Environmental Impact Statement

398 North Service Road, Grimsby

Prepared for

Losani Homes

430 McNeilly Road, Suite 203
Stoney Creek, ON
L8E 5E3

October 2019
Project No. P2016-175

Prepared by

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

OPENING

October 2019

Losani Homes
430 McNeilly Road, Suite 203
Stoney Creek, ON
L8E 5E3

Re: Scoped Environmental Impact Statement
398 North Service Road, Grimsby

GeoProcess Research Associates Inc. (GRA) is pleased to present the following Scoped Environmental Impact Statement for the proposed development at 398 North Service Road, in the Town of Grimsby, Ontario. We hope that you are content with the recommendations made and wish you success with the subject project. We look forward to working with you on future endeavours.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC

PROJECT NO.P2016-175

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

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1. Introduction

GeoProcess Research Associates Inc. (GRA) was retained by Losani Homes to prepare an Environmental Impact Statement (EIS) in support of a proposal to redevelop the Fifth Wheel Truck Stop property to accommodate a residential and commercial development. The property was formerly operated as the Fifth Wheel Truck Stop and restaurant for 27 years, and is comprised of remnants of the previous development, open field and a watercourse along the shore of Lake Ontario.

The Town of Grimsby Official Plan and the associated Winston Road Secondary Plan designate the Subject Property as Mixed Use – High Density Residential. The watercourse bisecting the site is designated as an Environmental Protection Area and View Corridor. The shoreline of Lake Ontario is designated as Environmental Conservation Area and Hazard Land Area, a designation regulated under Ontario Regulation 155/06 administered by the Niagara Peninsula Conservation Authority (NPCA). Due to the presence of natural heritage features within and adjacent to the Subject Property, the preparation of an EIS is required to accompany the development application.

The EIS has been prepared in accordance with the approved Terms of Reference (ToR) and is based on current environmental policies, background information and field investigations of natural heritage features. Based on the information gathered, the ecological features and functions associated with the Subject Property were characterized and ecologically appropriate limits for development were established. Mitigation and management strategies were developed with the objective of protecting, restoring and enhancing the ecological features and functions on the Subject Property. Refer to **Appendix A** for the ToR.

1.1. Study Area

The Subject Property is approximately 6.9 hectares and is bounded by the North Service Road to the west and south, the Grimsby Water Treatment Plant to the east and Lake Ontario to the north. A watercourse traversing the center of the Subject Property originates from culverts running under the adjacent transportation corridors (North Service Road and the QEW) to the south (Burnside, 2017) and is under NPCA permit review by the Niagara Peninsula Conservation Authority. The watercourse is vegetated and contained within a steep-sloped gully. The Subject Property has little gradient change and slopes slightly towards the lake. The northern boundary of the Subject Property occurs adjacent to the shoreline of Lake Ontario and is characterized by a narrow beach and a high till bank with limited vegetation. Evidence of construction debris is scattered throughout the shoreline, below the bluff (Shoreplan, 2016). Refer to **Figure 1: Key Map** for the Property location.

2. Environmental Planning Context

The following section has been prepared to identify applicable environmental policies, regulations and legislation relevant to the Subject Property and proposed development.

2.1. Provincial Policy Statement

The Provincial Policy Statement (PPS), 2014 is administered under section 3 of the Planning Act. It became effective April 30, 2014 and replaced the previously issued 2005 PPS. The PPS applies to planning decisions made on or after that date. It provides policy direction for land use and development for regional and local municipalities within the Province of Ontario and prescribes the building of strong communities, the wise use and management of resources, and the protection of public health and safety.

Within the updated PPS the definition of a Natural Heritage System has been expanded and now reads, "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". This expanded definition includes linkages, providing greater consideration and further clarification on the components and functions of natural heritage features.

Policies in Section 2.1 and 3.1 of the PPS detail the areas where development and site alteration shall not be permitted due to the presence of natural heritage features and hazard lands. These policies are included below in **Table 1** Applicable Policies of the Provincial Policy Statement.

Table 1 Applicable Policies of the Provincial Policy Statement

Policy Number	Policy
2.1.1	Natural features and areas shall be protected for the long term.
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 *ground water 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* expect in accordance with *provincial and federal requirements*.
2.1.7	*Development* and *site alteration* shall not be permitted in *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 2.14, 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 on their *ecological functions*.
3.1.1	Development shall generally be directed 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*; *c)* and *Hazardous sites.* Hazardous lands are further defined by the Provincial Policy Statement as "*property or lands that could be unsafe for development and site alteration due to naturally occurring processes. Along the shorelines of the Great Lakes – St. Lawrence River System, this means the land, including that covered by water, between the international boundary, where applicable, and the furthest landward limit of the flooding hazard, erosion hazard or dynamic beach hazard limits.*"
3.1.2	Development and site alteration shall not be permitted within: a) the *dynamic beach hazard*; b) *defined portions of the flooding hazard along connecting channels* (the St. Marys, St. Clair, Detroit, Niagara and St. Lawrence Rivers); c) areas that would be rendered inaccessible to people and vehicles during times of *flooding hazards, erosion hazards and/or dynamic beach hazards*, unless it has been demonstrated that the site has safe access appropriate for the nature of the *development* and the natural hazard; and d) a *floodway* regardless of whether the area of inundation contains high points of land not subject to flooding.
3.1.7	Further to policy 3.1.6, and except as prohibited in policies 3.1.2 and 3.1.5, *development* and *site alteration* may be permitted in those portions of *hazardous lands* and *hazardous sites* where the effects and risk to public safety are minor, could be mitigated in accordance with provincial standards, and where all of the following are demonstrated and achieved: *a)* *development* and *site alteration* is carried out in accordance with *floodproofing standards, protection works standards*, and *access standards*;

b) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;

c) new hazards are not created and existing hazards are not aggravated; and

d) no adverse environmental impacts will result.

2.2. Greenbelt Plan

The Greenbelt Plan was adopted by the Province of Ontario in 2005 with the purpose of the protecting agricultural and rural areas. The Greenbelt Plan provides guidance on protecting natural features, including use restrictions and required buffers, identified as vegetated protection zones. It builds upon policies of the Oak Ridges Moraine Conservation Plan, the Niagara Escarpment Plan, and the Provincial Policy Statement to protect additional lands. It provides further and more specific land use planning policies to its designated areas, the *Protected Countryside*. In lands which overlap with the ORMCP or the NEP, the policies of those plans take precedence with minor exceptions, while still adhering to the vision of the Greenbelt Plan and the PPS.

The Greenbelt Plan provides mapping which delineates the limits of the Greenbelt Plan Area. Map 110 identifies the Subject Property as Towns and Villages (Settlement Areas) within the Greenbelt Plan. In general, these areas are to continue to be governed by the Official Plans of their respective Municipalities and are not to expand beyond the Towns and Villages Limit.

2.3. Niagara Regional Official Plan

The Niagara Region Official Plan was adopted by Regional Council in November 1991 after a major review that resulted in revised Regional Strategic Objectives, Agricultural and Rural Area policies, and Urban Area policies. These revised policies were modified and approved by the Minister of Municipal Affairs in December 1994. The Regional Official Plan was last consolidated in 2014. Currently, Niagara Region is in the process of developing a new Niagara Official Plan, which will reflect current goals and priorities of the community and Regional Council, provide clear direction for land use planning and implement current provincial policy and plans.

Per Schedule A, Regional Structure (August 2015), the Subject Property is identified as Built-up Area contained within the Urban Area Boundary. Built-up areas are designated by the Region for intensification purposes and are to include all forms of development. Municipalities will develop and implement through their OP strategies and polices promoting intensification to achieve intensification targets set out in Niagara Regions OP.

2.4. Town of Grimsby Official Plan

The Town of Grimsby Official Plan provides goals, objectives and policies to guide land use matters within the municipality. The current official plan was approved by the Ontario Municipal Board in May 2012 and was last consolidated on July 16, 2018.

The Subject Property is designated Urban Settlement contained within a Major Intensification Area with a Natural Heritage System (Core Natural Area) feature located parallel to the Lake Ontario shoreline as per Schedule A, Municipal Structure (August 2018). Schedule B-1 Land Use - Urban Settlement Area (West)

(August 2018), shows that the Property is designated Residential/Mixed Use Area within the Hazard Lands limit of Lake Ontario (O. Reg 155/06).

As per Section 3.4.5, this land use designation is intended for *intensified development and/or redevelopment of a mixture of residential, convenience retail, service commercial and prestige employment uses.* The physical locations of these designations allow for higher density and transit-supported transportation. Various Permitted Uses and General Policies are found in Section 3.4.5.1-7.

2.4.1. Winston Road Neighborhood Secondary Plan

The Winston Road Neighborhood Secondary Plan provides additional guidance and land use designations pertaining to the major intensification development to occur within its boundaries. Schedule F- Land Use (August 2018) illustrates a more detailed structure of the Subject Property's intended uses and designations. The Subject Property is located within the Built Boundary and is designated as Mixed Use- High Density.

In addition, the Subject Property is bisected by a watercourse designated as an Environmental Protection Area. As per Schedule F-1 (October 2009), the watercourse is intended to provide a View Corridor from the North Service Road to Lake Ontario, over the trail planned to occur along the shoreline. The trail (Schedule C) overlaps the Natural Heritage System land use designation along the Property's shoreline, deemed an Environmental Conservation Area (Schedule F- Land Use). As per Section 3.8.8, *Any new development and/or redevelopment adjacent to the water's edge shall incorporate a water's edge public open space component that shall be dedicated to the Town. Parks and trails are to be secured through the use of the Planning Act concerning new development.* To the west of the Subject Property is the Casablanca interchange and a parcel of Parks and Open Space to northwest. Adjacent land to the east is designated Utility Area.

The objective of this secondary plan is to ensure that the undeveloped stretch of waterfront is maintained as a public resource and ensure increased public ownership and use along it. The Subject Property's designation of Mixed Use- High Density allow for the community to live, work and enjoy the lake view via interconnected open space, trails and protected view corridors, one of which is located on the Subject Property (11.2.2, 11.2.3, 11.3.3.3.a).

Permitted uses within the Mixed Use- High Density designation, as per 11.3.3.1.a, include residential types associated with high density (apartments and townhouses) and a range of employment and commercial centers including offices, retail, hotels, and prestige employment uses. Prohibited uses are provided in 11.3.3.1.b. and include outdoor storage, outdoor processing, outdoor display of goods and merchandise.

Per section 11.3.10, the lands designated as Hazard Land Area within the Winston Road Neighborhood are to be governed by policies of section 3.2, Hazard Land Areas. The erosion limit, based on erosion susceptibility over a 100-year period, may be reduced to allow development and site alteration provided proper studies demonstrate the safe erosion limit, with or without the use of shoreline protection works. The Subject Property is also subject to policies pertaining to steep slopes.

2.4.2. General Policies

Official Plan policies applicable to the proposed development at 398 North Service Road include those associated with the Natural Heritage System, Environmental Protection Areas, Environmental Conservation

Areas, Hazard Lands, Landform Conservation, Stormwater Management Policies and Implementation policies regarding the Environmental Impact Study.

2.4.2.1. Natural Heritage System: Environmental Protection Areas and Environmental Conservation Areas Policies

The Town of Grimsby's Core Natural Areas consists of features and linkages that support connectivity to protect the ecological function of these features. The shoreline associated with the Subject Property is designated Natural Heritage System, referring to the Greenbelts designation, as per Schedule A.

Section 2.3.4.1 provides policies detailing permissible development and site alteration within the Natural Heritage System designations located within the Greenbelt Plan. Permissible development requires the approval of an Environmental Impact Statement demonstrating various conditions have been met that identify no negative effects occur to the natural heritage feature or its function. There are two distinct categories of Core Natural Areas within the Town of Grimsby: Environmental Protection Areas (Section 3.1.1) and Environmental Conservation Areas (Section 3.1.2).

The watercourse located within the Subject Property boundaries is designated a stream and an Environmental Protection Area (Schedule F). All permanent or intermittent streams are classified as Key Hydrologic Features per Section 3.1.1.3 and therefore are included in the definition of Core Natural Areas as Environmental Protection Areas. Appendix 1- Key Natural Heritage and Hydrological Features within the Greenbelt Plan Area and Appendix 2- Natural Features do not designate the Subject Property's stream as fish habitat.

Per Section 3.1.1.14, Lake Ontario waters are significant fish habitat and therefore development and site alteration adjacent to the water body are subject to policies pertaining to fish habitat, as it is recognized as an Environmental Protection Area. Section 3.1.1 of the Official Plan provides policies applicable to the Environmental Protection Areas which are provided in **Table 2**.

Table 2 Environmental Protection Areas Policies Applicable to this EIS

Policy Number	Policy
3.1.1.8	Within the Environmental Protection Area designation, and any associated vegetation protection zones in the Greenbelt Plan Area, development, site alteration, and non-linear infrastructure shall not be permitted except for the following: a) Forest, fish and wildlife management; b) Conservation and flood or erosion control projects where it has been demonstrated that they are necessary in the public interest and other alternatives are not available; and c) Small scale, passive recreational uses and accessory uses such as trails, boardwalks, footbridges, fences, docks and picnic facilities that will have no significant negative impact on natural features or ecological functions of the Core Natural Heritage System.

