixed Wader Nesting Colony		SNR			17NH9296	
996960	SPECIES	Forked Panicgrass	Dichanthelium dichotomum	S2			17NH9296	
996960	SPECIES	Butternut	Juglans cinerea	S2?	END	END	17NH9296	
996960	SPECIES	American Chestnut	Castanea dentata	S1S2	END	END	17NH9296	
996960	SPECIES	Bristly Buttercup	Ranunculus hispidus	S3			17NH9296	
996960	SPECIES	Largebract Tick-trefoil	Desmodium cuspidatum	S3			17NH9296	

Breeding Bird Atlas

The following SAR were found within the Ontario Breeding Bird Atlas report for the 100 km^2 grid square that overlaps the study area (17NH99).

Species	Max BE	Categ	Atlasser Name	#PC	%PC	Abun	#Sq	SARO_STATUS	S_Rank
Barn Swallow	NY	CONF	Paul D Smith	6	19.35	0.3548	1	Threatened	S5B
Bobolink	S	POSS	2 atlassers	2	6.45	0.0968	1	Threatened	S4B
Chimney Swift	AE	CONF	Bob Curry	2	6.45	0.1613	1	Threatened	S4B,S4N
Eastern Meadowlark	FY	CONF	Alan Wormington	2	6.45	0.0645	1	Threatened	S4B
Eastern Wood-Pewee	T	PROB	3 atlassers	5	16.13	0.1613	1	Special Concern	S4B
Golden-winged Warbler	S	POSS	Bob Curry					Special Concern	S4B
Least Bittern	S	POSS	Bob Curry					Threatened	S4B
Louisiana Waterthrush	S	POSS	Karl R. Konze					Threatened	S3B
Peregrine Falcon	NY	CONF	3 atlassers					Special Concern	S3B
Red-headed Woodpecker	H	POSS	Alan Wormington					Special Concern	S4B
Wood Thrush	T	PROB	2 atlassers					Special Concern	S4B

eBird

No eBird Hotspots occur on site. However, one Hotspot occurs in the Sassafras Woods ANSI, which is within 120 m of the study area. The following SAR were found within this hot spot:

SPECIES NAME	COUNT	DATE	BY	SARO_STATUS	S_Rank
Eastern Wood-Pewee	1	20-Jun-20	Bob Curry	Special Concern	S4B
Bald Eagle	1	18-Jan-19	Richard Poort	Special Concern	S2N,S4B
Wood Thrush	3	14-Jul-14	Sunny Z	Special Concern	S4B
Golden-winged Warbler	1	28-May-97	Hamilton Naturalists' Club Bird Record Data	Special Concern	S4B

iNaturalist

** iNaturalist now includes the Ontario Herps Project (Formerly Ontario Reptile and Amphibian Atlas)*

According to the iNaturalist species database, no designated SAR have been observed on or directly adjacent to the study area.

Ontario Moth Atlas

No SAR were recorded for the 100 km^2 grid square that overlaps the study area (17NH99).

Ontario Butterfly Atlas

The following SAR were recorded for the 100 km^2 grid square that overlaps the study area (17NH99).

Common Name	Scientific Name	# of Records	Earliest in Yr (adults)	Latest in Yr (adults)	Earliest Yr	Latest Yr	SARO_STATUS	S_Rank
Mottled Duskywing	Erynnis martialis	6	25-May	18-Jul	1994	2012	Endangered	S2
Monarch	Danaus plexippus	137	9-Jun	22-Nov	1956	2019	Special Concern	S2N,S4B

Fisheries and Oceans Canada Aquatic Species at Risk Map

According to the Aquatic Species at Risk Map, no SAR or critical habitat for Aquatic Species at Risk occurs on or directly adjacent to site.

Additional Information

List Conservation Authorities you contacted

- Conservation Halton

List local naturalist groups you contacted

- Although not directly contacted, Hamilton Naturalists Club records are included in the eBird atlas, as reported above.

List local Indigenous communities you contacted

- No local Indigenous communities were contacted, as no groups are known to be directly associated with the subject lands at the present time.
- The City of Burlington is located on the traditional lands of groups that include the Anishinaabeg, Haudenosaunee, and Metis. These lands are covered by the Dish with One Spoon Wampum (Iroquois Confederacy, Ojibway, and other allied Nations around the Great Lakes). This land is also part of the Treaty Lands and Territory of the Missisaugas of the Credit.

List any other local land trusts or Environmental Non-Government Organizations you contacted

- No local land trusts or Environmental Non-Government Organizations were contacted.

List and field studies that were conducted to identify species at risk, or their habitat, likely to be present or absent at or near the site

- Amphibian Call Count Surveys as per the Marsh Monitoring Protocol, no SAR detected.
- Breeding Bird Calling Surveys

List what you think the likely impacts of your activity are on species at risk and their habitat (e.g. damage or destruction of habitat, killing, harming or harassing species at risk)

- A development is proposed on the former Burlington Landfill site that includes the construction of an asphalt plant and associated storage facilities, which will occur mostly on an existing crushed gravel surface. Additionally, the extension of an existing laneway (Hickory Lane) is proposed.
- The impacts of these activities are being assessed through an Environmental Impact Assessment. Based on work currently completed and building on the background information gathered to date, we do not believe the project will have an impact on any species at risk or their habitats given to the lack of SAR in the vicinity of the proposed development and the highly disturbed nature of the site (former landfill).

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC



Ken Glasbergen, MSc., ERPG
Principal, Senior Ecologist



Waverley Birch, MES
Junior Planning Ecologist

GeoProcess RESEARCH ASSOCIATES

Meghan Douglas <mdouglas@geoprocessresearch.com>

Fwd: Request for preliminary screening guide

1 message

Waverley Birch <wbirch@geoprocess.com> Tue, Jan 19, 2021 at 9:43 AM
To: Ken Glasbergen <Kglasbergen@geoprocessresearch.com>, Jennifer Reader <jreader@geoprocess.com>, Ben Angel <bangel@geoprocessresearch.com>, Meghan Douglas <mdouglas@geoprocess.com>

Here are the results of the King Paving SAR screening that we submitted quite some time ago! Thankfully they seem to have since sped up a fair bit.

---------- Forwarded message ---------
From: **Zarkovich, Aide (MECP)** <Aide.Zarkovich@ontario.ca>
Date: Mon, Jan 18, 2021 at 3:49 PM
Subject: RE: Request for preliminary screening guide
To: Waverley Birch <wbirch@geoprocessresearch.com>

Hello Waverley,

Please disregard this portion of the previous e-mail, I must of copied and pasted from a previous review.

> *"There are numinous occurrences of Jefferson Salamander overlapping and adjacent 13010 Eighth Line. These occurrences would trigger the regulated habitat protection under the ESA. Any proposed development that cannot avoid or mitigate impacts to Jefferson Salamander or their habitat may require an authorization under the ESA"*

Please let me know if you have any questions,

Aide Zarkovich

A/Management Biologist - Permissions & Compliance

Species at Risk Branch

Land & Water Division

Ministry of the Environment, Conservation & Parks

aide.zarkovich@ontario.ca

T: 705-492-7452

From: Zarkovich, Aide (MECP)
Sent: January 18, 2021 3:41 PM
To: Waverley Birch <wbirch@geoprocessresearch.com>
Subject: RE: Request for preliminary screening guide

Good afternoon Waverley,

My apologies for the delay of the response but we continue to receive a high volume of requests since transition of the Endangered Species Act (ESA) from the MNRF to MECP and work restrictions and delays as a result of COVID-19 have only further delayed our ability to respond to requests.

The SARB has conducted review of 291 North Service Road, Burlington and the areas adjacent to it for Species at Risk (SAR) occurrences and have detected the same SAR occurrences as those submitted for review.

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).

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments will better verify site conditions, identify and confirm presence of species at risk and/or their habitats.

There are numinous occurrences of Jefferson Salamander overlapping and adjacent 13010 Eighth Line. These occurrences would trigger the regulated habitat protection under the ESA. Any proposed development that cannot avoid or mitigate impacts to Jefferson Salamander or their habitat may require an authorization under the ESA

If any vegetation removal must occur then survey's for Butternut, Eastern Flowering Dogwood, and American Chestnut should be completed prior to the start of any vegetation removal. If butternut trees are detected and the proponent wish's to remove them, then Butternut Health Assessment must be completed on all trees which might be impacted by the proposed development prior to the removal of any vegetation and start of construction.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the ESA.

Again, my apologies for the delay of the response.

Regards,

Aide Zarkovich

A/Management Biologist - Permissions & Compliance

Species at Risk Branch

Land & Water Division

Ministry of the Environment, Conservation & Parks

aide.zarkovich@ontario.ca

T: 705-492-7452

Appendix C

Significant Wildlife Habitat Screening

Table C1. Significant Wildlife Habitat

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	CUM, CUT1 - plus evidence of annual spring flooding within these ecosites *Fields with seasonal flooding and waste grains in certain areas are specific to Tundra Swan	Fields with sheet water during Spring (mid-March to May) •agricultural fields with waste grain are not SWH unless they have spring sheet water available.	No	• No candidate habitat for waterfowl stopover and staging areas (terrestrial).	•Any mixed species aggregations of 100+ individuals • the flooded field plus 100-300m radius, dependant on localized site and adjacent land us • Annual Use of Habitat is documented from information sources or field studies •Specific evaluation methods required
Waterfowl Stopover and Staging Areas (Aquatic)	MAS1,MAS2,MAS3,SAS1, SAM1,SAF1,SWD1,SWD2, SWD3,SWD4,SWD5,SWD 6,SWD7	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. • Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	No	• No candidate habitat for waterfowl stopover and staging areas (aquatic).	•Aggregations of 100 + of species listed for 7 days, results in > 700 waterfowl use days. •Areas with annual staging for ruddyducks, canvasbacks and redheads. •The combined area of the ELC ecosites and a 100m radius area. •Wetland area and shorelines associated with sites identified within the SWHTG, Appendix K, are significant wildlife habitat. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required
Shorebird Migratory Stopover Area	BBO1,BBO2,BBS1,BBS2,BB T1,BBT2,SDO1,SDS2,SDT1 ,MAM1,MAM2,MAM3,MA M4,MAM5	•Shorelines of lakes, rivers, and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. •Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores in May to mid-June and early July to October. • No sewage treatment ponds.	No	• No candidate habitat for shorebird migratory stopover areas.	•Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. •Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. •The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
Raptor Wintering Area	Combo of one of each Community Series from Forest (FOD,FOM,FOC) and Upland (CUM,CUT,CUS,CUW). Bald Eagle: Forest on shoreline area adjacent to large rivers and lakes.	A combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Need to be > 20 ha. •Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation.• Eagle sites have open water and large trees and snags available for roosting.	No	• Meadow communities were too small to qualify as candidate habitat for wintering raptors. • No candidate habitat for raptor wintering areas.	•One or more Short-eared Owls or; •One of more Bald Eagles or;• At least 10 individuals and two of the listed hawk/owl species. •To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. •for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area.• Specific evaluation methods required
Bat Hibernacula	CCR1,CCR2,CCA1,CCA2. * buildings are not to be considered SWH	May be found in caves, mine shafts, underground foundations, and Karsts. •Active mine sites are not considered SWH.	No	• No crevices, caves or abandoned mines were observed to accommodate hibernating bats. • No candidate habitat for bat hibernacula.	•All sites with confirmed hibernating bats are SWH. • area includes 200m radius around the entrance of the hibernaculum for most development types and 1000m for wind farms. •Studies are to be conducted during the peak swarming period (Aug. – Sept.). • Specific survey methods required
Bat Maternity Colonies	All Ecosites in: FOD,FOM,SWD,SWM.	Maternity colonies can be found in tree cavities, vegetation and often in building. *Building are not considered SWH. • Not found in caves or mines in ON. •Located in Mature Deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. •Prefer snags in early stages of decay (class 1-3 or class 1 or class 2). •Silver-haired Bats prefer older mixed or deciduous forests with at least 21 snags/ha.	Yes	A total of 8 potential snag trees were identified FODM4 which does meet the habitat criteria of forest stands with >10/ha large diameter wildlife trees.	Maternity Colonies with confirmed use by; . >10 Big Brown Bats© • >5 Adult Female Silverhaired Bats© • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"
Turtle Wintering Areas	Snapping and Midland Painted: SW,MA,OA,SA and FEO/BOO Series. Northern Map: Open water areas such as deeper rivers or streams and lakes.	Wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. •Man-made ponds such as sewage lagoons or storm water ponds should not be considered	No	•There are no ponds suitable for turtle wintering areas located in the Study Area.	•Presence of 5 over-wintering Midland Painted Turtles is significant, •One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant • The mapped ELC ecosite area with the over wintering turtles is the SWH. • If the hibernation site is within a stream or river, the deep-water pool where the turtles are

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
		SWH.			over wintering is the SWH. • Search for congregations in Basking Areas in spring and fall.
Reptile Hibernaculum	Any ecosite other that very wet. •Talus, Rock Barren, Crevice, Cave, Alvar may be directly related. •Observations of congregations in spring or fall is good indicator.	Sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH.• Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.	No	• No potential snake hibernacula features were observed. • No candidate habitat for snake hibernacula.	•Presence of snake hibernacula used by - a minimum of five individuals of a snake sp. or;- individuals of two or more snake spp.. •Congregations of -a minimum of five individuals of a snake sp. or; -individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • If there are Special Concern Species present, then site is SWH. •The feature in which the hibernacula is located plus a 30 m radius area is the SWH .• Hibernacula are used annually, often by the same individuals (strong site fidelity) and other life processes often take place near by
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. CUM1,CUS1,BLS1,CLO1,CLT1,CUT1,BLO1,BLT1,CLS1	Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area, *does not include man-made structures or licenced Mineral Aggregate Operation.	No	• No bank or cliff swallow nesting habitat was observed. • No candidate habitat for colonial-nesting birds.	•Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests. •Field surveys to observe and count swallow nests are to be completed during the breeding season. • Specific evaluation methods required
Colonially-Nesting Bird Breeding Habitat (Tree/Shrub)	SWM2,SWM3,SWM5,SWM6,SWD1,SWD2,SWD3,SWD4,SWD5,SWD6,SWD7,FET1	Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. •Most nests in trees are 11 to 15 m from ground, near the top of the tree.	No	• No groups of large stick nests were observed during field investigations. • No candidate habitat for tree/shrub colonial nesting birds.	•Presence of 2 or more active nests of Great Blue Heron or other listed species. •The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH.

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Code	Habitat Criteria			
					•Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells.
Colonially-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM,CUT,CUS	Nesting colonies on islands or peninsulas associated with open water or in marshy areas. Brewers Blackbird colonies found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	No	•No rocky islands or peninsulas are present within the Study Area. • No Brewer's blackbirds encountered (in southern Ontario, Brewer's Blackbird known occurrences are primarily restricted to the Bruce Peninsula; none are known to occur in London Area) • No candidate habitat for ground colonial nesting birds was identified.	•Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. •Presence of 5 or more pairs for Brewer's Blackbird. •Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. •The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. •Studies would be done during May/June when actively nesting. • Specific evaluation methods required
Migratory Butterfly Stopover Areas	Combo of one of each Field (CUM, CUT, CUS) and Forest (FOC, FOD,FOM,CUP).	Minimum 10 ha in size with combo of field and forest located within 5km of Lake Erie or Lake Ontario. •Should not be disturbed. • Field/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. •Should provide protection from the elements, often spits of land or areas with the shortest distance to cross the Great Lakes.	Yes	Monarchs were observed in Study Area which is within 5 km of Lake Ontario, however the low number of individuals observed combined with lack of nectaring opportunities and roosting sites, provided evidence that Monarch does not depend heavily on the subject lands as a migratory stopover site.	•Presence of Monarch Use Days (MUD) during Fall migration (Aug/Oct) •Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. •MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.
Landbird Migratory Stopover Areas	All Ecosites within: FOC,FOM,FOD,SWC,SWM ,SWD	Woodlots >5ha in size and within 5km of Lake Erie and Lake Ontario. • If woodlands are rare in area, smaller size can be considered. • If multiple woodlands located along shore line, those 2km from shoreline are more significant. • Sites have a variety of habitats; forest,	No	• No candidate habitat for migratory landbird stopover areas.	•Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. •Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. • Specific evaluation methods required

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
		grassland and wetland complexes. •The largest sites are more significant. •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.			
Deer Winter Congregation Areas	All forested ecosites within: FOC,FOM,FOD,SWC,SWM ,SWD + conifer plantations much smaller than 50 ha may be used.	Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots >50ha. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. *Woodlots with high densities of deer due to artificial feeding are not significant.	No	• No large woodlots >100ha were encountered. • No candidate habitat for deer winter congregation areas.	•Will be mapped by MNRF. • All woodlots exceeding the criteria are significant unless determined to be not by the MNRF. •Studies to be completed during winter when >20 cm of snow is on the ground, using aerial survey or pellet count.
Rare Vegetation Communities					
Cliffs and Talus Slopes	Any Ecosite within: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. Most cliff and talus slopes occur along the Niagara Escarpment.	No	• No cliffs or talus slopes were identified. • No candidate habitat for cliffs or talus slopes.	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes
Sand Barren	SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicketlike (SBS1), or more closed and treed (SBT1). Tree cover always < 60%	A sand barren area >0.5ha in size. • Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. • Vegetation can vary from patchy and barren to tree covered, but less than 60%.	No	• No sand barrens were identified. • No candidate habitat for sand barrens.	•Confirm any ELC Vegetation Type for Sand Barrens. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.
Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2, *Five Alvar Indicator Species:* 1) Carex crawei	An Alvar site > 0.5 ha in size, only known sites are found in the western islands of Lake Erie. • An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation	No	• No alvars were identified. • No candidate habitat for alvars.	•Studies that identify four of the five ***Alvar Indicator Species*** at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •The alvar must be in excellent condition and

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Code	Habitat Criteria			
	2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum	and drought. • Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover.			fit in with surrounding landscape with few conflicting land uses.
Old Growth Forest	FOD FOC FOM SWD SWC SWM	Woodland area is >0.5ha • Characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	No	• No old growth forests were identified. • No candidate habitat for old growth forests.	•If dominant trees species of the area are >140 years old, then the area containing these trees is Significant Wildlife Habitat. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics
Savannah	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. • No minimum size to site. • Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH. • Remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)	No	• No savannahs were identified. • No candidate habitat for savannahs.	•Field studies confirm one or more of the Savannah indicator species found in Appendix N, Ecoregion 7E of the SWHTG, OMNR (2000). •Entire area of the ELC Ecosite is SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic species).
Tallgrass Prairie	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. •An open Tallgrass Prairie habitat has < 25% tree cover. •No minimum size to site. •Site must be restored or a natural site. *Remnant sites such as railway right of ways are	No	• No tall grass prairies were identified. • No candidate habitat for tall grass prairies.	•Field studies confirm one or more of the Prairie indicator species in Appendix N, Ecoregion 7E of The SWHTG, OMNR (2000). •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
		not considered to be SWH.			
Other Rare Vegetation Communities	See the Significant Wildlife Habitat Techinical Guide (OMNR, 200), Appendix M for Provincially Rare S1,S2 and S3 ELC Vegetation Types.	May include beaches, fens, forest, marsh, barrens, dunes, and swamps. See OMNRF/NHIC for up to date list of rare vegetation communities.	No	• No rare vegetation communities were identified. • No candidate habitat for rare vegetation communities.	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG, OMNR (2000). •Area of the ELC Vegetation Type polygon is the SWH.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4. * Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests.	No	• There were no aggregations of nesting waterfowl observed in the meadow marsh community during spring field investigations. • No candidate habitat for waterfowl nesting areas.	Presence of 3 or more nesting pairs for listed species excluding Mallards OR Presence of 10 or more nesting pairs for listed species including Mallards. •Any active nesting site of an American Black Duck is considered significant. •Nesting studies should be completed during the spring breeding season (April - June). •Specific evaluation methods required •A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. *Nests located on man-made objects are not to be included as SWH. •Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.	No	• No large stick nests were identified. • No candidate habitat for Osprey or Bald Eagle habitat.	One or more active Osprey or Bald Eagle nests in an area. •Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. •For an Osprey, the active nest and a 300 m

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
					radius around the nest or the contiguous woodland stand is the SWH. *with additional requirements •For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. * with additional requirements•To be significant a site must be used annually. •When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. •Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid August. • Specific evaluation methods required
Woodland Raptor Nesting Habitat	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >4ha of interior habitat. • Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	No	• No forest interior habitat was encountered in the Study Area. • No candidate habitat for woodland raptor nesting.	Presence of 1 or more active nests from species list is considered significant. •Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) •Barred Owl – A 200m radius around the nest is the SWH. •Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area.

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. *Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.• Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	No	• There were no natural areas of exposed mineral soil in the Study Area. • No candidate habitat for turtle nesting areas.	Presence of:- 5 or more nesting Midland Painted Turtles OR - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. •The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. •Field investigations should be conducted in prime nesting season typically late spring to early summer. •Observational studies observing the turtles nesting is a recommended method.
Seeps and Springs	Where ground water comes to the surface. Often they are found within headwater areas within forested habitats. •Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.	No	• There were no seeps/springs observed in any of the forest communities in the Study Area. • No candidate wildlife habitat for seeps and springs.	Presence of a site with 2 or more seeps/springs should be considered SWH. •The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. •The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat.
Amphibian Breeding Habitat (Woodland)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD •Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be	Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). • Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	No	• No woodland breeding amphibians were observed in the Study Area as formal surveys were not proposed • No candidate wildlife habitat for amphibian breeding habitat (woodlands) north of the study property.	Presence of breeding population of: - 1 or more of the listed newt/salamander species or - 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or - 2 or more of the listed frog species with Call Level Codes of 3. •A combo fo observational and call count surveys required during the spring (March-June) . •The habitat is the wetland area plus a 230m

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
	used due to reduced risk to migrating amphibians.				radius of woodland area. • If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.
Amphibian Breeding Habitat (Wetlands)	ELC Community Classes SW, MA, FE, BO, OA and SA. •Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	Wetlands >500m^2 (about 25m diameter), supporting high species diversity are significant; •some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. •Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	No	• No wetland breeding amphibians were observed in the Study Area. • No candidate wildlife habitat for amphibian breeding habitat (wetlands).	Presence of breeding population of: -1 or more of the listed newt/salamander species or -2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or -2 or more of the listed frog/toad species with Call Level Codes of 3. or; -Wetland with confirmed breeding Bullfrogs are significant. •The ELC ecosite wetland area and the shoreline are the SWH. •A combo of observational and call count surveys will be required during the spring (March-June). •If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered.
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Woodland Area-Sensitive Bird Breeding Habitat	All Ecosites withing: FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. •Interior forest habitat is at least 200 m from forest edge habitat.	No	• No forest interior habitat was identified in the Study Area. • No candidate habitat for woodland area-sensitive breeding bird habitat.	Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. *any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer.

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
					• Specific evaluation methods required
Marsh Bird Breeding Habitat	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. •For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water..	No	• No candidate habitat for marsh breeding birds.	Presence of: - 5 or more nesting pairs of Sedge Wren or Marsh Wren or -breeding by any combination of 4 or more of the listed species. •any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. •Area of the ELC ecosite is the SWH. •Breeding surveys should be done in May/June. • Specific evaluation methods required
Open Country Bird Breeding Habitat	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). •Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. •The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	No	• No meadows >30 ha was identified. • No candidate habitat for open country breeding bird habitat.	Presence of nesting or breeding of: -2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. •The area of SWH is the contiguous ELC ecosite field areas. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Specific evaluation methods required.