	Development and site alteration may be permitted without an amendment to this Plan on adjacent lands, except for those lands within the minimum vegetation protection zones associated with Environmental Protection Areas located in the Greenbelt Plan Area, subject to the following.
3.1.1.12	a) It has been demonstrated through an EIS in accordance with Section 9.18 that, over the long term, there will be no significant negative impact on the feature or its function or adjacent lands; and, b) The proposed development or site alteration is not prohibited by other Policies in this Plan.
3.1.1.13	Notwithstanding Section 3.1.1.8, within Fish Habitat and adjacent lands outside of the Natural Heritage System located in the Greenbelt Plan Area, development and site alteration may be permitted if it will result in no net loss of the productive capacity of fish habitat as determined by the Department of Fisheries and Oceans or its designate. First priority will be given to avoiding harmful alteration or destruction of fish habitat by redesigning or relocating the proposal or mitigating its impacts. The proponent shall be required to prepare an EIS to the satisfaction of the Department of Fisheries and Oceans, or it's designate, in accordance with Section 9.18 [Implementation of Environmental Impact Study's].
3.1.1.14	A naturally vegetated buffer zone, a minimum 30 metres in width extending from each side of the stream shall be required adjacent to all streams containing critical Fish Habitat as defined by the Ministry of Natural Resources and all streams containing Fish Habitat within the Greenbelt Plan Area. Outside the Greenbelt Plan Area a naturally vegetated buffer zone, a minimum 30 metres in width as measured from the stable top of bank, generally shall be required adjacent to Critical Fish Habitat as defined by the Ministry of Natural Resources. A minimum 15 metre buffer from the stable top of bank shall be required adjacent to Important or Marginal Fish Habitat as defined by the Ministry. A narrower buffer may be considered where the EIS has demonstrated that it will not harm fish or fish habitat, but in no case shall the buffer adjacent to Critical Fish Habitat be less than 15 metres. Agricultural cultivation does not require planning approval and is not subject to these requirements. The waters of Lake Ontario also are a significant fish habitat. Development and site alteration on adjacent lands shall be subject to Sections 3.1.1.13-15 and to the provisions respecting Environmental Protection Areas in Sections 3.1.1.15-18, 3.1.1.21-23 and 3.1.1.25.
3.1.1.15	Notwithstanding any other policies in this Plan, essential public uses of a linear nature including utilities, communication facilities and transportation routes may be permitted within the Environmental Protection Area designation or on adjacent lands where an Environmental Assessment for the proposed use has been approved under Provincial or Federal legislation.
3.1.1.16	Within the Greenbelt Plan Area, a proposal for development or site alteration within 120 metres of an Environmental Protection Area designation shall require a natural heritage evaluation and hydrological evaluation that identifies an appropriate vegetation protection zone which:

	a) Is of sufficient width to protect the natural heritage or hydrologic feature and its functions from adverse environmental impacts of the development or site alteration; b) Is established and maintained as natural self-sustaining vegetation; and c) Is a minimum 30 metres wide in the case of wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes and significant woodlands or greater if determined appropriate by an EIS.
3.1.1.17	The Vegetation Protection Zone established through Section 3.1.1.16 shall be considered part of the Environmental Protection Area designation.
3.1.1.21	Where development or site alteration is approved adjacent to an Environmental Protection Area designation, new lots thus created shall not extend into either the area to be retained in a natural state as part of the Environmental Protection Area designation or the buffer zone identified through an Environmental Impact Study. The lands to be retained in a natural state and the adjacent buffer zone shall be maintained as a single block and zoned to protect their natural features and ecological functions.

The shoreline, according to the corrected Schedule F provided by Amy Shanks, Planner at the Town of Grimsby, designates this Core Natural Area component as an Environmental Conservation Area. This portion of the Subject Property is therefore protected as per the policies outlined in Section 3.1.2 and adjacent lands are considered all lands within 120 metres of the top of bank (as per section 9.20.3). As per Section 3.1.2:

Table 3 Environmental Conservation Area Policies Applicable to this EIS

Policy #	Policy
3.1.2.5	Within the Environmental Conservation Areas and adjacent lands, development, site alteration, and non-linear infrastructure may be permitted without an amendment to this Plan provided: a) It has been demonstrated, through an Environmental Impact Study (EIS) in accordance with Section 9.18, that, over the long term, there will be no significant negative impact on the natural feature or its ecological functions or on adjacent lands; and b) The proposed development or site alteration, or non-linear infrastructure is not prohibited by other Policies in this Plan.
3.1.2.6	Where it is demonstrated that all, or a portion of, an Environmental Conservation Area does not meet the criteria for designation under this Plan and thus the site of a proposed development or site alteration no longer is located within the Environmental Conservation Area or on adjacent land then the restrictions on development and site alteration set out in this section of the Plan do not apply.
3.1.2.7	The boundaries of the Environmental Conservation Area may be defined more precisely through sub-watershed or environmental planning studies, secondary planning, Environmental Impact Studies, or other studies prepared to the satisfaction of the Town in consultation with the Region, and the Niagara Peninsula Conservation Authority. A significant modification, such as a change in the classification of an Environmental Conservation Area, or

	a significant change in the spatial extent or boundaries of a feature, requires an amendment to this Plan unless otherwise provided for in this Plan.
3.1.2.12	Where development or site alteration is approved in or adjacent to an Environmental Conservation Area designation, new lots thus created shall not extend into either the area to be retained in a natural state as part of the Environmental Conservation Area or the buffer zone identified through an Environmental Impact Study. The lands to be retained in a natural state and the adjacent buffer zone shall be maintained as a single block and zoned to protect their natural features and ecological functions.
3.1.2.15	Subject to other policies in this Plan, an expansion to an existing use located within an Environmental Conservation Area may be permitted if it will have no significant negative impact on the natural feature or its ecological functions. If the expansion involves a substantial intensification in land use or increase in the land area devoted to the use the proponent shall prepare an Environmental Impact Study in accordance with Section 9.18.
3.1.2.17	A new residence and accessory uses may be permitted on an existing lot of record located in whole or in part within an Environmental Conservation Area, Fish Habitat or adjacent lands if they are located, designed and constructed to minimize negative impacts on the natural features and ecological functions of the Natural Heritage System Component and adjacent lands.

2.4.2.2. Hazard Land Areas Policies

Section 3.2 of the Official Plan contains policies related to Hazard Land Areas and the restriction of development in these areas due to the potential of causing personal injury, property damage and/or the loss of life. General policies prohibit development within the floodway, on unstable grounds and within river and stream erosion zones (Policies 3.2.4, 3.2.6, and 3.2.7 respectively).

As per 3.2.8, *Development will generally be directed to areas outside of hazardous lands adjacent to Lake Ontario, along rivers and streams, areas that would be rendered inaccessible to people and vehicles during times of flooding hazards, erosion hazards and/or dynamic beach hazards, unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the natural hazard; a floodway regardless of whether the area of inundation contains high points of land not subject to flooding and areas which are impacted by flooding and erosion hazards. The hazard area along Lake Ontario is defined by the furthest landward limit of the flooding hazard, erosion hazard, and dynamic beach hazard. Lake Ontario shoreline hazards are identified on Schedule B and updated from time to time by the NPCA.*

A geotechnical report is required for new development adjacent to Lake Ontario where the bank is equal or greater than three (3) metres (3.2.9) and where there are steep slopes greater than 15% (3.2.10). Shoreline protection works, to address the hazards associated with Lake Ontario, may be used with approval from the conservation authority under O. Ref. 155/06. See policies prescribed in 3.2.10 for the conditions to develop adjacent to steep slopes.

Permission for development within hazard lands, except within dynamic beach hazard, may be granted as per Section 3.2.11:

Development and site alteration may be permitted on portions of hazardous lands or sites, provided the Conservation Authority must be satisfied that the effects and risk to public safety are minor and can be managed or mitigated so that:

a) Development and site alteration will be in accordance with provincial flood proofing standards; protection works standards and access standards;

b) Vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;

c) New on-site or off-site hazards will not be created, or existing ones aggravated; and

d) No adverse environmental impacts will result.

2.4.2.3. Landform Conservation Policies

Section 4.4 refers to the landform significance of the shoreline of Lake Ontario and aims to maintain it in as natural a condition as possible while improving public access to open space along it. It is an objective to promote environmental protection, restoration and enhancement. Policies concerning development along the shoreline (4.4.1-8) ensure a natural vegetated buffer strip remains and bioengineering protection measures are used where feasible, public access is provided, view corridors are maintained around developments, lands are dedicated to the planned public trail system and that the required permitting is obtained from the NPCA.

2.4.2.4. Stormwater Management Policies

Section 5.3 provides general policies for new developments storm water management practices. Stormwater management facilities are only to be constructed within Environmental Protection Areas if permitted under Section 3.2.1.5 of the Official Plan which requires an EIS to determine *there will be no significant negative impact on the natural feature or its ecological functions or on adjacent lands*. New developments require Best Management Practices principles to be applied, as per section 5.3.8 a-l, which include, but are not limited to: a net gain of fish habitat, no creation or aggravation of flood or erosion problems, and no negative impacts on the Environmental Protection Area. The submission of a stormwater management plan is required for the proposed works, as per 5.3.9, with Low Impact Development approaches encouraged (as per 5.3.11-5.3.12).

2.5. Niagara Peninsula Conservation Authority

The Subject Property is located within the jurisdiction of the Niagara Peninsula Conservation Authority (NPCA). Applicable policies and guidelines relating to the proposed development include O. Reg. 155/06 and the Lake Ontario Shoreline Management Plan.

2.5.1. NPCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses 155/06

The northern portion of the Subject Property is contained within the Shoreline Flood and Erosion zone and the watercourse is regulated under NPCA permit review, a jurisdiction of the NPCA which is subject to Ontario Regulation 155/06 Niagara Peninsula Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Section 2 of this regulation prohibits development within the defined areas, including areas adjacent or close to the shoreline of any Great Lakes up to the defined distances. Section 3 states that permission to develop may be attained from the Conservation Authority, in writing, if it is successfully demonstrated that the development will not affect the features and

functions as listed in Section 3 (1). Section 6 allows for permission to alter if granted by the Conservation Authority, in writing, with or without conditions (S. 6. (1) and (2)).

2.6. Department of Fisheries and Oceans Canada

The Department of Fisheries and Oceans Canada [DFO] has legislative authority of the Fisheries Act, 1985, c. F-14 and the regulations made under it. The act's purpose is to manage and control fisheries as well as to conserve and protect fish and their habitat (DFO, N.D). All internal waters of Canada are deemed Canadian Fisheries Waters and fish habitat is defined as *spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes* (Fisheries Act, 2 (1)). *Serious harm to fish* is a prohibition of the current Fisheries Act. As per Section 35 (1) *No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery*.

The DFO interprets *serious harm to fish* as

i) the death of fish;
ii) the permanent alteration to fish habitat; and,
iii) the destruction of fish habitat (Fisheries Protection Policy Statement, 8.2, 2013).

This principle was previously known as HADD- the harmful alteration, disruption or destruction of fish habitat which is prohibited except by authorization by the Minister of Fisheries and Oceans (DFO, 2005). Policies regarding these exceptions are stated in Section 35 (2) of the Fisheries Act. Section 36 provides a prohibitive policy concerning polluting waters with *deleterious* substances. Plans and specifications may be requested by the Minister to determine the effects of proposed works, whether the work would be an offence, and what mitigation measures are plausible (s. 37 (1)). Punishments for offences are provided in Section 40 (1-2).

For Projects Near Water, the DFO (2016) provides a key to determining if the proposed works requires a DFO review and to ensure compliance to the Fisheries Act. Species at Risk are to be determined using the Aquatic Maps provided by the DFO. Per map 17 of 34 Ontario South West (DFO, 2017) no aquatic species listed under SARA occur along the shoreline of the Subject Property. The nearest shoreline habitat, for a species of special concern, occurs 3.5km to the west at the outlet of Fifty Creek at Fifty Point.

In addition, certain project activities are listed which do not require review. If works accompanying new development, such as stormwater management facilities and habitat restoration (including shoreline/bank stabilization), do not occur below the High-Water Mark then no review is required. Bank stabilization works using rock, plantings or bioengineering must not have a temporary or permanent increase in existing *footprint* (total area of the bed of the waterbody that is covered) below the High-Water Mark nor new temporary or permanent fill (aggregate material or structures) placement below the High-Water Mark.

The High-Water Mark is *the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to leave a mark on the land* (DFO, 2016). It is determined for each of the Great Lakes using eighty (80) years of monthly mean water levels to find the average high-water mark elevation. From these data, the 80th percentile High Water Mark has been determined for Lake Ontario as 75.32 m IGLD85 (DFO, 2005). The High-Water Mark is *the minimum elevation that will be considered as the boundary*

for fish habitat (DFO, 2005). Proposed works at the Subject Property must consider the High-Water Mark in planning and construction.

2.7. Endangered Species Act

The Endangered Species Act (ESA) 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 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 MNRF, unless the activities are exempted under Regulation. The current Ontario Regulation 242/08 identifies activities which are exempt from the permitting requirements of the Act 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.

3. Assessment Methodology

3.1. Background Review

Literature and background data pertaining to the Subject Property were reviewed and evaluated to obtain background planning policy information. A list of documents and information sources consulted are provided below:

- Provincial Policy Statement (2014)
- Town of Grimsby Official Plan (2012)
- Niagara Peninsula Conservation Authority O. Reg. 155/06
- Greenbelt Plan (2017)
- Department of Fisheries and Oceans, Projects Near Water
- Endangered Species Act (2007) and Ontario Regulation 242/08
- Land Information Ontario Natural Heritage Information
- eBird Database
- Ontario Breeding Bird Atlas
- Ontario Herpetofaunal Atlas
- Shoreline Hazard Assessment (Shoreline Engineering Limited)
- Functional Servicing and Stormwater Management Report (Burnside)
- Geotechnical Slope Stability Report (Soil-Mat)

3.2. Field Work Completed by GRA

GRA conducted field studies to characterize and inventory the natural heritage features and functions of the Subject Property and surrounding landscape. A summary of the field work is provided below in **Table 4.**

Table 4 Field Work Summary

Study	Date	Staff	Affiliation
Spring Vegetation Assessment	May 20, 2016	Jenn Reader	GRA
Summer Vegetation Assessment	July 19 2016	Jenn Reader	GRA
Tree Inventory	May 20 2016	Jenn Reader	GRA
Breeding Birds Surveys	June 7 & 23 2016	James Holdsworth	Sub
Watercourse Characterization	June 23 2016	James Ehrman	GRA
Species at Risk and Significant Wildlife Habitat Surveys	May 20 & July 19 2016	Jenn Reader	GRA
Incidental Wildlife	May 20 & July 19 2016	Jenn Reader	GRA
Shoreline Assessment using UAV	June 14 2016	Ken Glasbergen	GRA

3.2.1. Vegetation Assessment

3.2.1.1. Floristics Inventory

Floristic surveys were completed in spring and summer of 2016. Species nomenclature and ranking follows the Ministry of Natural Resources and Forestry Natural Heritage Information Centre database. A list of all vascular plant species observed was compiled and is presented in **Appendix B**.