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Code	Habitat Criteria			
Shrub/Early Successional Bird Breeding Habitat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 •Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha in size. •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no rowcropping, haying or livestock pasturing in the last 5 years). •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. •Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	Yes	THDM2-4 does not meet habitat size criteria measurements however breeding bird surveys confirmed 1 of the indicator species and at least 2 of the common species required to confirm habitat.	Presence of nesting or breeding of - 1 of the indicator species and at least 2 of the common species. •A habitat with breeding Yellowbreasted Chat or Golden-winged Warbler is to be considered as SWH. •The area of the SWH is the contiguous ELC ecosite field/thicket area. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Specific evaluation methods required
Terrestrial Crayfish	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1-with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. •Usually the soil is not too moist so that the tunnel is well formed. •Can often be found far from water.	No	• No terrestrial crayfish chimneys were recorded during field investigations. • No candidate habitat for terrestrial crayfish.	Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. •Surveys should be done April to August in temporary or permanent water. • Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult.
NHIC species element occurrences and field observations of Special Concern and rare wildlife species	All plant and animal element occurrences (EO) within a 1 or 10km grid.	Identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	Yes	• Four Barn Swallow (*Hirundo rustica*) individuals were observed foraging on the Study Area. • 1 male Eastern Wood-pewee was detected quadrat 3 of the breeding bird survey (Figure 3).	Visual confirmation of foraging Barn Swallows during two breeding bird surveys. Singing male Eastern Wood-pewee detected in suitable breeding habitat.
Animal Movement Corridors					

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Code	Habitat Criteria			
Amphibian Movement Corridors	Corridors may be found in all ecosites associated with water.	Corridors will be determined based on identifying the significant breeding habitat for these species. Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from this Schedule.	NA	• No candidate amphibian breeding habitat (wetland) was identified in the Study Area. • No candidate habitat fore amphibian movement corridors.	Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat.
Exceptions for EcoRegion 7E					
Bat Migratory Stopover Area	No specific ELC types.	Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas.	No	No habitat features on site.	Only confirmed site is Long Point. Confirmation criteria and habitat areas are still being determined.

Appendix D

Species at Risk Screening Sources

Table D 1. Species at Risk Screening Sources

Screening Resource	Description
Natural Heritage Information Center (NHIC)	The Natural Heritage Information Center (NHIC), operated by the Ontario Ministry of Natural Resources and Forestry, collects, reviews, manages and distributes information on Ontario's biodiversity. Data distributed by the NHIC is used in conservation and natural resource management decision making and was a primary resource for this report. Through the NHIC Make-a-Map tool, data on species, plant communities, wildlife concentration areas and natural areas is made accessible to the public and professionals using generalized 1-kilometer grid units to protect sensitive information. The mapping interface provides current and historical occurrences of SAR within the specified grid unit. The database also identifies environmental designations which provide insight into habitat potential including wetland, areas of natural and scientific interests and woodlands.
Breeding Bird Atlas	The atlas divides the province into 10×10 km squares and then birders find as many breeding species as possible in each square. Atlassers who know birds well by song complete 5-minute "Point Counts", 25 of which are required to provide an index of the abundance of each species in a square. Data from every square are mapped to show the distribution of each species. Point count data from each square show how the relative abundance of each species varies across the province.
eBird	eBird data document bird distribution, abundance, habitat use, and trends through checklist data collected within a simple, scientific framework. Birders enter when, where, and how they went birding, and then fill out a checklist of all the birds seen and heard during the outing. eBird's free mobile app allows offline data collection anywhere in the world, and the website provides many ways to explore and summarize your data and other observations from the global eBird community. eBird hotspots that are within 1 km of the Study Area are selected for species review.
Ontario Moth Atlas	The Ontario Moth Atlas is a project of the Toronto Entomologists' Association. The atlas currently covers about 250 species from 7 of the best-known families. The atlas presently includes 62,000 records. The last update of the atlas was in April 2020. The atlas is updated at least every 3 months. Most atlas data come from iNaturalist records. However, there is some data from Chris Schmidt of Agriculture Canada, the BOLD (Barcode of Life Datasystems) project of the University of Guelph, and from other records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
Ontario Butterfly Atlas	The Ontario Butterfly Atlas is a project of the Toronto Entomologists' Association (TEA). The TEA has been accumulating records and publishing annual seasonal summaries (Ontario Lepidoptera) for 50 years, with the first edition appearing in 1969. Atlas data comes from eButterfly records, iNaturalist records, BAMONA records, and records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
i-Naturalist	i-Naturalist is a nature app that helps public identify plants and animals. Using algorithms as well as scientists and taxonomic experts' multiple observations can be identified at a research scale. This data generated by the iNat community can be used in science and conservation. The program actively distributes the data in venues where scientists and land managers can find it. I-Naturalist has a project group for (NHIC) Rare species of Ontario. GRA only records observations with-in 1 km of the Study Area.
Fisheries and Ocean Aquatic Species at Risk Maps	The DFO has compiled critical habitat and distribution data for aquatic species listed under the Species at Risk Act (SARA). The interactive map is intended to provide an overview of the distribution of aquatic species at risk and the presence of their critical habitat within Canadian waters. The official source of information is the Species at Risk Public Registry. Using this map, a 1 km radius circle is outlined around aquatic features located within the Study Area.

Appendix E

Tree Inventory

Tree Preservation Plan

291 North Service Road, Burlington, On.

Prepared for

King Paving Ltd.

April 7, 2022

Project No. P2020-433

Prepared by

GeoProcess
RESEARCH ASSOCIATES

Table of Contents

1. Introduction 3
1.1. Site Description 3
2. Study Methodology 3
2.1. Tree Inventory 3
2.2. RHOP Woodland Analysis 4
3. Existing Conditions & Results 5
3.1. Tree Inventory 5
3.2. RHOP Woodland Assessment 6
4. Impact Assessment 7
4.1. Trees Recommended for Removal 7
4.2. Trees Recommended for Preservation 8
5. Mitigation Recommendations and Tree Preservation Measures 8
6. Conclusions 10
Maps 12

List of Tables

Table 1. Woodland tree tally surveyed on August 4, 2020. 6
Table 2. Minimum Tree Protection Zones per DBH Class 8
Table 3. Tree Inventory Results 11

List of Maps

Map 1 Tree Protection Plan 13

1. Introduction

GeoProcess Research Associates Inc. (GRA) was retained King Paving Ltd. to complete a Tree Preservation Plan for the development of a new asphalt plant on a property leased from Halton Region, located at 291 North Service Road, Burlington, Ontario. Herein referred to as the "Study Area". GRA conducted multiple field studies to identify and assess the existing trees for the Study Area. An inventory and assessment of existing trees was undertaken with consideration of the proposed development, footprint and construction phasing. Recommendations have been provided for tree protection and tree removals based on tree condition, tree species and the limits of construction.

1.1. Site Description

The Study Area is limited to the southwestern portion of the Regional Landfill site, which has been disturbed by former landfill operations including the placement of fill, access roads and a leachate collection system (**Map 1)**. Currently, the Study Area is accessed by Hickory Lane (from the North Service Road and the internal landfill road network. The proposed development site is located adjacent to an Environmental Protection Area (EPA) to the west, the Sassafrass Woodlands Earth Science Area of Natural and Scientific Interest (ANSI). The Study Area is approximately 50 m north of the 403 and is just west of the Mercedes Benz car dealership. The proposed extension of Hickory Lane will cross the former regional landfill site, within an existing road easement immediately east of the proposed asphalt plant.

Natural Heritage Features within the Study Area includes unevaluated wetlands, candidate Significant Woodlands, and anthropogenic surface drainage features draining to Falcon Creek. The subject lands form part of the approved Regional Natural Heritage System (RNHS) for the Region of Halton. A portion of these natural heritage features, including the tributaries of Falcon Creek and wetlands regulated under Ontario Regulation 162/06 *Halton Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses*. Approximately half of the Study Area was recently designated as a City's Natural Heritage System under the revised City of Burlington Official Plan (OP). However, it still maintains a designation of Urban Growth Area as well.

2. Study Methodology

GRA conducted field studies on August 29-31, 2020, November 12, 2020, and August 3, 2021, to identify and assess the existing tree resources of the Study Area.

2.1. Tree Inventory

An assessment of individual trees included all trees 10 cm Diameter at Breast Height (DBH) or greater for the Study Area. Trees were surveyed using a handheld GPS with +/- 5 m of accuracy. Species nomenclature and ranking is based on the Ministry of Natural Resources and Forestry Natural Heritage Information Centre species list.

Trees were assessed for condition utilizing the following parameters:

- **Tree #** - numbers assigned to tree that corresponds to their surveyed/mapped location.
- **Species** - common and botanical names provided in the inventory table.
- **DBH** - diameter (centimeters) at breast height, measured at 1.4 m above the ground.
- **Condition** - condition of trees were assessed as follows:
    - **Trunk integrity (TI)**: conditions on trunk that might affect likelihood of failure based on factors including co-dominant stems, cracks, decay, poor taper, lean, response growth, abnormal or missing/dead bark, etc.
    - **Crown Structure (CS)**: condition on crown structure that might affect likelihood of failure including live crown ratio, presence of defects (including bark, weak attachments, cracks, decay, cavities), crown density.
    - **Crown Vigor (CV)**: an assessment of overall tree health classified as weak/under stress (poor), average vigor for its species and site condition with some signs of stress (fair), growing well and appears to be free of significant health stress factors (good).
    - **Canopy Dieback (CDB):** extent dead branching and canopy cover loss measured as a percentage of the entire crown. Note: Due to leaf-off conditions, CDB was not assessed as part of this inventory.
- **Comments** - additional relevant detail.

This report has been prepared under the following applicable municipal by-laws and guidelines of the City of Burlington:

- By-Law to conserve and protect trees on private land within the Urban Planning Area Boundary of City of Burlington (02-2020);
- By-law to regulate planting, maintenance and preservation of trees on or affecting public property (68-2013); and
- City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A).

2.2. Region of Halton Official Plan: Woodland Analysis

A Region of Halton (ROH) woodland on the Study Area was staked with regional staff in August 2020. The staked limits included a portion of the woodland dripline. A stand analysis was required to define the remaining limits per the criteria provided within the Region of Halton Tree By-law. The stand analysis was conducted based on vegetation form and cover, utilizing fixed area circular plots with a set radius of 5.64 m, including 6 total plots; 2 plots within compartment A in the northern portion of the feature and 4 plots within compartment B within the southern portion of the feature. Refer to Map 2 for the location of the density plots and compartments.

Plots were established in areas representative of the larger area where tree cover was present as well as areas where large variations in canopy cover exists to confirm presence/absence of woodland density. Variations in canopy cover exists in the southern portion of the feature due to impacts from Emerald Ash Borer (EAB) and from the disturbed overall condition of the property resulting in a dense Common Buckthorn (*Rhamnus cathartica*) understory. Due to this variation in canopy cover and dense shrub thicket, multiple check plots were established to confirm the presence/absence of regenerating trees.

For Ash in poor condition as a result of impacts from EAB, only trees with epicormic branching at the base greater than 50% were counted as a live stem.

For each plot, trees were inventoried based on species type and diameter class. To determine the number of trees per hectare, total trees tallied were multiplied by the plot per hectare factor (100) based on the fixed area sample plot size. The limit of woodland for the Study Area was established where multiple density plots met the criteria of a woodland per the By-Law. Within the feature, density was verified by the plot per hectare factor (100) based on the fixed area sample plot size multiplied by the number of trees tallied per plot divided by the number of plots per area.

The results of the assessment identified woodland in compartment A of the feature based on overall size of the feature (over 0.5 ha) and the number of stems per hectare corresponding to the criteria set out in the ROH Tree By-Law. Areas corresponding to compartment B of the feature do not meet the density per the By-Law for a woodland. Refer to **Error! Reference source not found.** below for the woodland tree tally and Map 5 for the limits of the woodland.

3. Existing Conditions & Results

3.1. Tree Inventory

The tree inventory documented a total of 344 trees on and adjacent to the Study Area. The majority of trees identified are confined to woodland immediately to the east of the proposed asphalt plant. The trees ranged in size from 10-47 cm DBH. Common trees surveyed for the property included trembling aspen (*Populus tremuloides*), declining white ash (*Fraxinus americana*), shagbark hickory (*Carya ovata*) and black locust (*Robinia psuedoacacia*).

Tree heath was good overall, with the exception of white ash, which has been heavily impacted by the invasive emerald ash borer beetle. Refer to Map 2 for general tree locations.

3.2. RHOP Woodland Assessment

The results of the assessment identified woodland in compartment A of the feature based on overall size of the feature (over 0.5 ha) and the number of stems per hectare corresponding to the criteria set out in the ROH Tree By-Law. Areas corresponding to compartment B of the feature do not meet the density per the By-Law for a woodland. Refer to Table 1 below for the woodland tree tally and Map 7 b for the limits of the woodland.

Table 1. Woodland tree tally surveyed on August 4, 2020.