3.2.1.2. Ecological Land Classification

Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al. draft 2008). Vegetation community boundaries were determined using desk top analysis and further refined in the field. The results of this assessment are provided in **Section 4.3.1** and **Figure 2 Ecological Land Classification**.

3.2.1.3. Tree Inventory

An assessment of individual trees included a 100% tally of trees 10 cm Diameter at Breast Height (DBH) and greater for the Subject Property. Tree resources 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 for the following:
    - **Trunk integrity:** 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:** 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:** 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.

Topographic mapping and aerial imagery were used to identify the location of trees, which were then confirmed in the field. Refer to **Figure 3 Tree Protection Plan** for the location of trees surveyed on the Subject Property and **Section 4.3.1.3** for further tree information.

3.2.2. Breeding Birds Surveys

Breeding bird surveys were undertaken on two separate dates, June 7 and June 23, 2016 by a breeding bird expert under appropriate weather conditions (**Table 5**). These areas were thoroughly covered by walking random transects and recording presence, abundance and level of breeding evidence (using Ontario Breeding Bird Atlas [OBBA] protocols).

Table 5 Site Visit Weather Conditions

Visit Date	Temp. Range [^{0}C]	Cloud Cover [%]	Wind Speed [Beaufort scale]
June 7	17 – 23 ^{0}C	10	B2
June 23	18 – 25 ^{0}C	20 - 75	B2

3.2.3. Watercourse Assessment

On June 23rd, 2016 GeoProcess Research Associates performed a detailed channel survey and geomorphic assessment of the watercourse found on the Subject Property. The survey was conducted using a high-accuracy Global Navigation Satellite System receiver equipped with RTK to record position and elevation of critical channel components. The collected data include top and bottom of bank, channel centerline, and cross sections. Additionally, the location of a culvert south of North Service road was collected to provide benchmarking. **Figure 4 Watercourse Overview** illustrates the site and the collected survey data.

A qualitative geomorphic assessment was also conducted, which included general characterization of the channel, and observations on slopes, sediment constituents, vegetation, and run-off sources.

A basic hydraulic analysis was conducted based on the above collected data. The cross sections were used in determining stage, velocity, bank and bed shear at various flows. A Manning's roughness of 0.05 was assumed for this straight, excavated channel with heavy brush on the banks. Bankfull flow was assumed to be the flow at which the surveyed main channel (in the upper section) flowed full. Given the deeply incised nature of the valley, this is not representative of the bankfull scenario under natural conditions, but there were no clear natural indicators of bankfull flow in the valley to provide estimates for the depth of actual bankfull conditions.

3.2.4. Lake Ontario Shoreline Characterization

An unmanned aerial vehicle (UAV) and site reconnaissance by staff were used to characterize the shoreline. General characterization included the terrestrial vegetation survey and background fish habitat data as well as the information in the 2016 Shoreline Hazard Assessment conducted by Shoreline Engineering Limited.

3.2.5. Incidental Wildlife

Incidental wildlife observations were recorded during all surveys and recorded species observations and signs (e.g. tracks / trails, scat, burrows, dens, browse, vocalizations). The surveys coincided with surveys for amphibians and breeding birds, watercourse characterizations and vegetation inventories.

4. Existing Conditions

4.1. Physiography

The Subject Property is contained within the limits of the Lake Ontario South Shore subwatershed and the NPCA's Grimsby Watershed Planning Area. Along the shoreline sand plains, the prominent soil type, allow for a multitude of creek drainage features to form (NPCA, 2012). Per the Generalized Soil Map of the Regional Municipality of Niagara Ontario, Report 60 (1989), the Subject Property is within an area classified as *Miscellaneous man-modified land unit-not mapped* due to its historical use as an urban/built up area. Topography in the area consists of *smooth basin to level*, with an individual area of *irregular very steeply sloping areas >30%* that correspond to the shoreline landform.

Geotechnical investigations conducted by Soil-Mat Engineering & Consulting Ltd, dated January 15, 2016, concluded, *the site is composed of native silty clay proven to depths ranging from 3.5 to 11.3 m below grade*. Topsoil in landscaped areas was observed up to 0.6 m. Silty clay or silty sand fill was present below the paved areas at depths between 1.1 to 1.8 m, per Soil-Mat, 2016 as reported by Burnside, 2017. In addition, the report notes Queenstone shale was observed at depths ranging from 3.6 to 10.7 m, with the shallowest occurrences in the south and west, and deeper to the east and north.

4.2. Natural Environment Background Information Review

A background information review was conducted to guide the field studies and impact assessment of the proposed works at the Subject Property. The following documents were reviewed.

- Natural Heritage Information Center Database (current)
- Soils of the Regional Municipality of Niagara, Soil Survey Report 60, maps
- Ontario Breeding Bird Atlas
- eBird database
- Ontario Herpetofaunal Atlas
- Shoreline Hazard Assessment (Shoreplan Engineering Limited)
- Functional Servicing and Stormwater Management Report (Burnside, 2017)

4.3. Study Area Assessment and Review of Existing Conditions

The following provides a description of the Subject Property based on secondary source information and field collected data.

4.3.1. Vegetation Communities

4.3.1.1. Floristics

Seventy-four species of vascular plants were identified during the flora survey, including 46 non-native species (approximately 62% percent of all species). Non-native, invasive species were prominent throughout the entire area of natural heritage features. No significant or rare species were identified for the natural areas. Significance was based on rarity at two geographical scales: global and provincial (NHIC database). A working vascular plant list is provided in **Appendix B**.

4.3.1.2. Ecological Land Classification (ELC)

Five ELC vegetation communities were delineated on the property and are described below in **Table 6.** Refer to **Figure 2 Ecological Land Classification** for location of ELC communities.

Table 6 ELC Vegetation Communities

ELC Code	ELC Community	Description
MEMM4	Fresh-Moist Mixed Meadow Type	Dominated by a mix of forbs and graminoids near the rear of the property. Dominated by Smooth Brome (*Bromus inermis ssp. inermis*), Reed-canary Grass (*Phalaris arundinacea*), Canada Goldenrod (*Solidago canadensis*), Canada Thistle (*Cirsium arvense*), Kentucky Blue Grass (*Poa pratensis*) and Cow Vetch (*Vicia cracca*). Disturbance is relatively high throughout this community due its proximity to the surrounding land use and evidence of dumping of debris was noted throughout the community. Small pockets of shrubs including Tartarian Honeysuckle (*Lonicera tatarica*), Meadow Willow (*Salix petiolaris*) and Staghorn Sumac (*Rhus typhina*) are present throughout.
SHOM1	Mineral Open Shoreline Ecosite	Similar in composition to MEMM4 but directly along the Lake Ontario shoreline and subject to active shoreline processes. Slightly higher Reed-canary Grass composition.
THMM2	Fresh-Moist Thicket Ecosite	Disturbed thicket community located along a swale feature. Common species include Tatarian Honeysuckle, Common Buckthorn, Red-osier Dogwood (*Cornus stolonifera*), Grey Dogwood (*Cornus foemina ssp. racemosa*), Staghorn Sumac and Riverbank Grape (*Vitis riparia*).
WODM5	Fresh-Moist Deciduous Woodland Ecosite	Steep, deeply incised disturbed woodland feature along a channel adjacent to Lake Ontario. Dumping of debris high within this community. Common species include Manitoba Maple (*Acer negundo*), White Elm (*Ulmus americana*), Norway Maple (*Acer platanoides*), Green Ash (*Fraxinus pennsylvanica*), Crack Willow (*Salix fragilis*), Russian Olive (*Elaeagnus angustifolia),* Tatarian Honeysuckle, Common Buckthorn, Red-osier Dogwood and Garlic Mustard (*Alliaria petiolata*).
WODM5-3	Fresh-Moist Manitoba Maple Deciduous Woodland Type	Degraded woodland composed of juvenile Manitoba Maple, White Ash, White Poplar with a heavy understory dominated by Common Buckthorn. Additional species include Red-osier Dogwood, Common Lilac (*Syringa vulgaris*), Multi-flora Rose (*Rosa multiflora*) and Garlic Mustard. Dumping of debris is abundant throughout this feature.
MAMM1-12	Common Reed Graminoid Mineral Meadow Marsh Type	Monoculture community dominated by Common Reed (*Phragmites australis*).

H1	Located along the eastern limit	Dominated by young exclusively Manitoba Maple in good health. Nine trees were identified for this hedgerow. Refer to the tree inventory table below for further information.

4.3.1.3. Tree Inventory

The Subject Property is dominated by early successional communities with a very low percentage of tree species present. Outside of the small, fragmented woodland feature in the northwest corner of the property, trees are limited to a linear hedgerow feature along the eastern limit. A total of eight trees were documented within this hedgerow and were identified as exclusively Manitoba Maple. Refer to **Table 7** below for tree inventory details.

Table 7 Tree Inventory Table

Tree #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	Comments	Retain	Remove	Proposed Action
1	Little Leaf Linden	*Tilia cordata*	24	G	G	G	10			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
2	Little Leaf Linden	*Tilia cordata*	23.5	G	G	G		Lean (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
3	Little Leaf Linden	*Tilia cordata*	23	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
4	Little Leaf Linden	*Tilia cordata*	24	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
5	Little Leaf Linden	*Tilia cordata*	23	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
6	Little Leaf Linden	*Tilia cordata*	25	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
7	Little Leaf Linden	*Tilia cordata*	25	G	G	G		Lean (L), pruning wounds (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
8	Little Leaf Linden	*Tilia cordata*	24	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
9	Little Leaf Linden	*Tilia cordata*	23	F	F	F		Frost crack (M), lean (L),			Conflicts with proposed works including grading and proposed development within minimum tree protection zone.

10	Little Leaf Linden	*Tilia cordata*	22	P	P	P		Lost leader, epicormic branching (H)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
11	Little Leaf Linden	*Tilia cordata*	24	G	G	G		Epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
12	Little Leaf Linden	*Tilia cordata*	23	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
13	Little Leaf Linden	*Tilia cordata*	21	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
14	Little Leaf Linden	*Tilia cordata*	23	G	G	G		Frost crack (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
15	Little Leaf Linden	*Tilia cordata*	23	G	G	G		Epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
16	Little Leaf Linden	*Tilia cordata*	25	F	G	G		Frost crack (M), epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
17	Little Leaf Linden	*Tilia cordata*	23	F	G	G		Frost crack (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
18	Little Leaf Linden	*Tilia cordata*	23	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
19	Little Leaf Linden	*Tilia cordata*	23	G	G	G	15			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
20	Little Leaf Linden	*Tilia cordata*	18	G	G	F	30	Epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.

21	Little Leaf Linden	*Tilia cordata*	26	G	G	F	30	Epicormic branching (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
22	Little Leaf Linden	*Tilia cordata*	25	F	G	G		Open wound (at base)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
23	Little Leaf Linden	*Tilia cordata*	25	G	G	G		Epicormic branching (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
24	White Spruce	*Picea glauca*	21	G	G	G		Multi-stem at 2 m		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
25	Silver Maple	*Acer saccharinum*	74	G	G	G		Lean (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
26	Austrian Pine	*Pinus nigra*	23	F	G	G		Girdled by wire		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
27	White Ash	*Fraxinus americana*	22	F	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
28	White Poplar	*Populus alba*	dead	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
29	White Poplar	*Populus alba*	58	P	P	P	85			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
30	White Ash	*Fraxinus americana*	36	F	G	G	30			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
31	White Ash	*Fraxinus americana*	35	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.

32	White Poplar	*Populus alba*	69	F	F	F	60			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
33	White Ash	*Fraxinus americana*	37	F	G	G	30			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
34	White Ash	*Fraxinus americana*	85	F	G	G	30	Epicormic branching (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
35	Bird Cherry	*Prunus avium*	15-25	F	P	P		Multi-stem		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
36	Manitoba Maple	*Acer negundo*	~100	G	G	G		3 stems at breast height, canker, epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
37	Little Leaf Linden	*Tilia cordata*	54	G	G	G		Pruning wounds (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
38	Little Leaf Linden	*Tilia cordata*	54	G	G	G	20			x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
39	Little Leaf Linden	*Tilia cordata*	40	G	G	F	50	Epicormic branching (L)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
40	Little Leaf Linden	*Tilia cordata*	50	P	P	P	90	Lean (L), epicormic branching (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
41	Little Leaf Linden	*Tilia cordata*	48	F	G	G		Girdling roots (H), epicormic branching (M)		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
42	Little Leaf Linden	*Tilia cordata*	47	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.

43	Little Leaf Linden	*Tilia cordata*	35	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
44	Manitoba Maple	*Acer negundo*	37	G	G	G				x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.
P45	Manitoba Maple Hedgerow	*Acer negundo*	12; 10; 8,10; 15; 17; 16; 15; 8, 14	G	G	G		8 trees in good health, 2 with co-dominant stems		x	Conflicts with proposed works including grading and proposed development within minimum tree protection zone.

LEGEND

DBH	Diameter at Breast Height (cm)
	Tree
TPZ	Protection
	Zone
GOOD	Dead branches less than 10%; good compartmentalization on any wounds, no structural defects
FAIR	10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.
POOR	More than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.
DEAD	Tree shows no signs of life
Rating	(L) = light; (M) = moderate; (H) = heavy

4.4. Breeding Bird Survey

Breeding bird surveys were undertaken on two separate dates, June 7 and June 23, 2016, and identified the following species found in **Table 8 Breeding Bird Survey Results** below. Of the 42 summer resident bird species (33 with some breeding evidence), the following species of conservation concern were observed during field surveys.