Compartment A					
# Plots: 2	Start Time: 9 a.m.	r = 5.64m	100m^2	1/100ha	
Tree Tally (number of stems per 100m^2)					
		Diameter cm (dbh)			
Species	**≤5**	**>5 ≤12**	**>12 ≤20**	**>20**	**All Diam.**
At		3	11		14
Hs	8	11	3		22
Aw		2			2
Total Trees/ha		**800**	**700**		**1900**
Threshold trees/ha		750	500	250	1000
Compartment B					
# Plots: 4	Start Time: 10 a.m.	r = 5.64m	100m^2	1/100ha	
Tree Tally (number of stems per 100m^2)					
		Diameter cm (dbh)			
Species	**≤5**	**>5 ≤12**	**>12 ≤20**	**>20**	**All Diam.**
Aw	1	2	1	2	6
Wi				1	1
Mm				1	1
At		2			2
Hs		1		1	2
Cb				1	1
Total Trees/ha		**125**	**25**	**150**	**325**
Threshold trees/ha		750	500	250	1000

4. Impact Assessment

King Paving is proposing to build a new, cutting-edge asphalt plant on a portion of the Halton Region City of Burlington closed landfill property. This application also includes constructing a new Hickory Lane for Halton Region, that will provide access to the landfill for on-going maintenance and to provide landfill maintenance staff with access to cleanouts along the leachate collection system.

The asphalt plant will include the following main elements:

- A combined entrance and exit using the new Hickory Lane to the North Service Road.
- Truck staging area immediately north of the plant.
- Material storage (primarily aggregate). On-site material storage is minimized as the plant operates as a just on time delivery, meaning base ingredients are brought into the site as needed and fresh mixed asphalt is immediately placed in trucks for delivery.
- The 'plant' where aggregate is mixed with asphalt cement/binder and then loaded onto trucks.
- A stormwater management pond, which is a dry pond, to control site run-off.

The proposed development will require the removal of 105 trees, 73 trees within the asphalt plant development envelope and 32 within the Hickory Lane footprint. Of the 73 trees identified for removal, three are considered hazardous, of the 32 trees identified for removal, four are considered hazardous. These trees are considered hazardous due to impacts from Emerald Ash Borer.

Site planning, grading, and the installation of the plant, the new hickory valley road and proposed stormwater management pond precludes the retention of trees identified for removal. Refer to Table 3 and Map 3, 3a, 3b,3c,3d, and 3e for the full tree inventory and Tree Preservation Plan.

4.1. Trees Recommended for Removal

Trees recommended for removal have been assessed using one or more of the following criteria:

- Location conflicts with proposed works to a degree that would compromise the long term structural and/or health integrity;
- Current health condition suggests tree is undergoing significant decline and/or death;
- Potential impacts from proposed works will cause the tree to become a hazard to person or property; and
- General species intolerance of construction-related and other expected stressors.

Trees to be Removed

- Tree #'s 47,49,51,52,62,68,69,170-183,190-207,209,221,227,231,245,249,250,253-283,286 300,304,312,314,318-327 will be impacted by the proposed works, including grading, infrastructure, servicing
- Tree #'s 209, 221,227 298,299 and 300 are considered hazard trees.

4.2. Trees Recommended for Preservation

Trees recommended for preservation have been assessed using one or more of the following criteria:

- Location sufficiently distanced from proposed site works and/or construction related stresses;
- Current health condition is acceptable;
- Tree poses a low hazard level to person or property; and
- General species tolerance to construction-related and other expected stressors.

Two-hundred and thirty-eight (238) trees are recommended for preservation. All trees to be preserved are to be protected to the satisfaction of the City of Burlington prior to the commencement of construction. Tree protection measures are to remain in place during all stages of construction, as specified in the City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A).

Trees to be Preserved:

- Tree #'s 1-48,50,53-61,63-67,70-169,184-189,208,210-220,222-226,228-230,232-244,246-248,251,252,284,285,301-303,305-311,313,315-317,328-344 are proposed to be retained. Refer to Section 5 and Map 3, 3a, 3b,3c,3d, and 3e for tree protection details.

5. Mitigation Recommendations and Tree Preservation Measures

The following section identifies recommended mitigation measures to avoid and minimize effects of the proposed works on the trees identified for preservation. The following requirements will ensure short- and long-term preservation of trees identified for preservation.

Tree protection zones (TPZ) provide an approximation of the tree's critical root zone and are used for protection guidelines. The TPZ is measured from the outside edge of the base of tree to the dripline. Table 2 summarizes the TPZ's per DBH class for the City of Burlington.

Table 2. Minimum Tree Protection Zones per DBH Class

Diameter of Trunk (DBH) in centimetres	Tree Protection Zone Distance from trunk measured in metres
<10 cm	1.8
11-40 cm	2.4
41-50 cm	3.0
51-60 cm	3.6
61-70 cm	4.2
71-80 cm	4.8
81-90 cm	5.4
91-100+ cm	6.0

Tree Preservation Measures:

- Tree protection measures will have to be implemented prior to the commencement of construction (earthworks) to ensure trees identified for preservation are not affected by the proposed works;
- Tree protection fencing should comprise paige wire fencing supported on metal T-bars at 3 m centres. Fences should be erected per **Error! Reference source not found.** for the trees identified for preservation;
- Tree protection barriers need to be inspected regularly to ensure they meet the design requirements detailed within this report and **Error! Reference source not found.**;
- No machinery or disturbance of any type is permitted within the tree protection fence (tree protection zone). If disturbance within the TPZ is unavoidable, placement of ¾ in thick plywood over an 8-in deep mulch should be placed in the TPZ to avoid or reduce soil compaction;
- Do not store construction materials, soil, waste material or dispose of liquid material within the TPZ. Any grading within the root zone must be completed by hand (rake, shovel,) to ensure tree roots are not damaged;
- A sign should be displayed on the tree protection fencing and placed on the hoarding in various locations, which describes the TPZ and restrictions within the TPZ. Signage informs the public and reminds the contractors of the significance of the TPZs and the efforts put forward by the client in tree preservation; and
- Regular inspections should be completed by a qualified person (s) to ensure all tree protection and mitigation measures are implemented as intended.

Construction Measures:

- A construction work plan should designate specific locations for stockpiling of soils and other material;
- Upon completion of construction works, site grading should ensure proper drainage of surface water to maintain original/pre-construction soil moisture regime conditions;
- Where root systems of protected trees are exposed directly adjacent to or damaged by construction work, they shall be trimmed neatly, and the area immediately backfilled with appropriate material to prevent desiccation; and
- Trees to be preserved that have died or have been damaged beyond repair shall be replaced by the developer at his own expense with trees of a size and species approved by the City.

Wildlife Disturbance Measures:

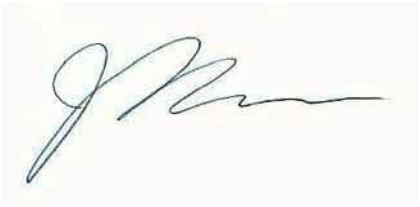
- Tree removal and clearing of vegetation should occur outside breeding bird season (March 31st to August 31st). If clearing of vegetation is to occur during breeding bird season, or if birds are suspected of nesting within this area, an ecologist should undertake detailed nest searches immediately prior (within 48 hours) to site alteration to ensure no active nests are present, and Trees identified for removal should be clearly marked with paint prior to their removal and felled into the proposed construction area. Effects on adjacent vegetation should be avoided during the felling process.

6. Conclusions

The tree inventory documented a total of 344 trees within the Study Area. The majority of trees identified are confined to woodland immediately to the east and west of the proposed asphalt plant and to the south where the proposed stormwater management pond is located. The proposed development will require the removal of 105 trees located in the Study Area, seven of which are considered hazard trees and the preservation of 238 trees. All trees to be preserved are to be protected to the satisfaction of the City of Burlington prior to the commencement of construction.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC



Jenn Reader, B.Sc., ERPG
Ecologist, ISA Certified Arborist #ON-1792A



Meghan Douglas, B.Sc., ERPG
Wildlife Ecologist, ISA Certified Arborist #ON-2826A

Table 3. Tree Preservation Results

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
1	Shagbark Hickory	*Carya ovata*	23.5	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
2	Shagbark Hickory	*Carya ovata*	22	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
3	Shagbark Hickory	*Carya ovata*	26	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
4	Quaking Aspen	*Populus tremuloides*	10.5	Good	Good	Good	10	wound	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
5	White Ash	*Fraxinus americana*	31.5	Good	Good	Good	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
6	White Ash	*Fraxinus americana*	23	Good	Good	Good	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
7	White Ash	*Fraxinus americana*	11	Good	Good	Good	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
8	Red Oak	*Quercus Rubra*	CD 47, 27.5	Good	Good	Good	60	CD at 1m	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
9	Red Oak	*Quercus Rubra*	MS 45, 47, 42.5	Good	Good	Good	20	MS at base	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
10	Shagbark Hickory	*Carya ovata*	17	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
11	Black Cherry	*Prunus serotina*	24, 27 base	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
12	Quaking Aspen	*Populus tremuloides*	14	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
13	Quaking Aspen	*Populus tremuloides*	11	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
14	Shagbark Hickory	*Carya ovata*	27,28 base	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
15	White Ash	*Fraxinus americana*	32, 31, 47 1m	Good	Good	Good	95	1m 1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
16	Shagbark Hickory	*Carya ovata*	34	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
17	White Ash	*Fraxinus americana*	20, 19, 22,base	Poor	Poor	Poor	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
18	White Ash	*Fraxinus americana*	18.5	Poor	Poor	Poor	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
19	Quaking Aspen	*Populus tremuloides*	14.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
20	Quaking Aspen	*Populus tremuloides*	11.5	Good	Good	Good	45	dwd	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
21	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	5		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
22	Quaking Aspen	*Populus tremuloides*	16.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
23	Quaking Aspen	*Populus tremuloides*	17.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
24	Quaking Aspen	*Populus tremuloides*	17	Good	Good	Good	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
25	Quaking Aspen	*Populus tremuloides*	21.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
26	Quaking Aspen	*Populus tremuloides*	13.5	Poor	Poor	Poor	70		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
27	White Ash	*Fraxinus americana*	14.5	Poor	Poor	Poor	90	5 cm suck, alm dd	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
28	White Ash	*Fraxinus americana*	10.5	Poor	Poor	Poor	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
29	White Ash	*Fraxinus americana*	17	Pool	Poor	Poor	95	1.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
30	Quaking Aspen	*Populus tremuloides*	19.5	Good	Good	Good	5		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
31	Quaking Aspen	*Populus tremuloides*	12.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
32	White Ash	*Fraxinus americana*	17.5	Good	Good	Good	100	5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
33	White Ash	*Fraxinus americana*	12	Good	Good	Good	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
34	White Ash	*Fraxinus americana*	10.5	Good	Good	Good	90	3cm suck, alm dd	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
35	White Ash	*Fraxinus americana*	13.5	Good	Good	Good	95	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
36	White Ash	*Fraxinus americana*	cd 13.5, 9	Good	Good	Good	65	1 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
37	Manitoba Maple	*Acer Negundo*	25.5, 22.5	Good	Good	Good	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
38	Crack Willow	*Salix fragilis*	31, 34, 26.5, 13	Good	Good	Good	20	crack	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
39	Black Locust	*Robinia pseudoacacia*	42	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
40	Black Locust	*Robinia pseudoacacia*	20, 11	Good	Good	Good	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
41	Black Locust	*Robinia pseudoacacia*	20	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
42	Black Locust	*Robinia pseudoacacia*	21	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
43	Black Locust	*Robinia pseudoacacia*	10.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
44	Black Locust	*Robinia pseudoacacia*	12	Good	Good	Good	20	wound	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
45	Black Locust	*Robinia pseudoacacia*	cd 14, 13	Good	Good	Good	35	cd at 1m	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
46	Black Locust	*Robinia pseudoacacia*	13	Good	Good	Good	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
47	White Ash	*Fraxinus americana*	10.5	Good	Good	Good	0	epi and sucks		x	Conflicts from site preparation.
48	Black Locust	*Robinia pseudoacacia*	13.5	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
49	Black Locust	*Robinia pseudoacacia*	16	Good	Good	Good	0			x	Conflicts from site preparation.
50	Red Oak	*Quercus Rubra*	27.5, 24.5	Good	Good	Good	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
51	Red Oak	*Quercus Rubra*	4x 30-50	Good	Good	Good	65	lots of dwd		x	Conflicts from site preparation.
52	Red Oak	*Quercus Rubra*	37	Good	Good	Good	40			x	Conflicts from site preparation.
53	Shagbark Hickory	*Carya ovata*	11	Good	Good	Good	1		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
54	Shagbark Hickory	*Carya ovata*	21.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
55	Shagbark Hickory	*Carya ovata*	17.5	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
56	Shagbark Hickory	*Carya ovata*	17.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
57	Shagbark Hickory	*Carya ovata*	22	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
58	Red Oak	*Quercus Rubra*	63	Good	Good	Good	40	bk br/stem	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
59	Red Oak	*Quercus Rubra*	43	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
60	Shagbark Hickory	*Carya ovata*	22.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
61	Shagbark Hickory	*Carya ovata*	17.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
62	Shagbark Hickory	*Carya ovata*	15.5	Good	Good	Good	15			x	Conflicts from site preparation.
63	Shagbark Hickory	*Carya ovata*	16.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
64	Shagbark Hickory	*Carya ovata*	19.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
65	Shagbark Hickory	*Carya ovata*	16	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
66	Shagbark Hickory	*Carya ovata*	14	Good	Good	Good	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
67	Shagbark Hickory	*Carya ovata*	18	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
68	Shagbark Hickory	*Carya ovata*	16.5	Good	Good	Good	45			x	Conflicts from site preparation.
69	Eastern Cottonwood	*Populus deltoides*	12	Good	Good	Good	0			x	Conflicts from site preparation.
70	Quaking Aspen	*Populus tremuloides*		Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
71	Quaking Aspen	*Populus tremuloides*	16	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
72	Quaking Aspen	*Populus tremuloides*	14.5	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
73	Quaking Aspen	*Populus tremuloides*	11.5	Poor	Poor	Poor	60		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
74	Quaking Aspen	*Populus tremuloides*	11	Poor	Poor	Poor	65		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
75	Quaking Aspen	*Populus tremuloides*	17	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
76	Quaking Aspen	*Populus tremuloides*	19	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
77	Quaking Aspen	*Populus tremuloides*	14.5	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
78	Quaking Aspen	*Populus tremuloides*	10.5	Good	Good	Good	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
79	Quaking Aspen	*Populus tremuloides*	18.5	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
80	Quaking Aspen	*Populus tremuloides*	17	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
81	Quaking Aspen	*Populus tremuloides*	19	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
82	Quaking Aspen	*Populus tremuloides*	13	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
83	Quaking Aspen	*Populus tremuloides*	19	Good	Good	Good	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
84	Quaking Aspen	*Populus tremuloides*	13.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
85	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	60		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
86	Quaking Aspen	*Populus tremuloides*	20	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
87	Quaking Aspen	*Populus tremuloides*	23	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
88	Quaking Aspen	*Populus tremuloides*	21.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
89	Quaking Aspen	*Populus tremuloides*	13	Poor	Poor	Poor	65		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
90	White Ash	*Fraxinus americana*	cd 11, 8	Good	Good	Good		no suck, cd at 1.5m	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
91	White Ash	*Fraxinus americana*	25.5	Good	Good	Good		no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
92	White Ash	*Fraxinus americana*	17.5	Good	Good	Good		0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
93	Quaking Aspen	*Populus tremuloides*	22.5	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
94	White Ash	*Fraxinus americana*	10.5	Poor	Poor	Poor	50	dying, no suck, epi	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
95	White Ash	*Fraxinus americana*	10	Good	Good	Good		dying, 0.5 cm suck, epis	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
96	Quaking Aspen	*Populus tremuloides*	26.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
97	Quaking Aspen	*Populus tremuloides*	14	Good	Good	Good	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
98	Quaking Aspen	*Populus tremuloides*	13	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
99	Quaking Aspen	*Populus tremuloides*	26	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
100	Quaking Aspen	*Populus tremuloides*	22	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
101	Quaking Aspen	*Populus tremuloides*	19.5	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
102	Quaking Aspen	*Populus tremuloides*	12	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
103	Quaking Aspen	*Populus tremuloides*	20.5	Fair	Fair	Fair	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
104	Quaking Aspen	*Populus tremuloides*	23	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
105	Quaking Aspen	*Populus tremuloides*	22	Fair	Fair	Fair	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
106	Quaking Aspen	*Populus tremuloides*	11	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
107	Quaking Aspen	*Populus tremuloides*	17	Poor	Poor	Poor	65		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
108	Quaking Aspen	*Populus tremuloides*	15	Poor	Poor	Poor	70		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
109	Quaking Aspen	*Populus tremuloides*	21	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
110	White Ash	*Fraxinus americana*	15.5	Poor	Poor	Poor	95	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
111	Quaking Aspen	*Populus tremuloides*	23	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
112	Quaking Aspen	*Populus tremuloides*	12	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
113	Quaking Aspen	*Populus tremuloides*	17.5	Fair	Fair	Fair	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
114	Quaking Aspen	*Populus tremuloides*	18.5	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
115	White Ash	*Fraxinus americana*	11.5	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
116	Quaking Aspen	*Populus tremuloides*	18.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
117	Quaking Aspen	*Populus tremuloides*	13	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
118	White Ash	*Fraxinus americana*	17.5	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
119	Quaking Aspen	*Populus tremuloides*	20	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
120	Quaking Aspen	*Populus tremuloides*	16	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
121	Quaking Aspen	*Populus tremuloides*	23.5	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
122	White Ash	*Fraxinus americana*	3x 10-20	Poor	Poor	Poor	90	hv epi, 0.5cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
123	Quaking Aspen	*Populus tremuloides*	10	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
124	Quaking Aspen	*Populus tremuloides*	15.5	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
125	Quaking Aspen	*Populus tremuloides*	12.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
126	Quaking Aspen	*Populus tremuloides*	14.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
127	Quaking Aspen	*Populus tremuloides*	19.5	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
128	Quaking Aspen	*Populus tremuloides*	19	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
129	Quaking Aspen	*Populus tremuloides*	14	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
130	Quaking Aspen	*Populus tremuloides*	16	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
131	Quaking Aspen	*Populus tremuloides*	16.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
132	Quaking Aspen	*Populus tremuloides*	12	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
133	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
134	Quaking Aspen	*Populus tremuloides*	12	Fair	Fair	Poor	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
135	Quaking Aspen	*Populus tremuloides*	14.5	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
136	Quaking Aspen	*Populus tremuloides*	11.5	Fair	Fair	Poor	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
137	White Ash	*Fraxinus americana*	15.5	Dead	Dead	Dead	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
138	White Ash	*Fraxinus americana*	12.5	Poor	Poor	Poor	95	epis, 0.5cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
139	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
140	Quaking Aspen	*Populus tremuloides*	13.5	Fair	Fair	Poor	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
141	Quaking Aspen	*Populus tremuloides*	19.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
142	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
143	Quaking Aspen	*Populus tremuloides*	18.5	Fair	Fair	Poor	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
144	Quaking Aspen	*Populus tremuloides*	14	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
145	Quaking Aspen	*Populus tremuloides*	20.5	Good	Good	Good	5		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
146	Quaking Aspen	*Populus tremuloides*	19	Poor	Poor	Poor	85		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
147	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
148	Quaking Aspen	*Populus tremuloides*	13	Poor	Poor	Poor	60		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
149	Quaking Aspen	*Populus tremuloides*	17	Poor	Poor	Poor	60		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
150	Quaking Aspen	*Populus tremuloides*	15	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
151	Quaking Aspen	*Populus tremuloides*	14.5	Poor	Poor	Poor	75		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
152	Quaking Aspen	*Populus tremuloides*	17	Poor	Poor	Poor	65		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
153	Quaking Aspen	*Populus tremuloides*	21.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
154	Quaking Aspen	*Populus tremuloides*	15.5	Fair	Fair	Poor	45		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
155	Quaking Aspen	*Populus tremuloides*	18	Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
156	Quaking Aspen	*Populus tremuloides*	19	Fair	Fair	Poor	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
157	Quaking Aspen	*Populus tremuloides*	19	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
158	Quaking Aspen	*Populus tremuloides*	14	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
159	Quaking Aspen	*Populus tremuloides*	17	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
160	Quaking Aspen	*Populus tremuloides*	19	Poor	Poor	Poor	65		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
161	Quaking Aspen	*Populus tremuloides*	18	Fair	Fair	Poor	40		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
162	Quaking Aspen	*Populus tremuloides*	19	Poor	Poor	Poor	70		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
163	Quaking Aspen	*Populus tremuloides*	10	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
164	Quaking Aspen	*Populus tremuloides*	15	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
165	Quaking Aspen	*Populus tremuloides*	14	Fair	Fair	Fair	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
166	White Ash	*Fraxinus americana*	16.5	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
167	White Ash	*Fraxinus americana*	12.5	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
168	White Ash	*Fraxinus americana*	17	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
169	White Ash	*Fraxinus americana*	17	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
170	Manitoba Maple	*Acer Negundo*	19.5	Good	Good	Good	20			x	Conflicts from site preparation.
171	American Elm	*Ulmus americana*	12	Good	Good	Good	0			x	Conflicts from site preparation.
172	Russian Olive	*Elaeagnus angustifolia*	12	Fair	Fair	Fair	30			x	Conflicts from site preparation.
173	White Ash	*Fraxinus americana*	10	Dead	Dead	Dead	100	no suck		x	Conflicts from site preparation.
174	American Elm	*Ulmus americana*	21.5	Good	Good	Good	0			x	Conflicts from site preparation.
175	White Ash	*Fraxinus americana*	11.5	Good	Good	Good	0			x	Conflicts from site preparation.
176	White Ash	*Fraxinus americana*	10.5	Good	Good	Good	20			x	Conflicts from site preparation.

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
177	Russian Olive	*Elaeagnus angustifolia*	3x 10-30	Poor	Poor	Poor	65			x	Conflicts from site preparation.
178	Manitoba Maple	*Acer Negundo*	19, 10	Good	Good	Good	20			x	Conflicts from site preparation.
179	White Ash	*Fraxinus americana*	13.5	Dead	Dead	Dead	100	3cm suck		x	Conflicts from site preparation.
180	White Ash	*Fraxinus americana*	11.5	Dead	Dead	Dead	100	no suck		x	Conflicts from site preparation.
181	Willow Species	*Salix sp.*	5x5-30	Fair	Fair	Poor	40			x	Conflicts from site preparation.
182	Willow Species	*Salix sp.*	11.5	Good	Good	Good	15			x	Conflicts from site preparation.
183	Willow Species	*Salix sp.*	18	Fair	Fair	Fair	30			x	Conflicts from site preparation.
184	Willow Species	*Salix sp.*	4x 10-40	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
185	White Ash	*Fraxinus americana*	13.5	Dead	Dead	Dead	100	5cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
186	White Ash	*Fraxinus americana*	11.5	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
187	White Ash	*Fraxinus americana*	20	Dead	Dead	Dead	100	5cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
188	White Ash	*Fraxinus americana*	22	Dead	Dead	Dead	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
189	Black Locust	*Robinia pseudoacacia*	17, 19.5	Good	Good	Good	5		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
190	Willow Species	*Salix sp.*	5x20-30	Good	Good	Good	5			x	Conflicts from site preparation.
191	Willow Species	*Salix sp.*	40.5	Good	Good	Good	20			x	Conflicts from site preparation.

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
192	Willow Species	*Salix sp.*	3x 15-40	Good	Good	Good	0			x	Conflicts from site preparation.
193	Eastern Cottonwood	*Populus deltoides*	20.5	Fair	Fair	Poor	30	dying leaves		x	Conflicts from site preparation.
194	Eastern Cottonwood	*Populus deltoides*	22	Good	Good	Good	25			x	Conflicts from site preparation.
195	Black Locust	*Robinia pseudoacacia*	17, 23	Good	Good	Good	15			x	Conflicts from site preparation.
196	Black Locust	*Robinia pseudoacacia*	18	Good	Good	Good	10			x	Conflicts from site preparation.
197	Black Locust	*Robinia pseudoacacia*	16.5	Fair	Fair	Fair	35			x	Conflicts from site preparation.
198	Black Locust	*Robinia pseudoacacia*	16	Good	Good	Good	15			x	Conflicts from site preparation.
199	Black Locust	*Robinia pseudoacacia*	20	Good	Good	Good	10			x	Conflicts from site preparation.
200	Black Locust	*Robinia pseudoacacia*	35, 21	Fair	Fair	Fair	30			x	Conflicts from site preparation.
201	Black Locust	*Robinia pseudoacacia*	28	Good	Good	Good	20			x	Conflicts from site preparation.
202	Manitoba Maple	*Acer Negundo*	16	Good	Good	Good	15			x	Conflicts from site preparation.
203	Black Locust	*Robinia pseudoacacia*	23, 28 1m	Good	Good	Good	20			x	Conflicts from site preparation.
204	Black Locust	*Robinia pseudoacacia*	18	Good	Good	Good	15			x	Conflicts from site preparation.
205	Black Locust	*Robinia pseudoacacia*	18.5	Good	Good	Good	0			x	Conflicts from site preparation.
206	Black Locust	*Robinia pseudoacacia*	11.5	Good	Good	Good	10			x	Conflicts from site preparation.
207	Black Locust	*Robinia pseudoacacia*	10	Good	Good	Good	0			x	Conflicts from site preparation.
208	Shagbark Hickory	*Carya ovata*	15	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
209	White Ash	*Fraxinus americana*	11.5	Poor	Dead	Poor	100	no suck		x	Hazard tree, remove
210	Shagbark Hickory	*Carya ovata*	10.5	Good	Good	Good	15		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
211	Shagbark Hickory	*Carya ovata*	12.5	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
212	Shagbark Hickory	*Carya ovata*	10	Good	Good	Good	0		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
213	Shagbark Hickory	*Carya ovata*	11.5	Good	Good	Good	30		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
214	Shagbark Hickory	*Carya ovata*	13	Good	Good	Good	35		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
215	White Ash	*Fraxinus americana*	cd 14, 12	Poor	Poor	Poor	100	2cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
216	Shagbark Hickory	*Carya ovata*	52	Dead	Dead	Dead	100		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
217	Manitoba Maple	*Acer Negundo*	3x 10-20	Good	Good	Good	20		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
218	White Ash	*Fraxinus americana*	14	Good	Good	Good	100	2cm sck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
219	White Ash	*Fraxinus americana*	4x 10-15	Good	Good	Good	95	1cm suck 5cm epi	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
220	Manitoba Maple	*Acer Negundo*	23	Good	Good	Good	10		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
221	White Ash	*Fraxinus americana*	37.5	Good	Good	Good	100	no suck		x	Hazard tree, remove
222	White Ash	*Fraxinus americana*	4x 5-20	Good	Good	Good	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
223	White Ash	*Fraxinus americana*	20	Good	Good	Good	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
224	White Ash	*Fraxinus americana*	11	Good	Good	Good	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
225	White Ash	*Fraxinus americana*		Good	Good	Good	25		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
226	White Ash	*Fraxinus americana*	16.5	Good	Good	Good	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
227	White Ash	*Fraxinus americana*	22.5	Good	Good	Good	100	1cm suck		x	Hazard tree, remove
228	White Ash	*Fraxinus americana*	31.5	Good	Good	Good	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
229	White Ash	*Fraxinus americana*	32	Good	Good	Good	100	no suck	x		
230	White Ash	*Fraxinus americana*	12	Good	Good	Good	100	no suck	x		
231	White Ash	*Fraxinus americana*	a120	Poor	Poor	Poor	75	41cm live, rest dead		x	Hazard tree, remove
232	Willow Species	*Salix sp.*	4x15-35	Good	Good	Good	55		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
233	Willow Species	*Salix sp.*	7x20-40	Good	Good	Good	50		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
234	Willow Species	*Salix sp.*	22.5	Good	Good	Good	90	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
235	White Ash	*Fraxinus americana*	21.5	Good	Good	Good	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
236	White Ash	*Fraxinus americana*		Good	Good	Good	30	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
237	White Ash	*Fraxinus americana*	14, 7	Good	Good	Good	85	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
238	White Ash	*Fraxinus americana*	11.5	Good	Good	Good	95	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
239	White Ash	*Fraxinus americana*	18	Good	Good	Good	100	0.5 cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
240	Willow Species	*Salix sp.*	a55, 25	Good	Good	Good	50		x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
241	White Ash	*Fraxinus americana*	11	Good	Good	Good	100	0.5cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
242	White Ash	*Fraxinus americana*	12.5	Good	Good	Good	100	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
243	White Ash	*Fraxinus americana*	20	Good	Good	Good	80	1cm suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
244	White Ash	*Fraxinus americana*	11.5	Good	Good	Good	100	no suck	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
245	Black Locust	*Robinia pseudoacacia*	cd 9.5, 17	Good	Good	Good				x	Conflicts from site preparation.
246	Eastern Cottonwood	*Populus deltoides*	25	Good	Good	Good		some yellowed leaves	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
247	Eastern Hemlock	*Tsuga canadensis*	ms 5-16	Good	Good	Good			x		
248	Eastern Cottonwood	*Populus deltoides*	16.5	Good	Good	Good			x		
249	Willow Species	*Salix sp.*	ms 10-15	Good	Good	Good				x	Conflicts from site preparation.
250	Eastern Cottonwood	*Populus deltoides*	16	Good	Good	Good				x	Conflicts from site preparation.
251	Manitoba Maple	*Acer negundo*	cd 12, 5	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
252	Eastern Cottonwood	*Populus deltoides*	11.5	Good	Good	Good		moderate yellowing of leaves	x		
253	Eastern Cottonwood	*Populus deltoides*	14	Good	Good	Good				x	Conflicts from site preparation.
254	Eastern Cottonwood	*Populus deltoides*	14.5	Good	Good	Good		moderate yellowing of leaves		x	Conflicts from site preparation.
255	Eastern Cottonwood	*Populus deltoides*	21	Good	Good	Good		moderate leaf yellowing		x	Conflicts from site preparation.
256	Eastern Hemlock	*Tsuga canadensis*	cd 11, 12.5	Good	Good	Good		potential trunk canker, see pic		x	Conflicts from site preparation.
257	Eastern Cottonwood	*Populus deltoides*	13	Good	Good	Good				x	Conflicts from site preparation.
258	Eastern Cottonwood	*Populus deltoides*	15	Good	Good	Good				x	Conflicts from site preparation.
259	Eastern Cottonwood	*Populus deltoides*	15	Good	Good	Good				x	Conflicts from site preparation.
260	Eastern Cottonwood	*Populus deltoides*	11	Good	Good	Good				x	Conflicts from site preparation.
261	Willow Species	*Salix sp.*	ms 5-15	Good	Good	Good				x	Conflicts from site preparation.
262	Black Locust	*Robinia pseudoacacia*	16	Good	Good	Good		cd just above bh		x	Conflicts from site preparation.

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
263	Willow Species	*Salix sp.*	ms 5-15	Good	Good	Good				x	Conflicts from site preparation.
264	Eastern Cottonwood	*Populus deltoides*	11	Good	Good	Good				x	Conflicts from site preparation.
265	Eastern Cottonwood	*Populus deltoides*	cd 9.5, 15	Good	Good	Good		some rusty looking spots on trunk		x	Conflicts from site preparation.
266	Eastern Cottonwood	*Populus deltoides*	13	Good	Good	Good				x	Conflicts from site preparation.
267	Eastern Cottonwood	*Populus deltoides*	10	Good	Good	Good		lean towards east path		x	Conflicts from site preparation.
268	Willow Species	*Salix sp.*	ms 5-15	Good	Good	Good		slight lean to devel		x	Conflicts from site preparation.
269	Eastern Cottonwood	*Populus deltoides*	15	Good	Good	Good				x	Conflicts from site preparation.
270	Black Locust	*Robinia pseudoacacia*	23	Good	Good	Good		moderate vine competition (virginia creeper)		x	Conflicts from site preparation.
271	Black Locust	*Robinia pseudoacacia*	cd 10.5, 10.5	Good	Good	Good				x	Conflicts from site preparation.
272	Black Locust	*Robinia pseudoacacia*	ms 5-20	Good	Good	Good	5	slight lean to lane		x	Conflicts from site preparation.
273	Black Locust	*Robinia pseudoacacia*	14	Good	Good	Good	5	slight lean to lane		x	Conflicts from site preparation.
274	Black Locust	*Robinia pseudoacacia*	cd 10.5, 5	Good	Good	Good	10			x	Conflicts from site preparation.
275	Black Locust	*Robinia pseudoacacia*	ms 5-15	Good	Good	Good				x	Conflicts from site preparation.
276	Black Locust	*Robinia pseudoacacia*	cd 15.5, 5	Good	Good	Good	5			x	Conflicts from site preparation.
277	Black Locust	*Robinia pseudoacacia*	18	Good	Good	Good				x	Conflicts from site preparation.
278	Black Locust	*Robinia pseudoacacia*	17	Good	Good	Good				x	Conflicts from site preparation.
279	Eastern Cottonwood	*Populus deltoides*	15	Good	Good	Good				x	Conflicts from site preparation.
280	White Ash	*Fraxinus americana*	cd 11, 8.5	Good	Good	Good		holes along trunk, suckering, no obvious eab holes.see photos		x	Conflicts from site preparation.
281	Ash Species	*Fraxinus sp.*	23	Good	Good	Good				x	Conflicts from site preparation.
282	Ash Species	*Fraxinus sp.*	cd 19, 15	Good	Good	Good				x	Conflicts from site preparation.

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
283	American Elm	*Ulmus americana*	17.5	Good	Good	Good		unsure of siberian, leaves seem bigger sse pics		x	Conflicts from site preparation.
284	White Ash	*Fraxinus americana*		Good	Good	Good		not certain of sp, see pics. no obvious eab	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
285	Willow Species	*Salix sp.*	ms 10-35	Good	Good	Good	15		x		
286	Ash Species	*Fraxinus sp.*	14	Good	Good	Good				x	Conflicts from site preparation.
287	Ash Species	*Fraxinus sp.*	13	Good	Good	Good		1cm suckers at base0		x	Conflicts from site preparation.
288	White Ash	*Fraxinus americana*	12	Good	Good	Good		1cm suckers at base		x	Conflicts from site preparation.
289	White Fir	*Abies concolor*	12.5	Good	Good	Good		6cm sucker, another4cm		x	Conflicts from site preparation.
290	White Ash	*Fraxinus americana*	7.5	Good	Good	Good				x	Conflicts from site preparation.
291	White Ash	*Fraxinus americana*	13	Good	Good	Good		heavy epcormic branching, suckers 1cm, .5cm, 1cm		x	Conflicts from site preparation.
292	White Ash	*Fraxinus americana*	26	Good	Good	Good		eab holes, heavy suckering, largest sucker 1cm		x	Conflicts from site preparation.
293	White Ash	*Fraxinus americana*	20.5	Good	Good	Good		heavy suckering largest 1cm		x	Conflicts from site preparation.
294	White Ash	*Fraxinus americana*	11.5	Good	Good	Good		no suckers		x	Conflicts from site preparation.
295	White Ash	*Fraxinus americana*	ms 5-15	Good	Good	Good		mushrooms on trunk, largest sucker 1.5cm, heavy epicormic		x	Conflicts from site preparation.
296	White Ash	*Fraxinus americana*	12	Good	Good	Good		eab, heavy epicormic, 1cm sucker		x	Conflicts from site preparation.
297	White Ash	*Fraxinus americana*	ms 10-20	Good	Good	Good		eavy epicormic, .5cm sucker		x	Conflicts from site preparation.
298	White Ash	*Fraxinus americana*	21.5	Good	Good	Good		2cm sucker, mod epicormic		x	Hazard tree, remove
299	White Ash	*Fraxinus americana*	22	Good	Good	Good		5.5CM SUCKER		x	Hazard tree, remove
300	White Ash	*Fraxinus americana*	12	Good	Good	Good		HEAVY Vines, 4cm sucker		x	Hazard tree, remove

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
301	White Ash	*Fraxinus americana*	19	Good	Good	Good		heavy epicormic, .5cm sucker	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
302	White Ash	*Fraxinus americana*	11	Good	Good	Good		heavy vine, .5cm sucker, mod epicormic	x		
303	White Ash	*Fraxinus americana*	cd 20, 24	Good	Good	Good		.5cm suckering mod	x		
304	White Ash	*Fraxinus americana*	ms 5-10	Good	Good	Good		one dead stem		x	Conflicts from site preparation.
305	White Ash	*Fraxinus americana*	11.5	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
306	White Ash	*Fraxinus americana*	cd 11, 17	Good	Good	Good		no suckers	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
307	White Fir	*Abies concolor*	10	Good	Good	Good		heavy epicormic, small suckers below hip	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
308	White Ash	*Fraxinus americana*	12	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
309	White Ash	*Fraxinus americana*	16	Good	Good	Good		sm suckes, .5cm	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
310	White Ash	*Fraxinus americana*	20.5	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
311	White Ash	*Fraxinus americana*	14	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
312	Willow Species	*Salix sp.*	ms 5-15	Good	Good	Good				x	Conflicts from site preparation.