2 species are listed as Species at Risk (SAR):

- Barn Swallow – Threatened (COSEWIC & COSSARO)
- Bank Swallow – Threatened (COSEWIC & COSSARO)

Table 8 Breeding Bird Survey Results

SPECIES		Breeding Level	COSSARO/ COSEWIC / NHIC	Comment
Canada Goose	2	H		
Mallard	6	H		offshore
Double-crested Cormorant	60	X		offshore
Turkey Vulture	5	X		over site
Red-tailed Hawk	1	X		
Killdeer	4	NE		
Spotted Sandpiper	3	FY		
Ring-billed Gull	45	X		offshore
Herring Gull	20	X		offshore
Caspian Tern	4	X	NHIC S3	offshore
Common Tern	15	X		offshore
Rock Pigeon	6	X		
Mourning Dove	4	T		
Ruby-throated Hummingbird	1	H		
Northern Flicker	1	H		
Great Crested Flycatcher	1	S		
Eastern Kingbird	2	T		
Warbling Vireo	1	T		
Blue Jay	1	H		
American Crow	3	FY		

SPECIES		Breeding Level	COSSARO/ COSEWIC / NHIC	Comment
Tree Swallow	4	T		
Barn Swallow	12	X	THR / THR	No suitable nesting habitat present
Bank Swallow	7	H	THR / THR	
Northern Rough-winged Swallow	9	T		
American Robin	6	FY		
Gray Catbird	2	A		
European Starling	15	FY		
Cedar Waxwing	2	H		
Yellow Warbler	2	T		
Common Yellowthroat	2	A		
Chipping Sparrow	1	S		
Song Sparrow	5	FY		
Swamp Sparrow	1	T		
Savannah Sparrow	1	CF		
Northern Cardinal	2	P		
Red-winged Blackbird	7	FY		
Common Grackle	10	FY		
Brown-headed Cowbird	2	P		
Baltimore Oriole	2	P		
American Goldfinch	4	T		
House Finch	2	S		
House Sparrow	8	FY		

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.

CONFIRMED
DD-distraction display or injury feigning.
NU-used nest or eggshell found.
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.

N-nest building or excavation of nest hole.

4.4.1. Species at Risk Breeding Bird Discussion

Breeding Birds identified as Species at Risk for the Subject Property included Barn Swallow and Bank Swallow. The Subject Property does not provide suitable nesting for these species.

Twelve Barn Swallow were observed aerial foraging over the site, as well as foraging offshore. Although there is a single wooden bridge structure onsite, it is completely overgrown with vegetation and does not provide suitable nesting habitat for this species. The rest of the property does not provide the necessary natural or anthropogenic situations for nesting Barn Swallow. This species should be considered a foraging visitant only.

Bird surveys also identified seven Bank Swallow observed aerial foraging over the property, primarily along the shoreline. Although the immediate shoreline does posses somewhat suitable nesting habitat for this species (exposed cliffs of suitable grade), it appears these slopes are hard clay and likely unsuitable for tunnel burrowing, for nesting. An extensive examination of these slopes found no entry holes or other openings; providing evidence that Bank Swallow are not nesting onsite. This species should be considered a foraging visitant only.

4.5. Watercourse and Fisheries Characterization

The watercourse on site receives water from a 106 ha upstream catchment made up of the QEW, retail and industrial lands and a railway corridor. Based on a review of the NPCA mapping, it does not contain a Regulated Floodplain. The channel is deeply incised with very steep sloped sides which are vegetated with species typical of highly disturbed sites. The channel has been straightened and does not support a natural meandering planform. The channel does not support direct fish habitat due to the upstream enclosure of the channel under the QEW, and the barrier present from a large pile of boulders at its outlet to Lake Ontario. Flow is believed to be intermittent based on the minimal flow observed in the channel and its small upstream catchment area. See **Photograph 1** below.

Photograph 1 Channel Outlet at Lake Ontario

4.5.1. Physical Characteristics

Analysis of physical channel properties was confined to the upper section of channel in **Figure 4**. The lower section was not included because it exhibits a consistent widening and deepening along its length, which would make averaged parameters unrepresentative.

Table 9 Summary of Upper Channel Parameters

Channel	Top Width (m)	Bottom Width (m)	Bank Height (m)	Slope (m/m)
Main	14.418	4.386	1.302	0.0177
Trib. 1	-	2.188	-	0.0127
Trib. 2	6.434	1.236	0.738	0.0314
Trib. 3	2.564	0.968	0.606	0.0043

The lower channel is broadly characterized as having banks starting at 10 m wide and expanding to 20 m where it meets Lake Ontario. Bank height ranges from 3 to 5 m similarly.

4.5.2. Geomorphic Assessment

The banks of the channel valley were observed to be heavily vegetated with steep slopes. Medium-sized bushes and small trees were observed to be firmly rooted along the entire reach. In the upstream section, as seen below in **Photograph 2**, dense vegetation including grasses and cattails were observed, further indicating that the channel is overly wide and deep for the flow it receives. A small low-flow channel was observed to meander between the bottoms of each bank. The sediment in the upstream section was observed to be mostly composed of silt, with debris jams interspersed.

Photograph 2 Typical view of upper section

The downstream section was found to contain dense vegetation including vines and fully matured trees. The banks were observed to steadily widen and deepen up to the Lake Ontario outlet. Several debris jams were

found just upstream of significant headcuts, with deep silty pools upstream. The sediment throughout the downstream section was found to be entirely composed of silt.

Photograph 3 Typical view of lower section

4.5.3. Hydraulic Analysis

Simple hydraulic analysis was conducted on XS 1 and XS 2. The results are summarized in **Table 10** below.

Table 10 Hydraulic Data

XS	Q (cms)	Stage (m)	Velocity (m/s)	Shear (Pa)		
				Bed	Bank	
1	1	45.81	0.91	29.44	22.08	
	5	46.46	1.41	57.33	43	
	9	46.81	1.63	61.67	46.25	*Bankfull
	17	47.23	1.49	53.5	40.13	
	25	47.42	1.64	61.31	45.98	
2	1	45.18	0.98	32.94	24.71	
	5	45.91	1.45	59.38	44.53	
	10	46.37	1.71	76	57	*Bankfull
	15	46.7	1.88	75.84	56.88	
	22	46.98	1.78	57.41	43.06	

The hydraulic analysis suggests that bankfull discharge is around 9-10 cubic metres per second (cms) the watercourse valley/gully, as indicated by the shear stress inflection point at this discharge. However, this value is based solely on the geometry of the channel. The 100-year peak flow rate was determined by Odan/Detech Group in 2005 to be 6.04 cms. This indicates that the channel is deeply incised within its valley/gully flood flows are contained within it.

4.6. Lake Ontario Shoreline Characterization

Located along the northern limit of the Subject Property, the Lake Ontario shoreline is a significant landform feature consisting of a high till bank ranging in elevation at top of bank from 79.1 msl to 83.3 msl with an elevation range for the toe of bank between 74.9 msl and 76.6 msl, as per the Shoreline Hazard Assessment performed by Shoreplan Engineering Limited, 2016. The slope of bank, consisting of vegetation nearer the top and exposed soil nearer the toe, ranges from 2h:1v to steeper than 1h:1v whereas the nearshore slope, consisting of till with sand, gravel and concrete debris, is in the range of 10h:1v to 15h:1v (Shoreplan Engineering Limited, 2016).

Natural Hazard Polices of the PPS were used assess the natural hazards of the site. The assessment concluded that the sand and gravel deposits making up the beach do not meet the criteria of a dynamic beach. The existing banks elevations, previously described, will contain the 100-year water level with uprush and thus the flood hazard limit is located at a point on the existing bank, not above it. Therefore, the report focused its hazard assessment on the erosion hazard and found that the concrete rubble and debris obscures the natural toe of the bank and that its elevation varies more than expected for a natural toe of bank. An erosion allowance of 76 m from the assumed natural toe of bank and an additional stable slope allowance of 23.4 m results in a total limit of 99.4 m based on a 3h:1v stable slope value. Shoreplan recommends using a 2h:1v slope, resulting in a hazard limit of 91.6m.

4.7. Incidental Wildlife

A visual and aural assessment of the presence and abundance of wildlife for the Subject Property was conducted during the spring and summer 2016 field investigations. Assessments were conducted mid-day under no cloud cover with little wind (1 on the Beaufort scale). Results of the assessment are provided below.

Table 11 Incidental Wildlife Summary

Scientific Name	Common Name	Evidence	Abundance	Comments
Agelaius phoeniceus	Red-winged Blackbird	Observed/ Calling	>20	
Branta canadensis	Canada Goose	Fecal matter	Noted in sections of subject property.	No individuals observed.
Buteo jamaicensis	Red-tailed Hawk	Overhead	1 individual noted	Flight displays with Red-winged Blackbird.
Carduelis tristis	American Goldfinch	Observed	3	

Scientific Name	Common Name	Evidence	Abundance	Comments
Corvus brachyrhynchos	American Crow	Observed	3	
Cyanocitta cristata	Blue Jay	Observed	2	
Dumetella carolinensis	Gray Catbird	Observed	~2	
Picoides pubescens	Downy Woodpecker	Observed	1 individual noted	Foraging on Willow standing snag.
Quiscalus quiscula	Common Grackle	Observed	<10	
Spizella pusilla	Field Sparrow	Observed/ Calling		
Turdus migratorius	American Robin	Observed/ Calling	2	Flight displays with American Crow.
Zenaida macroura	Mourning Dove	Observed/ Calling	2	
Marmota monax	Groundhog	Observed	1	Den observed near front of existing building.
Procyon lotor	Raccoon			
Canis latrans	Coyote	Hair & Scat		
Didelphis virginiana	Virginia Oppussum	Dead		
Sylvilagus floridanus	Eastern Cottontail			
Microtus pennsylvanicus	Meadow Vole	Under board		
Peromyscus maniculatus	Deer Mouse	Under board		

5. Assessment of Significance and Sensitivities

A review of secondary sources and information obtained from field investigations was evaluated to determine significance and sensitivity of features and functions associated with the Subject Property. Key sources and criteria for determining significance of features and functions was evaluated according to a number of guiding documents, including the PPS (2014), Town of Grimsby OP (2018)

5.1. Significant Habitat for Threatened and Endangered Species

No Significant Habitat for Threatened and Endangered Species was identified for the Subject Property. A list of Species at Risk in Ontario provided by the MNRF and data distributed by the NHIC was reviewed and screened for the purposes of this report (Refer to **Appendix C** for the SAR Screening Table). The table includes the habitat requirements for SAR, a description of potential habitat in the study area and a determination if the SAR and/or its habitat have the potential to occur.

Based on the results of the SAR screenings and the observations made in field no SAR, except the foraging barn and bank swallows, or SAR habitat have been identified on the Subject Property.

5.2. Significant Woodlands

The Town of Grimsby OP, per section 3.1.1.7 describes Significant Woodlands as "features that meet one or more of the following criteria":

a) Contain threatened or endangered species of concern;
b) In size, be equal to or greater than:
    a. 2 hectares, if located within or overlapping the Urban Settlement Area Boundary;
    b. 4 hectares, if located outside the Urban Settlement Area and north of the Niagara Escarpment;
    c. 10 hectares if located outside of the Urban Settlement Area and south of the Escarpment.
c) Contain interior woodland habitat at least 100 metres in from the woodland boundaries;
d) Contain older growth forest and be 2 hectares or greater in area;
e) Overlap or contain one or more of the other significant natural features which comprise an Environmental Protection Area; or
f) Abut or be crossed by a watercourse or water body and be 2 or more hectares in area.

Criteria established by the Town was derived from policies and definitions set out by the Region and PPS. Woodlands identified on the Subject Property are not identified as Significant Woodlands and do not meet the criteria set out within the Town's OP.

5.3. Significant Wetlands

Provincially Significant Wetlands are defined by the Town of Grimsby's OP as "a wetland identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time. The are no PSW's or additional significant wetlands (unevaluated or evaluated) located on or adjacent the Subject Property.

5.4. Significant Wildlife Habitat

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 Subject Property. The document groups wildlife habitat into four main categories:

- Seasonal concentration areas of animals;

- Rare vegetation communities or specialized habitats for wildlife;
- Habitat for species of conservation concern; and,
- Animal movement corridors.

The screening, found in **Table 12**, consisted of a review of the ELC codes and habitat criteria for candidate SWH. Any potential SWH on the Subject Property was noted and a rationale was provided. In the case of potential SWH, Confirmed Defining Criteria Studies were reviewed and recommendations for further studies can be found in the following Assessment Section.

Table 12 SWH Screening

Wildlife Habitat	Candidate SWH		Potential on Site	Rationale
	ELC Ecosite Codes	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 habitat features on site.
Waterfowl Stopover and Staging Areas (Aquatic)	MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, SWD1, SWD2, SWD3, SWD4, SWD5, SWD6, 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 habitat features on site.
Shorebird Migratory Stopover Area	BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, 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.	Yes	The Subject Property is located adjacent to the Lake Ontario Shoreline. Breeding Bird surveys and a review of eBirds database do not indicate the adjacent shoreline is active for migratory stopover.
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	No habitat features on site.
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 habitat features on site.
Bat Maternity Colonies	All Ecosites in: FOD, FOM, SWD, SWM.	Maternity colonies can be found in tree cavities, vegetation and often in building. *Buildings 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 dhb) 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.	No	No habitat features on site.
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 must 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 SWH.	No	No habitat features identified on the Subject Property.
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 habitat features identified on the Subject Property.

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	The eroding banks at the Subject Property have been assessed by the Birding expert and do not show evidence of bank nesting. See Section 4.4.1.
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 habitat features on site.
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). 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 habitat features on site.
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.	No	No habitat features on site.
Land bird 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, 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.	No	No habitat features on site.
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 woodlot >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 habitat features on site.
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 habitat features on site.
Sand Barren	SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (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 habitat features on site.

Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2, *Five Alvar Indicator Species:* 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum	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 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 animal's species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover.	No	No habitat features on site.
Old Growth Forest	FOD FOC FOM SWD SWC SWM	Woodland area is >0.5ha • Characterized by heavy mortality or turnover of overstory 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 habitat features on site.
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 habitat features on site.
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 not considered to be SWH.	No	No habitat features on site.
Other Rare Vegetation Communities	See the Significant Wildlife Habitat Technical Guide (OMNRF, 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 habitat features on site.
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	No habitat features on site.
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 habitat features on site.

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 habitat features on site.
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	No habitat features on site.
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	No habitat features on site.
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 used due to reduced risk to migrating amphibians.	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 habitat features on site.
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 habitat features on site.
Woodland Area-Sensitive Bird Breeding Habitat	All Ecosites within: 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 habitat features on site.
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)				
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 habitat features on site.

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 habitat features on site.
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 row-cropping, 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.	No	No habitat features on site.
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 habitat features on site.
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	No	No habitat features on site.
Animal Movement Corridors				
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.	N/A	
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.

Based on the results of the SWH habitat screening and the observations made during field studies of the Subject Property, Shorebird Migratory Stopover Area SWH was brought forward for site assessment. The habitat criteria include beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. It also includes Great Lakes coastal shorelines but does not include sewage treatment ponds.

The Subject Property is located adjacent to the Lake Ontario shoreline and contains compatible ELC ecosite codes MAMM1-12 as well as MEMM4 and SHOM1. An analysis of the eBird open source database, which provides a lists of bird sightings from hundreds of birds spanning many years, concluded that the Subject Property and adjacent shoreline is not a preferred stopover, likely due to the degraded site conditions and its proximity to the Fifty Point landform feature, a property of the Hamilton Conservation Authority, that is highly active. As a result, the Subject Property does not contain Shoreline Migratory Stopover Area SWH and no mitigation measures are recommended.

6. Constraints and Opportunities

A constraints and opportunities analysis was used to evaluated the existing ecological features and functions and identify any constraints or limitations to the proposed development. In addition to the identification of constraints, opportunities are identified in which mitigation or restoration measures may be implemented to enhance the existing natural environment.

6.1. Natural Heritage Constraints and Buffers

6.1.1. Natural Heritage Constraints

Secondary source information in conjunction with field investigations conducted for the Subject Property was used to identify environmental constraints such as watercourses, woodlands and potential significant wildlife habitat and SAR.

6.1.1.1. Shoreline

The shoreline of Lake Ontario resides along the northern limit of the Subject Property and is identified as a natural hazard and Shoreline Flood and Erosion zone regulated by NPCA. These areas are prone to erosion and flooding, therefore are identified as a constraint to development. As a result, a shoreline protection wall is proposed in conjunction with the proposed development. The proposed development will be required to be situated outside the limits and associated setbacks of any shoreline natural hazards.

Niagara Region identifies Lake Ontario as critical fish habitat, as defined by the MNRF, and requires a 30 m setback from the shoreline top-of-bank.

6.1.1.2. Watercourse

A watercourse regulated under NPCA permit review, subject to Ontario Regulation 155/06 Niagara Peninsula Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses bisects the Subject Property and is proposed to be re-aligned with a 7 m setback from top of bank. The watercourse and associated setback pose a constraint to development and will be used to define the limit of development.

The Town of Grimsby requires a 15 m natural hazards setback from the watercourse, unless a reduced buffer can be justified. The Niagara Region requires a 15 m fisheries setback from Category 3 fish habitat (indirect fish habitat) unless a reduced buffer can be justified.

6.1.1.3. Woodland and Treed Areas

The Subject Property supports a number of small, fragmented woodland areas, hedgerows and individual trees. These features are composed of native and non-native species commonly found within an urban setting and exhibit signs of degradation as a result. These features are not identified as significant per applicable environmental policies and regulations but where protection is feasible, integration of these features into the proposed development plan is recommended.

6.1.2. Setbacks

The Vegetation Protection Zones (VPZ) for the shoreline of Lake Ontario is a 30 metre buffer from stable top of bank consisting of self-sustaining naturalized vegetation and the proposed community public trail. Landscaped trees and shrubs and additional amenities such as benches and lighting are proposed along the southside of the trail. The vegetation protection zone will function to buffer the Lake Ontario shoreline from the proposed works and will provide habitat enhancements on the site compared to the existing conditions.

The Niagara Region, Town of Grimsby and NPCA all have setback requirements for the watercourse. A 7 m top-of-bank buffer is proposed for the stream corridor as stipulated by the NPCA based on their assessment of the watercourse on July 22, 2015. A full discussion regarding the proposed 7 m setback is provided in Section 7.1.1.

6.2. Opportunities

Opportunities to enhance and restore existing natural heritage features are proposed within the 30 metre VPZ from the stable top of bank and the provision of open space recreation through a trail network along the shoreline and within the stream corridor. Disturbance within this area as a result of historical land use has resulted in impacts to the ecological functions associated with the shoreline and watercourse feature.

The proposed development represents an opportunity to manage and restore the shoreline and watercourse through the installation of native plant species and wildlife habitat structures reflective of the local area. Native plantings will serve to increase biodiversity, enhance habitat for native wildlife species and provide a corridor function for species utilizing the Lake Ontario shoreline, particularly migrating bird populations.

7. Development Proposal

The proposed works includes the development of a mixed-use high-density community for commercial and residential use. See **Figure 5** for the proposed Site Plan. The community will include areas of open space, parking, interior roadways and sidewalks. A centrally located hybrid bioswale is proposed in the place of the existing watercourse feature within the internal right of way and the proposed open space corridor.

A public, accessible trail will be located along the shoreline providing connectivity with the Winston Road Neighborhood community and trail to the west. The north side of the trail will be restored to a natural,

shoreline habitat providing wind and snow break, habitat and a wildlife movement corridor. The south side of the trail will be maintained as an open space for residents. A bike trail is proposed along the southern property limit running parallel to North Service Road to provide additional access to the surrounding community. A trail is proposed within the stream corridor which will connect with the public shoreline trail network.

The proposed works requires the construction of a shoreline protection structure along the shoreline of Lake Ontario to ensure the risk of flooding and erosion to public safety is controlled.

7.1. Watercourse Realignment

The existing channel is located within a deeply incised channel that is completely disconnected from its floodplain. As described in Section 4.5, the channel is in a degraded condition and is not geomorphically stable. Through the redevelopment of the Subject Property the channel will be realigned into a more functionally stable system.

The channel bed will be raised to decrease the overall bed slope from and an average of approximately 2% down to 1 to 1.5%. The channel will have a genteelly meandering low flow channel imbedded within a 7.5 m wide floodplain. The valley is on average 1.5 m in depth with 3:1 valley side slopes. A 7 m buffer from the valley top-of-bank will be provided. **Figure 6** shows a typical stream corridor cross section. The overall watercourse corridor, including setbacks is 25.25 m in width.

The dimensions of the low flow channel will be determined at the detailed design stage. In general, the low flow channel will be designed with a bankfull capacity using the 1.01-year return period flow to ensure a good floodplain connection. The floodplain, valley side slopes and top-of-bank setback will be naturalized through native plantings reflective of the local area.

The long profile of the channel will include a number of 'steps' formed from large stone. These steps will act as grade control points and are needed to maintain the stream bed at a maximum slope of 1.5%. By maintaining a gently sloping channel bed, it will reduce flow velocity, which in turn reduces steam power and the erosive forces working on the channel bed and banks. Additionally, the steps will act to dissipate flow energy, helping to reduce erosive forces working on the system. **Figure 7** shows an approximation of the long profile of the channel with the grade control steps.

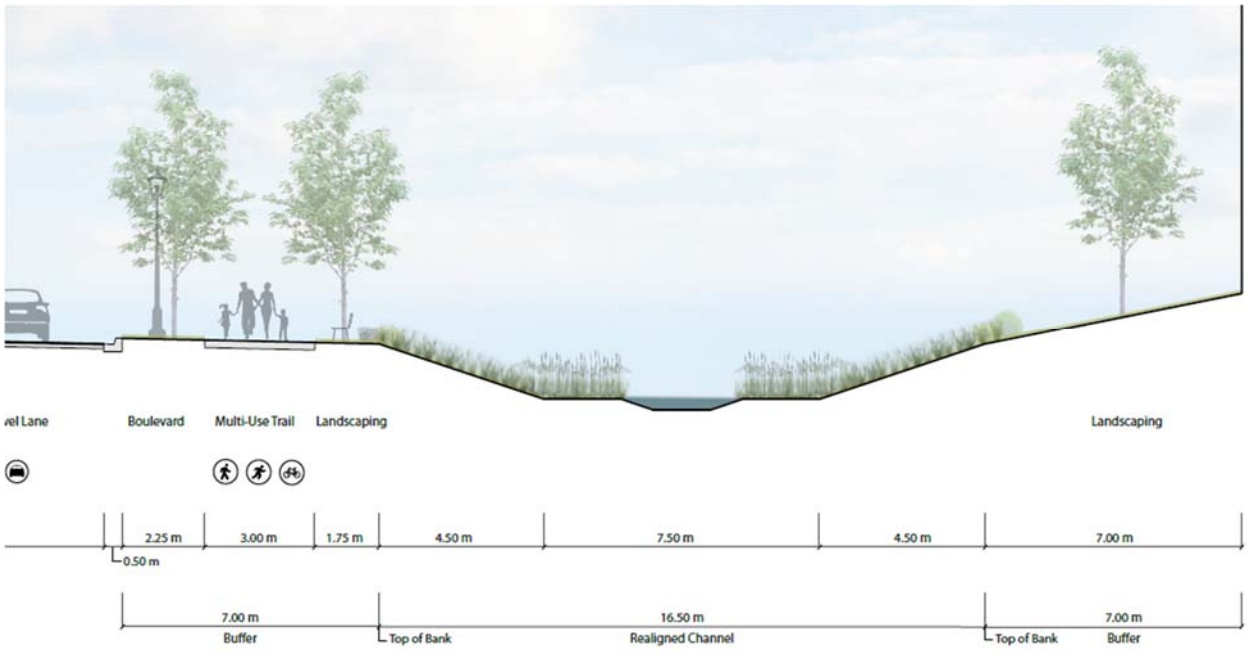

Figure 6 Typical watercourse cross-section, showing low flow channel, floodplain, and valley setbacks.

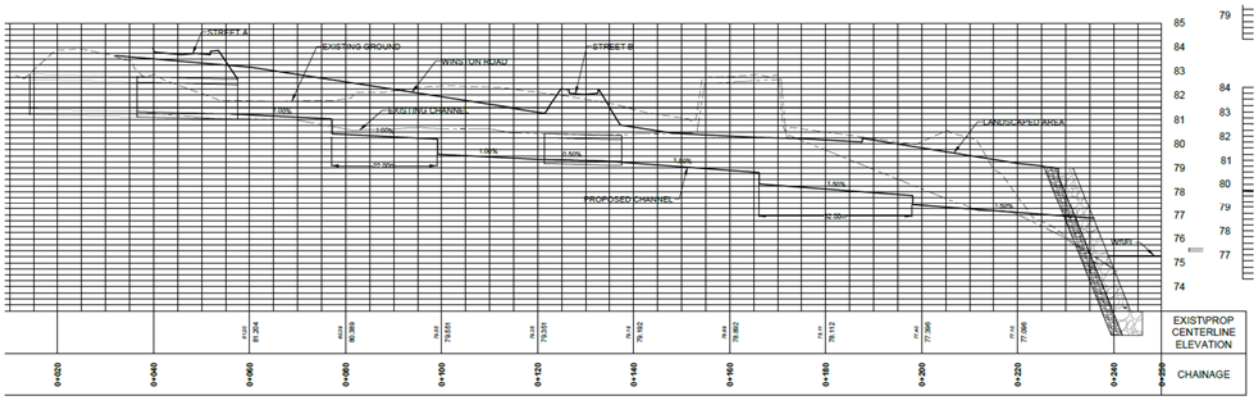

Figure 7 Long profile of the proposed realigned channel.

Shoreline protection is provided along the entire shoreline of the Losani Fifth Wheel Development, which includes the confluence of the watercourse with Lake Ontario. Due raising the bed elevation of the realigned creek, it results in the channel bed being higher than the long-term average high-water level. This requires a cascading channel (steps) for the last 15 m of channel before entering the lake. The cascading channel will be constructed of large limestone blocks, like those used in the shoreline protection, set as a series of steps.

7.1.1. Channel Setbacks

A 7 m top-of-bank buffer is proposed for the stream corridor as stipulated by the NPCA based on their assessment of the watercourse on July 22, 2015. NPCA policies require hazard setbacks which are intended to protect people and property from natural hazards. Typically, the NPCA requires that new habitable buildings and additions maintain a 7.5 m setback. The 7 m setback proposed in this creek realignment is consistent with a May 24, 2019 letter from the NPCA which request of a 7 m setback for all areas where the

bank height is 4 meters or less. 7 m represents only a slight reduction from the typical 7.5 m setback from the stable top-of-bank.

Additional setback requirements include a 15 m natural hazard setback for the City Grimsby and a 15 m fish habitat setback for Category 3 fish habitat as per Niagara Region. A reduced buffer can be considered for both setbacks if the reduced setback can be justified.