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
313	White Ash	*Fraxinus americana*	11	Good	Good	Good		.5cm sucker	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
314	Willow Species	*Salix sp.*	cd 14, 5	Good	Good	Good				x	Conflicts from site preparation.
315	Willow Species	*Salix sp.*	cd 10, 20	Good	Good	Good		branch breakage	x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
316	Willow Species	*Salix sp.*	cd 14, 5	Good	Good	Good			x		
317	Russian Olive	*Elaeagnus angustifolia*	ms 15-20	Good	Good	Good			x		
318	Black Locust	*Robinia pseudoacacia*	14.5	Good	Good	Good		lower branch dieback		x	Conflicts from site preparation.
319	Siberian Elm	*Ulmus pumila*	10,10,13	Good	Good	Good				x	Conflicts from site preparation.
320	Black Locust	*Robinia pseudoacacia*	28.5	Good	Good	Good				x	Conflicts from site preparation.
321	Black Locust	*Robinia pseudoacacia*	19,20	Good	Good	Good		some dead branched		x	Conflicts from site preparation.
322	Siberian Elm	*Ulmus pumila*	15.5	Good	Good	Good		leaf defoliation		x	Conflicts from site preparation.
323	Siberian Elm	*Ulmus pumila*	11	Good	Good	Good				x	Conflicts from site preparation.
324	Siberian Elm	*Ulmus pumila*	13	Good	Good	Good		lower branch dieback		x	Conflicts from site preparation.
325	Siberian Elm	*Ulmus pumila*	11	Good	Good	Good				x	Conflicts from site preparation.
326	Siberian Elm	*Ulmus pumila*	10	Good	Good	Good				x	Conflicts from site preparation.
327	Siberian Elm	*Ulmus pumila*	12,12.5	Good	Good	Good				x	Conflicts from site preparation.
328	Trembling Aspen	*Populus tremuloides*	22,10,15	Good	Good	Good			x		Establish fencing per TPP Figure. No machinery or disturbance within the TPZ
329	Trembling Aspen	*Populus tremuloides*	22,15,12	Good	Fair	Poor		Shaded by pines	x		
330	White Ash	*Fraxinus americana*	13	Good	Good	Good			x		
331	Trembling Aspen	*Populus tremuloides*	13	Good	Fair	Fair			x		
332	Siberian Elm	*Ulmus pumila*	18,16	Good	Good	Good			x		
333	Austrian Pine	*Pinus nigra*	29	Good	Good	Good			x		

Tree Map #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
334	Austrian Pine	*Pinus nigra*	30.5	Good	Good	Good			x		
335	Austrian Pine	*Pinus nigra*	30.5	Good	Good	Good			x		
336	Austrian Pine	*Pinus nigra*	31	Good	Good	Good			x		
337	Austrian Pine	*Pinus nigra*	32	Good	Good	Good			x		
338	Austrian Pine	*Pinus nigra*	33	Good	Good	Good			x		
339	Austrian Pine	*Pinus nigra*	33	Good	Good	Good			x		
340	Austrian Pine	*Pinus nigra*	34	Good	Good	Good			x		
341	Austrian Pine	*Pinus nigra*	34.5	Good	Good	Good			x		
343	Austrian Pine	*Pinus nigra*	36.5	Good	Good	Good			x		
344	Austrian Pine	*Pinus nigra*	50	Good	Good	Good			x		

Maps



Legend

Study Area

N

0 150 300 450 600 750 metres

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	KG	DATE:	May 13, 2021

Map 1.

Key Map

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant\EIS\Mapping\GIS\Projects\Basemap - alt EIS maps.qgz



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Sep 17, 2021

Map 2.

Woodland Assesment Plots and Tree Locations

TREE PRESERVATION PLAN
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz

592790 592875 592960 4797360 593045 593130

4797360 4797280 4797200 4797120 4797040

Legend

- Study Area
- Compartment A (woodland per by-law)
- Site Plan
- Dripline-Staked by ROH (August 2020)

Tree Preservation Plan

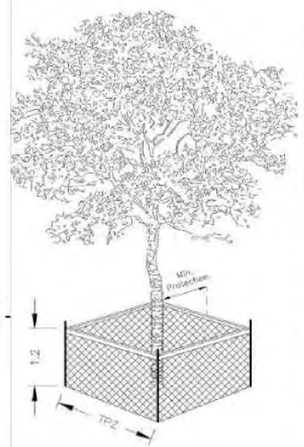
- Tree Protection Fencing
- Tree Protection Zone
- Removal Tree
- Retention Tree
- Hazard Trees for Removal

N

0 12 24 36 48 60 m

Prepared using QGIS and Google Satellite Imagery

Tree Protection and Preservation Specification No.: SS12A



TREE PROTECTION BARRIER

Detail TP-1 – Tree Protection Detail.

Trunk Diameter (DBH) [2]	Minimum Tree Protection Zone (MTPZ) Distances Required [3]	Critical Root Zone (CRZ) Distances Required [3][4]
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

[1] The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
[2] Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.
[3] Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
[4] Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

Notes
1.Removal of vegetation should be avoided during the period of March 31st to August 31st as per the Migratory Birds Convention Act, 1994

GeoProcess RESEARCH ASSOCIATES

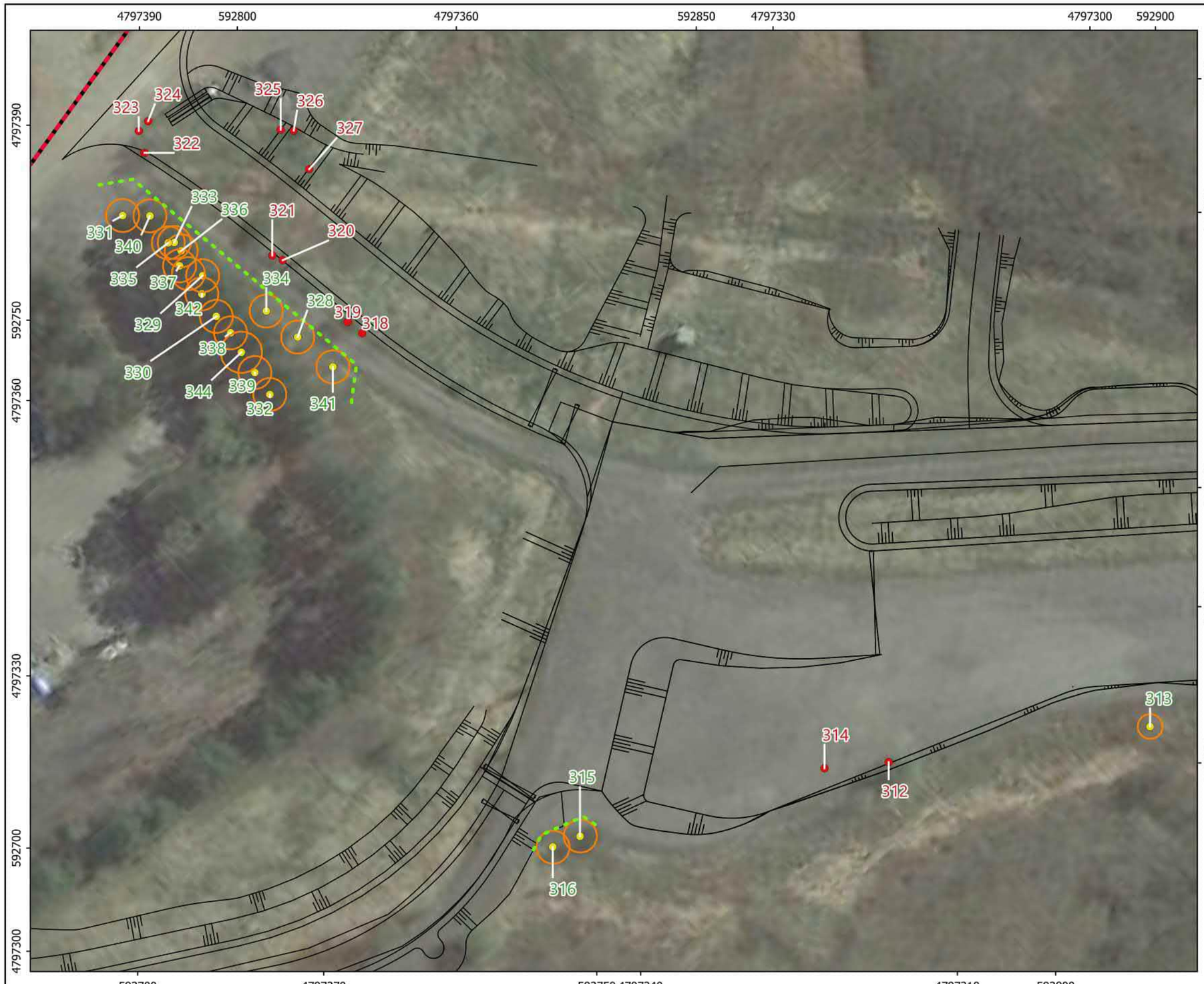
CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Apr 07, 2022

Map 3.

Tree Preservation Plan
Full Scale

TREE PRESERVATION PLAN
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant ES\Mapping\GIS\Projects\DHI\TPP_DH.qgz



Legend

- Study Area
- Site Plan

Tree Preservation Plan

- Minimum Tree Protection Zone for planning purposes
- Tree Protection Fencing
- Removal Tree
- Retention Tree

N

0 2 4 6 8 10 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Feb 16, 2022

Map 3a.

Tree Preservation Plan
Northwest Corner

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz

4797300 592950 4797270 592980 4797240

4797390 592920 4797360 592890

4797240 592890 4797210 592920 4797180

592980 4797210 592950 4797180

Legend

- Compartment A(woodland per by-law)
- Site Plan
- Dripline-Staked by ROH (August 2020)

Tree Preservation Plan

- Minimum Tree Protection Zone for planning purposes
- Tree Protection Fencing
- Removal Tree
- Retention Tree