Justification for a 7 m setback from the watercourse stable top-of-bank is provided below:

- The bank heights for the stream corridor are approximately 1.5 m for its entire length, less than the 3 m maximum bank height noted by the NPCA for a 7 m setback.
- The stream corridor valley has been entirely reconstructed and re-engineered. The stream valley corridor is shallow with a bank height of only 1.5 m with 3:1 side slopes. As per the geotechnical assessment of this stream valley corridor, completed by Soil-Mat, the 3:1 side slopes are considered stable and not a geotechnical risk.
- The corridor is not being designed to be a wildlife movement corridor as it terminates at the QEW, and it is not recommended to encourage animals towards this major highway. As a result, the width of the corridor does not need to consider wildlife movement, which would typically require a wider corridor.
- It is a small channel, therefore the riparian plantings within the approximate 11 m from the edge of the low flow channel will provide ample rooting zone for bank stabilization.
- The watercourse is not considered direct fish habitat and is located immediately upstream of Lake Ontario. As a result of its landscape position, and its short length through the Subject Property, the primary and arguably the only indirect fish habitat function that the channel will provide to the downstream fish habitat of Lake Ontario is flow, which will not be influence by setback width. Fish habitat setbacks are designed to provide direct protection to fish bearing waters by placing a physical separation between adjacent landuses and a watercourse. This separation acts to provide nutrient uptake, provide shading for thermal regulation, provides bank stabilization and organic (allochthonous) inputs as a source of food to downstream organisms. In this case, the immediate downstream receiving system is Lake Ontario, so a number of the benefits provided by a wider setback are not as important. For example, organic input is important in a river system in which it is transferred downstream, providing energy (food) for biological systems, as described in the River Continuum Theory; however in this case, organic inputs from the site are not needed to support downstream organisms as the inputs into Lake Ontario are of very minor importance. Nutrient uptake is an important function of a setback. In this case, due to the type of development (high density), there will be relatively few nutrients inputs, such as fertilizers, being generated from the site, and the 7 m setback plus the stream valley will be sufficient to absorb nutrients entering the system. There are no fish utilizing the watercourse, as a result shading is not critical. That being said, the proposed plantings will be sufficient to provide shading to the watercourse due to its small size. Combining all these factors, the 7 m setback is sufficient to protect the indirect fish habitat functions of the watercourse.
- The channel will be designed to be stable through the use of grade control structures which will provide protection up to the valley top-of-bank. Bed and bank substrates will be sized to be

stable up to the Regional Flood event with a factor of safety. As a result, there is little concern that lateral or vertical erosion of the channel will occur and put the adjacent infrastructure at risk.
- The channel width is consistent with the corridor width south of the QEW within the industrial park.

7.2. Functional Servicing and Stormwater Management

A Functional Servicing and Stormwater Management Report was prepared by R.J. Burnside and Associates Limited, October 2019 (Burnside, 2019). As per this functional servicing report [FSR], existing drainage conditions consist of an unnamed drainage ditch located in the center of the property which drains from south to north directly into Lake Ontario. Flow in this watercourse is conveyed under the Queen Elizabeth Way and North Service Road from an *external catchment, approximately 105.6ha in area, with a 100-year peak discharge of 6.04 m^3/s* (Burnside 2018, via Odan/Detech Group, 2005).

Outlets of the storm sewer network include two twin 1350mm diameter sewers to be located at the north end of the open space corridor (to convey 100-year event flows and the minor system drainage) and a 600 mm diameter sewer to be located at the western boundary (used to convey minor system drainage) as per the FSR.

Quantity controls are not required on-site due to the location of the Subject Property being directly adjacent to Lake Ontario. To ensure quality control of stormwater before conveyance to Lake Ontario "Enhanced Level Control", as defined by the MOECC guidelines, in the form of four (4) oil and grit separators are to be installed to produce a removal rate of 80 % of total suspended solids. An additional quality control feature, in the form of a bioswale, will *provide a minimum total suspended soils removal efficiency of 80 %* for storm water runoff originating from the adjacent drainage area (Burnside, 2018). Rooftop run off will not be processed by the oil and grit separators and rear yards located within the northern catchment area will continue to sheet drain, uncontrolled, as permitted, per the FSR.

Wastewater will be conveyed through a local sewer network which will outlet into the existing 525 mm trunk sewer located on North Service Road. The wastewater sewers will be designed and constructed to the appropriate authority's standards and will dictate the grading of the property to ensure that all local units shall be conveyed via gravity to the trunk.

The proposed water distribution system will be designed to the standards of the appropriate authorities. The watermain system is to consist of connections at Winston Road and the central access road to the local 300 mm water main located along North Service Road.

8. Impact Assessment

Impacts to the various natural heritage features associated with and adjacent to the Subject Property were considered in the impact analysis. **Table 13** presents the natural heritage components which were considered in this assessment, the proposed activity associated with that component, potential short term and long-term impacts and 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.

Table 13 Impact Summary Table

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.	Impacts from dust to the surrounding landscape should be minimal. No residual effects 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.	Noise impacts to wildlife present may occur, however due to the Subject Property's close proximity to existing transportation routes and development, much of the landscape is already impacted by noise. As the majority of the wildlife found within the local landscape is tolerant to disturbances, they are anticipated to return to the area once construction activities end. No residual effects expected.
Construction Activity	Watercourse and downstream outlet to Lake Ontario, Shoreline Protection construction	Grading, Servicing & Development	Sediment loading into waterbodies from construction activity near water	Implementation of Sediment and Erosion Control Measures, as recommended by Burnside, 2018.	With the implementation and maintenance of proper sediment and erosion controls during construction impacts to the adjacent lands and water bodies should be minimal. No residual effects expected.
Construction Activity	Wildlife Habitat	Site Clearing/Tree removal	Impacts to nests and nesting birds.	Undertake vegetation and tree clearing between August and March per the Migratory Birds Convention Act. If clearing is to occur during the nesting season, a nest survey should be completed by a qualified bird biologist to identify any nest which are not to be disturbed until the young have fledged.	Implementation of applicable mitigation measures is expected to reduce or eliminate impacts to migratory and breeding birds during the construction period. No residual effects 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.	Minimal residual effects expected.
Surface Water	Watercourse, designated	Enclosure of watercourse feature	Loss of greenspace, wildlife habitat and fish habitat.	• Create a bioswale in the same location and alignment of existing watercourse; • Bioswale to be planted with native species;	The absence of fish habitat, the level of degradation in the channel and the close proximity to Lake Ontario make this channel

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
	Core Natural Area per OP			• Some of the site surface water will directed to the bioswale, providing polishing functions to stormwater. • Watercourse flows are maintained across the property, discharging into Lake Ontario in the existing location;	primarily a conveyance feature and enclosure of the watercourse is not considered a significant impact because: • Native plantings will continue to provide habitat to for local wildlife; • Bioswale to remain as an open space corridor, maintaining view-scapes to Lake Ontario; • The channel does not provide direct fish habitat to Lake Ontario, but it provides indirect habitat through flow contributions, which will not be altered by the proposed development; • The enclosure of the channel will greatly reduce the hazard potential of the steep valley/gully associated with the watercourse. No residual effects expected.
Shoreline – Fish Habitat	Dynamic Beach Ecosystem, Landform feature, Nearshore Fish Habitat	Shoreline Protection Structure	Loss of nearshore fish habitat in the Lake Ontario.	A 30-metre Vegetation Protection Zone from stable to of slope. Shoreline protection feature will reduce shoreline erosion and eliminate construction rubble along existing slope. No loss of existing beach is proposed as the shoreline protection does not extend beyond the existing toe-of-slope. Beach will be maintained in its current size and elevation.	The proposed design does not result in the loss of the existing beach and does not extend into Lake Ontario beyond the High Water Mark. Footings for the shoreline protection extend below the High Water Mark, but they will be buried below the beach and ultimately will not alter the nearshore environment. As a result, no impacts to nearshore fish habitat are anticipated from the construction of the shoreline protection. No residual effects expected.
Vegetation	Subject Property Vegetation	Grading, Servicing and Development	The proposed development will require the removal of all vegetation communities and trees from the Subject Property to accommodate the proposed development.	Restoration planting within the VPZ will serve to replace the existing vegetation and its function. Tree clearing to comply with the Migratory Birds Convention Act.	Plant species identified for the Subject Property are common and secure within Ontario and Canada and many are identified as non-native and/or invasive species. Residual effects of vegetation removal are anticipated to be minor due to their cultural influence. In time, plantings proposed within the VPZ will provide urban tolerant wildlife and migratory song bird habitat functions. The 30 m VPZ will provide a larger vegetated community adjacent to Lake Ontario than

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
					currently exists. This is a net gain for the Lake Ontario shoreline. Minimal long-term residual impacts are anticipated due to the restoration efforts recommended.
Wildlife	Birds	Grading, Servicing and Development, Construction of Shoreline Protection Structure	Removal of all vegetation communities in which birds were observed breeding.	Undertake vegetation and tree clearing between August and March per the Migratory Birds Convention Act. Any tree clearing proposed within the migratory song bird window will require nest screening by a qualified biologist. Trees supporting song bird nests cannot be disturbed until the young have fledge from the nest. The Subject Property is located nearby a much more heavily frequented bird stopover, Fifty Point.	Breeding bird surveys conducted for the Subject Property identified predominantly urban tolerant species with the exception of foraging Barn Swallow and Bank Swallow. Barn Swallow and Bank Swallow were identified as foraging and no nests or appropriate habitat were identified on the Subject Property. Remaining species identified included no area-sensitive species or species of provincial or federal at-risk designations. The VPZ along the Lake Ontario shoreline and the bioswale feature will provide nesting habitat for birds on the site. It is anticipated that the VPZ will equally replace the existing nesting functions of the property. Overall, as a result of previous and surrounding land use, a change in breeding bird use for the property is considered to be minimal and low in magnitude. As a result, only a minimal residual impact is anticipated on the bird community.
Species at Risk	Barn Swallow, Bank Swallow	Grading, Servicing and Development	Vegetation removal on the subject property reducing insect production.	Opportunities to provide nesting structures for Barn Swallow are recommended. Incorporation of one nesting structure containing 10 nesting cups installed is proposed within the public trail/shoreline restoration area.	Barn Swallow and Bank Swallow were identified during the BBS as a forging visitant. Both species feed on flying insects. The Subject Property currently does not support many natural habitats which will produce flying insects such as wetlands, ponds or watercourses with riffles. The majority of the flying insects found within the Subject Property will come from Lake Ontario, which will not change due to the proposed development. Therefore, by creating a VPZ adjacent to the Lake, foraging habitat for barn and bank swallow will be maintained.

Category	Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
					The Subject Property does not contain the necessary anthropogenic or natural situations required for nesting for these species. By providing a barn swallow nesting structure within the Lake Ontario VPZ, nesting habitat opportunities for barn swallow will have increased on the site. Long term residual impacts are not anticipated for these species resulting from the development of the Subject Property.
Significant Wildlife Habitat	Seasonal Concentrations Areas of Animals: Shorebird Migratory Stopover Areas	Grading, Servicing and Development	Construction of the shoreline protection structure, removal of vegetation from the Subject Property	The Subject Property does not meet the criteria as a candidate Shorebird Migratory Stopover Area.	Although SWH was not identified for the Subject Property it is important to note that: • The creation of a 30 m VPZ adjacent to Lake Ontario will provide nesting and stopover habitat for migratory song birds. • Maintaining the existing beach along the toe-of-slope of the shoreline protection will maintain beach habitat for shoreline feeding birds. No residual effects expected.

8.1.1. Impacts on Terrestrial Ecological Communities and SAR

Field studies by GRA found the Subject Property to be comprised of early successional disturbed vegetation communities with a high percentage of non-native, invasive species and dumping of debris. Trees located within the Subject Property are generally in good health and represent naturally occurring (Manitoba Maple and Norway Maple) and planted (Austrian Pine, White Spruce) species. The hedgerow on the eastern property boundary consists of Manitoba Maples, a common disturbed area species. A proportion of the species are the result of landscaping and maintenance performed in the vicinity of the previously existing building. The proposed development will result in the removal of all existing vegetation communities and those trees identified for removal on **Table 7**. These vegetation communities and existing trees provide habitat for urban tolerant species, as well as breeding and migratory birds and are subject to the recommended restoration efforts, described In Column 5 of **Table 13**.

During the removal of existing natural heritage features and the construction of the proposed site plan, immediate impacts of dust and noise may temporarily disturb the existing wildlife populations but due to their urban tolerant nature it is expected that species will return following the construction period. Measures to control dust should be taken when conditions require it. Clearing of vegetation and trees are subject to the timing windows established for Species at Risk and Migratory Birds. The clearing of vegetation communities and trees should occur outside of the Breeding Bird and Migratory Birds Convention Act timing windows, or under the supervision of a qualified biologist to screen for active nests, to ensure that no impacts to breeding avian species occurs. The general nesting period of migratory birds in between mid-March and late August. By removing trees and vegetation outside the timing window, no impacts to breeding and migratory birds are expected.

Following the completion of construction, restorative native plantings within the 30 m Vegetation Protection Zone from the shoreline will establish a more diverse habitat along the shoreline than currently exists. In addition, it is recommended to install a Barn Swallow nesting structure within the 30 m VPZ to provide nesting habitat for the Barn Swallow which are currently using the area as foraging habitat. The naturalized VPZ will provide stopover habitat for migratory songbirds. The establishment of a restored native vegetation community within the stream corridor will replace the disturbed riparian vegetation communities of the existing watercourse gully and result in a net gain of functional habitat and species diversity. The inclusion of landscape trees and gardens will also provide habitat for species currently found on the site, across the interior of the proposed development. Overall, an increase in species diversity of the Subject Property will occur and minimal long-term residual impacts are anticipated for existing wildlife and migratory birds.

Vegetation communities and trees identified for removal are not listed as regionally, provincially or federally at-risk (MNRF, 2018). The Subject Property does not contain Significant Wildlife Habitat and, therefore, no impacts to Significant Wildlife Habitat are expected.

The occurrence of avian Species at Risk is limited to foraging barn swallow and bank swallow. Nesting habitat requirements for these species do not occur on the Subject Property. However, as noted above, a nesting structure will be provided within the 30 m shoreline VPZ.

8.1.2. Impacts on the Watercourse Features

The feature is not identified as providing direct fish habitat but is regulated per NPCA regulation mapping and identified on the Appendix 3 of the current Town of Grimsby Official Plan (2014). The watercourse is

identified in the Secondary Plan mapping (Schedule F) as a stream and Environmental Protection Area. The feature is not mapped as continuing upstream beyond the QEW on Schedule F. NPCA mapping (Niagara Navigator) includes the feature as a component of the Surface Water Inventory but does not regulate the floodplain or erosion top of slope with this feature.

The entire open portion of the watercourse from Lake Ontario to the rail line south of the QEW have been highly altered and is functionally a storm drain. The channel has been straightened and or enclosed and does not support any natural channel functions. Due to the highly disturbed condition of the feature it primary function is only providing a flow conveyance to Lake Ontario.

The existing channel was determined not to support direct fish habitat based on the typical minimal flow conveyance, the lack of direct connection to Lake Ontario, and the very small upstream drainage area. The proposed realigned watercourse will not be creating new fish habitat but rather maintaining the existing condition. The new channel, as the old one, will maintain the lack of direct connection to Lake Ontario due to its steep cascading confluence with the lake. The development is not altering the flow regime, so extended flow duration throughout the summer and fall as a result of stormwater management controls will not be a result of this development of the site. Several pools will be created within the new channel, which could support fish if any should find their way into the channel, possibly from upstream. However, it is not anticipated there are fish present in the upstream reaches due to the overall lack of viable fish habitat within the system.

Another important factor which should be considered, although not directly related to the natural environment, is public safety. The current watercourse is deeply incised in a very steep valley/gully. This represents a real public safety hazard, particularly given its location within the proposed development. By creating a much shallower stream corridor, with gentle side slopes, it will mitigate this public safety hazard.

Overall, the realignment of the watercourse and naturalization of the corridor is not considered an impact but rather a net benefit.

8.1.3. Impacts to the Shoreline

The shoreline has historically been impacted by the previous land use and dumping of large concrete debris to provide shoreline erosion protection. Currently the shoreline bluff does not provide a sufficient level of erosion protection for the proposed development and as a result, a shoreline protection wall has been proposed. The protection wall has been designed so that it does not extend into Lake Ontario or result in the removal of the existing beach. While the footings of the wall do extend below the High-Water Mark, it will not result in the loss of any nearshore habitat below the High-Water Mark and no impacts to nearshore fish habitat are anticipated by the construction of the shoreline protection.

The construction of the shoreline protection wall will require the removal of the vegetation along the slope/bluff. A 30 m VPZ is proposed from the stable slope, which will coincide with the top of the shoreline protection wall. The VPZ will be planted with tree and shrub species, which will replace the existing shoreline vegetation. As a result, the functions of the Lake Ontario shoreline will be maintained.

8.1.4. Cumulative Impacts

Cumulative impacts are changes to the environmental due to past, present and the reasonably foreseeable future impacts. The south shore of Lake Ontario acted as a corridor for early settlers and soldiers between the United States and the Canadian cities of the Golden Horseshoe for over three hundred years. Grimsby has been known for its beach and amusement park, fishing industry, the first gathering point of the family-oriented entertainment Chautauqua movement and as the central hub for the local fruit industry. Its placement along a busy traffic corridor, located between the shoreline of Lake Ontario and the Niagara Escarpment has allowed for a confined town to grow within these geographical limits over time. In recent times the Greenbelt Plan has delineated the limits of the Settlement Area containing the Town of Grimsby, a designation of which this Subject Property falls within.

The proposed development of the Subject Property is a component of the Winston Neighbourhood Secondary Plan, a community development plan which will conclude the development of all Settlement Area lands in the Town of Grimsby that lie between the Queen Elizabeth Way and the shoreline of Lake Ontario. The conversion of a semi-industrial landscape to a mixed use/high density urban community will change the character of the immediate landscape and will allow the shoreline of Lake Ontario, a public resource, to be used and appreciated by more permanent community members.

While considering the history of land use, the contemporary land use designation and the nearby Greenbelt boundary, it is understood that the current proposal will result in the loss of semi-open, degraded lands but will be enhanced using modern ecological restoration techniques alongside contemporary development planning. The subject property has been designated by the Town of Grimsby for the purposes of urban development and population residency and therefore the proposed works effect on the local landscape has been accounted for and is deemed appropriate. Cumulatively, the large impacts along Lake Ontario have already occurred. Continued land development will bring more people to the shoreline, but the overall converting the site from a truck stop to residential development will not increase the pressures already present. The creation of the 30 VPZ from along the shoreline should make the site more attractive for migratory birds by providing greater plant diversity. This should complement the migratory stopover functions of Fifty Point Conservation Area and provide a net gain to the area.

The findings of this EIS have ensured that the limited vegetation to be removed will not result in the loss of integral habitat or landscape function and, the watercourse feature will be modified and enhanced. Mitigation measures have been provided to ensure that impacts on the subject property, adjacent natural heritage features and the greater landscape are minimized, and that restoration works are employed to enhance the ecological value of the land.

9. 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.

9.1. Natural Heritage System Measures

9.1.1. Channel Realignment

The watercourse feature traversing the Subject Property is a highly impacted system that will be realigned within a new, shallower stream corridor. The new stream corridor will be naturalized with native plantings, and directly connected to the shoreline VPZ. Combined, the stream corridor and VPZ will create a contiguous naturalized north south and east west greenspace through the Subject Property.

9.1.2. Shoreline Vegetated Protected Zone

The shoreline landform feature is to be enhanced and protected to ensure its functionality and integrity is retained within the proposed community development. An appropriate vegetation protection zone (VPZ) of 30 m is proposed from the stable slope. The lands within this setback are to be retained in a natural state and contained as a single block, as per 3.1.1.21 (Grimsby Official Plan). The VPZ is intended to provide protection for the feature and its ecological function, shall be natural self-sustaining vegetation and are required to be a minimum 30 m wide for lakes, as per 3.1.1.16 (Grimsby Official Plan). This buffer region along the shoreline shall be dedicated as public space and allow for the planned trail system, considered water's edge public open space, to be contained within it. This VPZ and Trail allowance conforms to the policies of the Greenbelt Plan encouraging a connected natural heritage system and a Greenbelt trail system.

- The north side of trail within the VPZ is to be restored upon construction completion of the shoreline protection structure with natural, shoreline vegetation including woody shrubs and patches of native tree species locally sourced that will serve to attract and support migrating birds within the landscape and provide higher quality stopover habitat. Recommended species may include,

Silver Maple	White Cedar
White Birch	Gray Dogwood
Red-osier Dogwood	Nannyberry
Smooth Serviceberry	Pussy Willow
Ninebark	

- The recommended species are suitable for shoreline, exposed sites and support migratory birds by providing food, including a range of foraging guild, shelter and resting opportunities. This northern side is to be enhanced through plantings, the installation of a barn swallow nesting structure and to naturalize itself over time, with qualified monitoring to ensure its success;

- The southern side of the trail within the VPZ is to be landscaped using native species and maintained to provide a clean and comfortable natural look for community members;

- Patches and single trees are to be placed on both sides of the trail to ensure openings providing a view to the Lake remains; and,

- The trail is to be outfitted with benches and lighting designed to limit light pollution;

9.1.3. Barn and Bank Swallow Nesting Habitat

One (1) habitat structure containing ten (10) nesting cups for barn swallow is proposed within the shoreline VPZ to ensure foraging use along the shoreline continues. This nesting structure provides a gain in nesting habitat for Barn Swallows within the limits of the proposed development. Because no bank swallow nests were found to occur within the degraded and disturbed shoreline, restoration efforts to reduce impact to this Species at Risk will be provided by ensuring the 30m VPZ adjacent the shoreline remains suitable for foraging. As the Barn and Bank Swallow are both aerial insectivores, the shoreline VPZ will provide a mix of open and semi-closed canopy vegetation communities to maintain insect populations. This foraging habitat enhancement will also provide feeding grounds for other avian species and will complement the Fifty Point Conservation Area nearby which is known as a regional hotspot for migratory avian species and provides preferable habitat.

9.2. Construction Measures

General construction related mitigation measures include the following:

- Clearing of vegetation within the subject property as part of site preparation should be conducted in late summer or winter months (August 16- March 31) so as not to coincide with breeding bird season. If clearing is to proceed within the breeding bird window, the Subject Property should be screened by a qualified bird biologist to determine if any migratory song birds are nesting within work zone;
- All trees should be felled into the work zone;
- Top-soil 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 material. Top-soil stock piles should be placed to reduce dust generation from wind to prevent the movement of these substrates into the adjacent waters of Lake Ontario and to ensure to protection of fish habitat along the shoreline bed of the water body;
- Implementation of the erosion and sediment control plan is recommended to prevent releases of sediment into the adjacent natural areas and water bodies;
- Implementation of dust control measures is recommended to reduce dust impacts on the adjacent lands and water body; and,
- Store all oils and fuels at least 30 m away from water in properly designated locations with appropriate spill containment and clean-up equipment.

10. Monitoring Plan

Monitoring is recommended for the function of the bioswale, the vegetation restoration within the VPZ and the bioswale corridor, and the shoreline protection structure.

- All plantings should be monitored for a period of two years post-construction to ensure the plantings are growing and developing the desired communities;
    - Monitoring for the vegetation communities should be completed by a qualified biologist;
    - Any instance of non-native, invasive species colonization document during the monitoring period should be followed up with an aggressive de-colonization strategy and re-planting of native species.
- The shoreline protection structure will be monitored to ensure its stability and structure is not compromised over time.
- A fluvial geomorphic monitoring program of the realigned channel should put in place for a period of three years post construction to ensure the channel is stable and functioning as designed.

11. Policy Conformity

An outline of the applicable policies, including federal, provincial and municipal protection and planning policies and regulations, relative to the Subject Property were provided in Section 2.0. In conformity with the policies identified within the Town of Grimsby Official Plan and the NPCA regulations and policies, a 30-metre shoreline buffer from stable top of bank identified as a Vegetation Protection Zones (VPZ) consisting of self-sustaining naturalized vegetation and the proposed community public trail is identified in conjunction with the proposed development. An evaluation of how the Subject Property complies with these policies concludes that the proposed development will have no adverse effects on the adjacent natural heritage system. Planning, design and construction measures identified for the Subject Property will ensure the protection of natural features identified within this EIS.

12. Closing

The Subject Property's landscape position and the natural heritage features and functions it supports have been considered in this EIS. The Subject Property supports cultural, successional vegetation communities, urban tolerant wildlife species and contains a single watercourse feature. The extent of the property lies adjacent the Lake Ontario shoreline and its bluffs. The previous use of the property as a restaurant and truck spot resulted in a highly degraded, disturbed environment.

Surrounding land use is undergoing intensification due to is location adjacent to a major transportation corridor between the Greater Toronto Area and the United States border and amenities. The Subject Property

is proposed to contain a mix of commercial and mid-to-high density units and be highly accessible to the transportation corridor and nearby community amenities.

Due to the historical and contemporary development of the southern lakeshore region, ecological communities and species with low tolerance to disturbance are not present. The proposed plan meets the requirements of the Official Plan and Provincial Policy regarding environmental protection on re-development sites for intensification of existing developed areas. The proposed development at 398 North Service Road will not impact designated Species at Risk populations or Significant Wildlife Habitat. The mitigation measures presented in this EIS will ensure the protection of the local environment and should provide a net benefit through the proposed naturalization of the shoreline VPZ and realigned stream corridor.

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398 North Service Road
Environmental Impact Statement

Prepared for Losani Homes

October 2019

Prepared by:

Ken Glasbergen, M.Sc.
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 Losani Homes by GeoProcess Research Associates. The report may not be relied upon by any other person or entity without our written consent and that of Losani Homes. 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 P2016-175

Figures

GeoProcess RESEARCH ASSOCIATES

LEGEND

Property Boundary

N

0 125 250 500 Meters

Fifth Wheel

Key Map

Scale: 1:10,000	Drawn By: JJ	Figure No. 1
Date Issued: May 2017	Checked By: KAG	

MEMM3
WODM5-3
MEMM3
Lake Ontario
WODM5
SHOM1
MEMM
MAMM1-12
H1
THMM2
MAMM1-12
MEMM
North Service Rd.
QEW

Vegetation Communities

MEMM3	Dry-Fresh Mixed Meadow Ecosite
MEMM4	Fresh-Moist Mixed Meadow Ecosite
SHOM1	Mineral Open Shoreline Ecosite
MAMM1-12	Common Reed Graminoid Mineral Meadow Marsh Type
WODM5	Fresh-Moist Deciduous Woodland Ecosite
WODM5-3	Fresh-Moist Manitoba Maple Deciduous Woodland Type
THMM2	Fresh-Moist Mixed Thicket Ecosite
H	Hedgerow