N

0 2 4 6 8 10 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

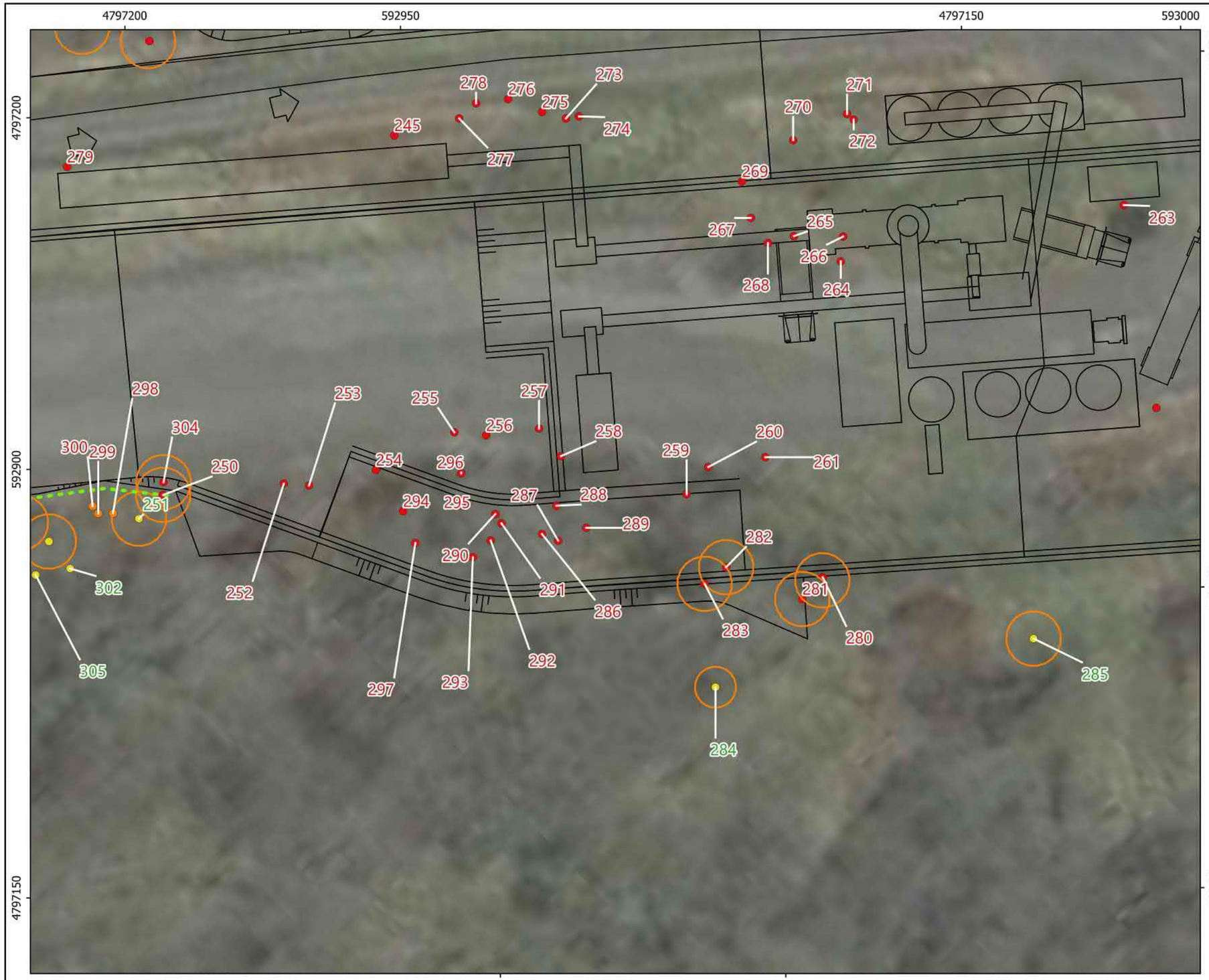
CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Feb 16, 2022

Map 3b.

Tree Preservation Plan
Northeast Woodland

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



Legend

- Site Plan

Tree Preservation Plan

- Minimum Tree Protection Zone for planning purposes
- Tree Protection Fencing
- Removal Tree
- Retention Tree
- Hazard Trees for Removal

N

0 2 4 6 8 10 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

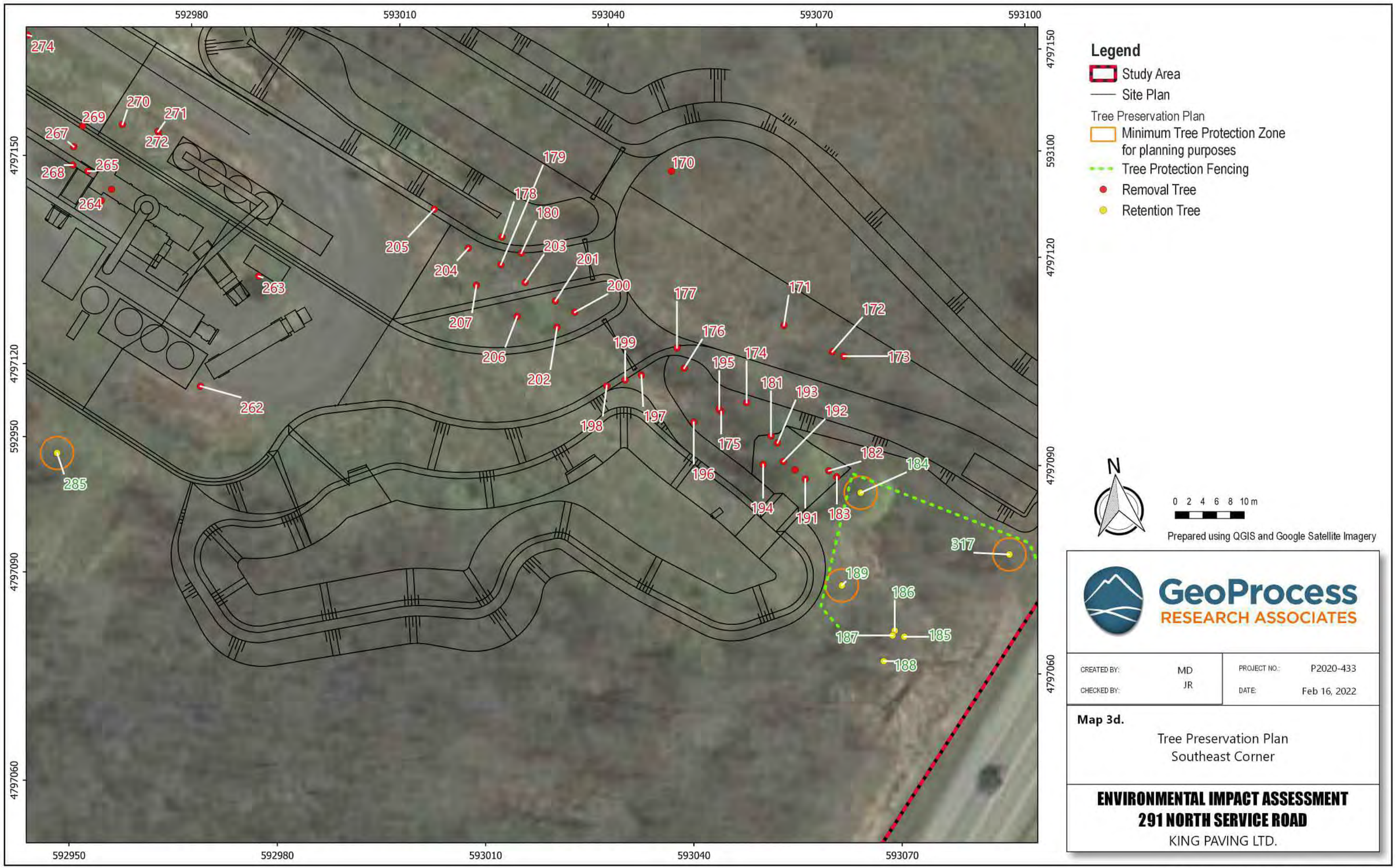
CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Feb 16, 2022

Map 3c.

Tree Preservation Plan
Asphalt Plant

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



Legend

- Study Area
- Site Plan

Tree Preservation Plan

- Minimum Tree Protection Zone for planning purposes
- Tree Protection Fencing
- Removal Tree
- Retention Tree

N

0 2 4 6 8 10 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

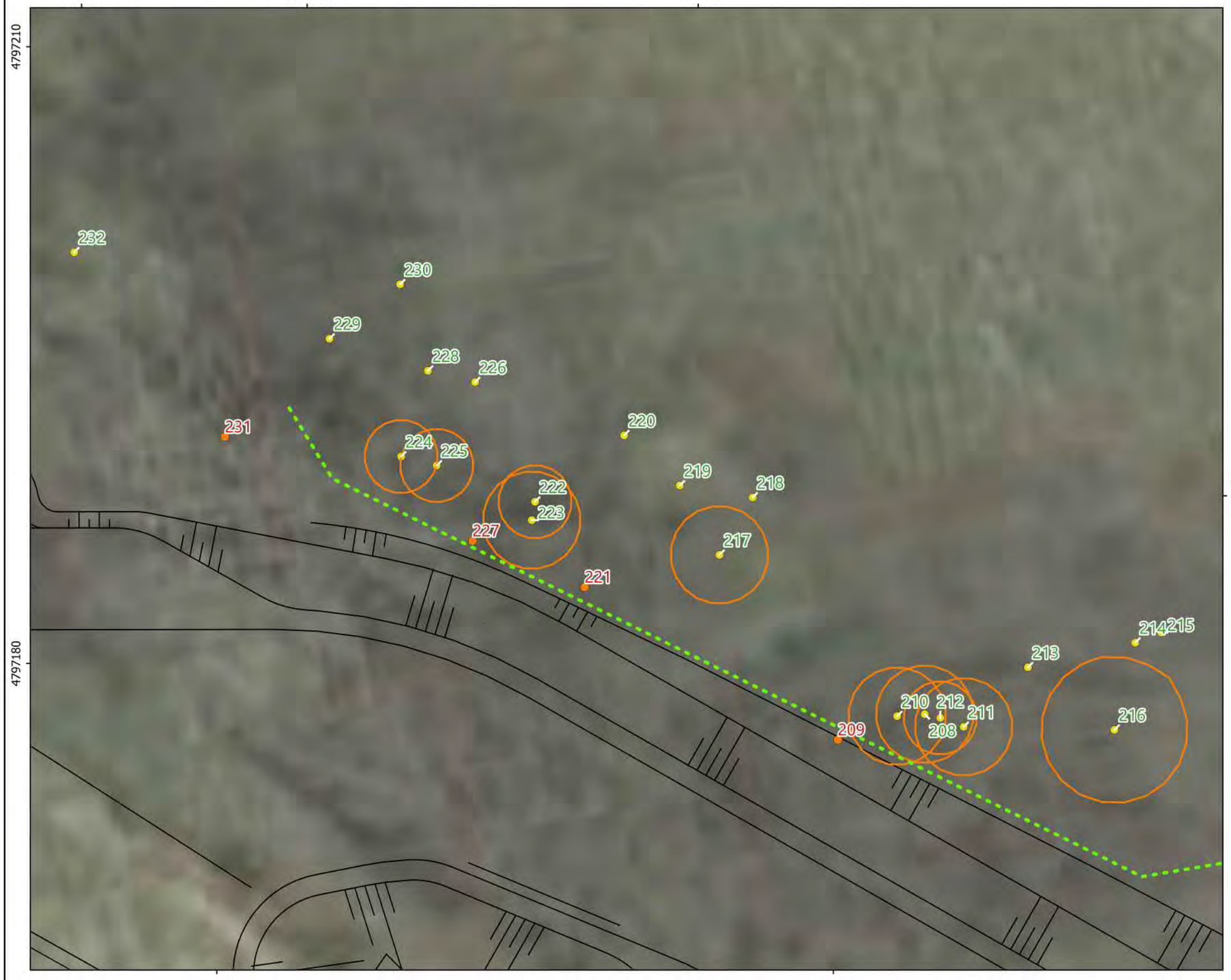
CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Feb 16, 2022

Map 3d.

Tree Preservation Plan
Southeast Corner

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DH\TPP_DH.qgz



Legend

- Site Plan

Tree Preservation Plan

- Tree Protection Zone
- Minimum Tree Protection Zone for planning purposes
- Removal Tree
- Retention Tree
- Hazard Trees for Removal

N

0 2 4 6 8 10 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	MD	PROJECT NO.:	P2020-433
CHECKED BY:	JR	DATE:	Feb 16, 2022

Map 3e.

Tree Preservation Plan
Southeast Woodland

ENVIRONMENTAL IMPACT ASSESSMENT
291 NORTH SERVICE ROAD
KING PAVING LTD.

G:\My Drive\Projects\P2020-433 King Paving Asphalt Plant EIS\Mapping\GIS\Projects\DHTPP_DH.qgz

Appendix F

Files

Map #	Title	Layers
1	Key Map	Study Area
2	Existing Conditions	Study Area Greenbelt Boundary Provincial Natural Heritage System Provincially Significant Wetland ANSI Halton Region Core Area Watercourse (Falcon Creek)
3	Ecological Land Classification (ELC)	ELC Polygons with "Inclusions" Study Area boundary
4	Biophysical Analysis Survey Locations	Study Area Breeding Bird quadrants Amphibian Monitoring Stations Potential Bat Maternity Roost Woodland Density Plot Watercourse Assessment Reach (Drainage Swale)
5	Woodland and Wetland Limits	Compartment A Compartment B Dripline- Staked by ROH Woodland Density Plot Provincially Significant Wetland Wetland Inclusion Wetland Limit (Staked by CH)
6	Site Plan	Study Area Site Plan Regional Woodland Woodland Limit 10 m Woodland Buffer Wetland 15 m Wetland Buffer Potential Bat Maternity Roost
7	Tree Inventory and TPP	Trees Woodland plots
8	Restoration Plan	Study Area Site Plan Revegetation Areas