GeoProcess RESEARCH ASSOCIATES

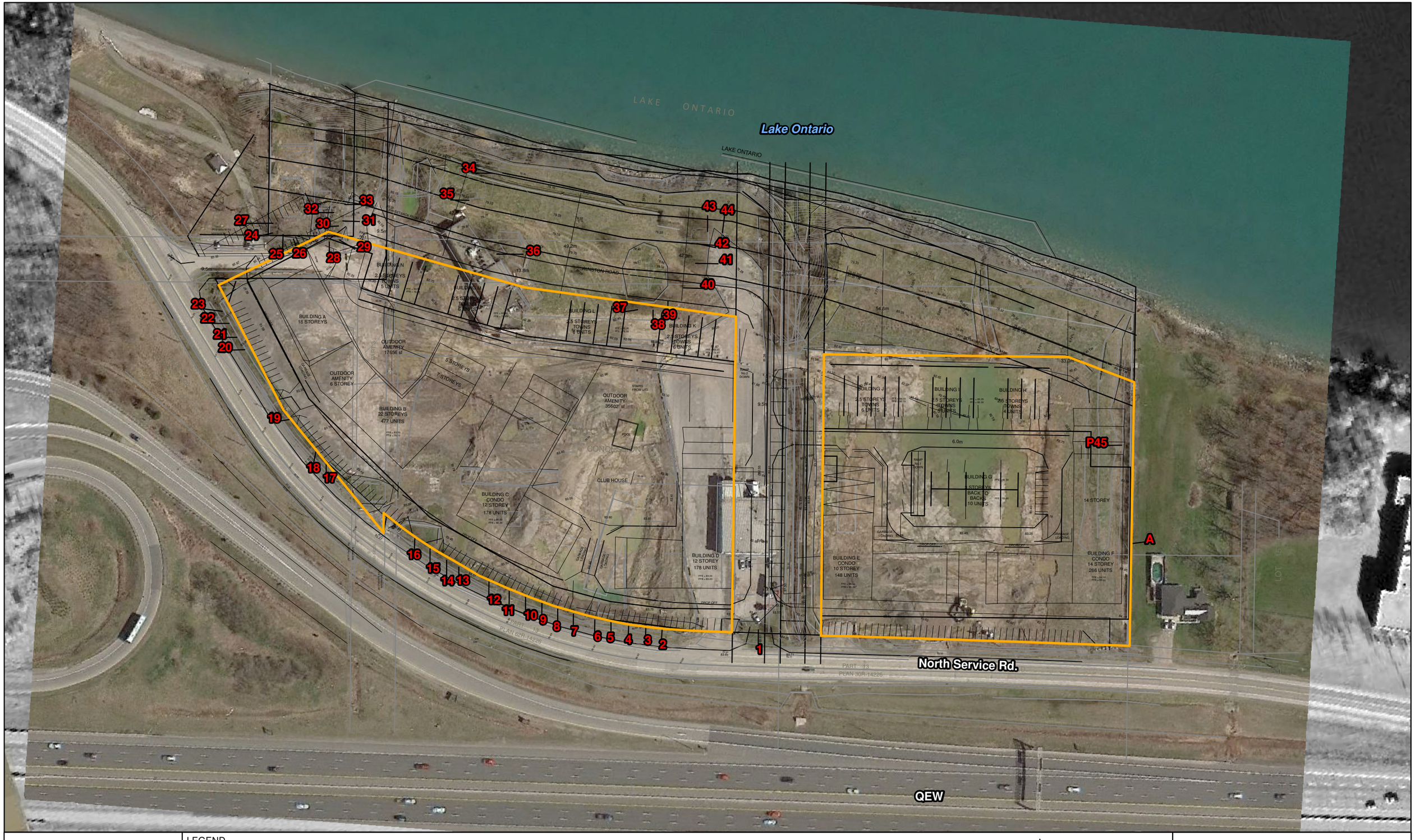
LEGEND
- Property Boundary
- Vegetation Community Boundary

N

0 15 30 60 Meters

Fifth Wheel
Ecological Land Classification

Scale: 1:1,500	Drawn By: JJ	Figure No. 2
Date Issued: May 2018	Checked By: KAG	



GeoProcess RESEARCH ASSOCIATES

LEGEND

- Study Area
- Dripline/Tree Polygon Boundary
- 6 — Tree Identified for Removal

N

0 15 30 60 Meters

Fifth Wheel

Tree Preservation Plan

Scale: 1:1,500		Drawn By: JJ	Figure No. 3
Date Issued: May 2018		Checked By: KAG	

GeoProcess RESEARCH ASSOCIATES

LEGEND

Property Boundary

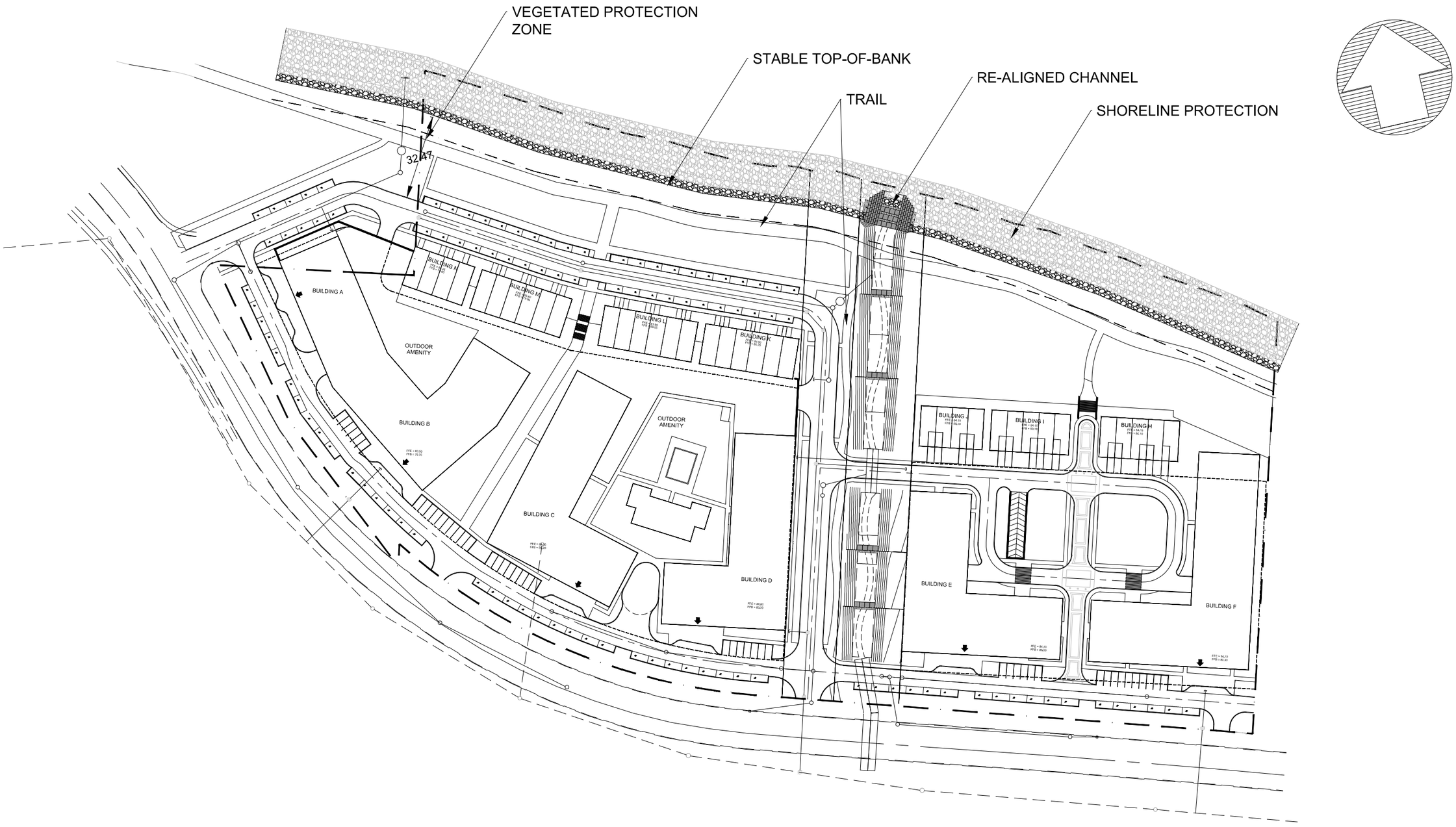
N

0 12.5 25 50 Meters

Fifth Wheel

Watercourse Overview Assessment

Scale: 1:1,000	Drawn By: JJ	Figure No. 4
Date Issued: May 2018	Checked By: KAG	



GeoProcess RESEARCH ASSOCIATES

LEGEND

0 30 60
SCALE

FIFTH WHEEL
PROPOSED SITE PLAN

Scale: 1:1,500	Drawn By: BA	Figure No. ##
Date Issued: OCT, 2019	Checked By: KG	

Appendix A

Terms of Reference

GeoProcess
RESEARCH ASSOCIATES
Knowledge
Research
Consulting

March 11, 2016

Walter Basic
Natural Heritage Planner
Town of Grimsby Planning Department
160 Livingston Avenue
Grimsby, ON L3M 4G3

Re: 398 North Service Road
Environmental Impact Statement Terms of Reference

GeoProcess Research Associates Inc. (GRA) was retained by Losani Homes to complete an Environmental Impact Statement (EIS) Terms of Reference (TOR) for a property they own, located at 398 North Service Road in Grimsby, ON. Losani Homes is proposing to redevelop the site which was formerly operated as the Fifth Wheel Truck Stop into residential housing. The Town of Grimsby Official Plan and specifically the Winston Road Neighbourhood Secondary Plan identifies the property for Mixed-Use – High Density Residential, but also identifies a watercourse with adjoining Environmental Protection Area, Environmental Conservation Area along the shore of Lake Ontario and Hazard Land Area as per Ontario Regulation 155/06 administered by the Niagara Peninsula Conservation Authority (NPCA). The need for an EIS is triggered by the identified natural heritage and hazard features.

The proposed EIS will assess the potential impact of the development proposal on the features associated with the property and provide an analysis of available mitigation measures. Mitigation measures will serve to eliminate or reduce the potential negative impacts of the proposed development on the natural features and functions, and where feasible, enhance or restore the natural features associated with the subject property.

Terms of Reference Elements

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, Town of Grimsby Official Plan, Niagara Peninsula Conservation Authority Regulations 155/06, etc.) and existing reports associated with the subject property.

Existing ecological databases such as Nature Counts, Bird Studies Canada, and Ontario Ministry of Natural Resources Natural Heritage Information Centre will be reviewed. A Species at Risk (SAR) screening will be

PO Box 29128 HESPELER
CAMBRIDGE, ON N3C 0E6
519.220.1208
www.geoprocessresearch.com

completed using all available background documents.

Ecological Studies

Due to the former use of the property as a truck stop and the limited natural heritage features found on the property, GRA is proposing to scope the level of field investigations to a few core areas most critical to characterizing the nature of the site. Specifically field studies will focus on the vegetation / trees found on the property, the small watercourse traversing the site and the near shore environment of Lake Ontario. The following highlights the key field components proposed for the EIS:

Floristic Studies: Vegetation characterization of the on-site vegetation resources for the property will be completed following the Ontario Ministry of Natural Resources Ecological Land Classification (ELC) protocol. The characterization will include two (2) season inventories including Spring and Summer 2016. A full botanical species list, and where applicable, a map showing rare or uncommon vegetation communities or species will be provided.

Tree Protection Plan: 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 location and protection measures will be provided.

Watercourse/Fish Habitat Characterization: An assessment and characterisation of the watercourse including any existing background information and physical measurements of the feature will be conducted. A formal fish community assessment is not proposed (i.e. electrofishing).

Lake Ontario Shoreline Assessment: An assessment of near shore conditions utilizing unmanned aerial vehicle (UAV) technology to create high resolution ortho-imagery of the near shore environment will be conducted. The imagery will be used to map the near shore condition of the lake. High resolution imagery can be used effectively to map the near shore bed conditions of the lake.

Incidental Wildlife Surveys: Formal surveys for mammals, reptile 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 EIS will include a discussion regarding the proposed, servicing and site grading plans and shoreline protection measures.

Federal, provincial and local rankings will be provided for species identified during fieldwork.

Due highly disturbed condition of the site and the lack of intact natural heritage features such as woodlots, wetlands and grasslands, GRA believes it is unlikely that sensitive bird species will utilize the property as breeding habitat. As there are no wetland or pond features on the property, GRA does not believe it supports amphibian habitat. Based on the limited bird and amphibian habitat, GRA is not proposing to conduct spring breeding bird or amphibian calling surveys.

Proposed EIS Structure

The EIS report will have the following structure:

1.0 Introduction

2.0 Methodology
- 2.1 Background Studies
- 2.2 Field Work completed by GRA

3.0 Policy Review
- 3.1 Provincial Policy Statement
- 3.2 Town of Grimsby Official Plan
- 3.3 Niagara Peninsula Conservation Authority

4.0 Existing Conditions
- 4.1 Physiography
- 4.2 Natural Environment Background Information Review
- 4.3 Study Area Assessment and Review of Existing Conditions
  - 4.3.1 Vegetation Communities
  - 4.3.2 Tree Inventory
- 4.4 Watercourse and Fisheries Characterization
- 4.5 Lake Ontario Shoreline Characterization
- 4.6 Incidental Wildlife

5.0 Species at Risk
- 5.1 Screening Assessment

6.0 Proposed Development
- 6.1 Study Area Natural Heritage System
- 6.2 Buffers

7.0 Impact Assessment
- 7.1 Short-term Impacts
- 7.2 Long-term Impacts
- 7.3 Cumulative Impacts

8.0 Mitigation Measures
- 8.1 Natural Heritage System Measurers
- 8.2 Construction Measures

9.0 Monitoring Plan

10.0 References

Closing

The Town of Grimsby has identified the need for an Environmental Impact Statement to accompany a development application for 398 North Service Road (originally the Fifth Wheel Restaurant and Truck Stop), as the property contains a watercourse feature, adjoining Environmental Protection Area, Environmental Conservation Area along the shore of Lake Ontario and Hazard Lands as identified by the Town of Grimsby and Niagara Peninsula Conservation Authority. The EIS will establish a scientifically defensible development limit for the subject property, which will be based on the biological and physiological characteristics of the site. The Terms of Reference has outlined the studies and methodologies, which will be followed in the EIS Study and the structure of the EIS report. The Terms of Reference will be submitted to the Town of Grimsby and Niagara Peninsula Conservation Authority for their approval.

If there are any questions regarding the submission, please do not hesitate to contact the undersigned.

Respectfully Submitted
GeoProcess Research Associates Inc.

Ken Glasbergen M.Sc.
Senior Ecologist, Principal

c.c. Lee-Ann Hamilton, Niagara Peninsula Conservation Authority

Appendix B

Vascular Plant List

Scientific Name	Common Names	Provincial Conservation Rank (Srank)	Coefficient Conservation	Coefficient Wetness
Acer negundo	Manitoba Maple	S5	0	-2
Acer platanoides	Norway Maple	SE5	0	5
Achillea millefolium ssp. millefolium	Common Yarrow	SE	0	3
Alliaria petiolata	Garlic Mustard	SE5	0	0
Ambrosia artemisiifolia	Common Ragweed	S5	0	3
Arctium minus ssp. minus	Common Burdock	SE5	0	5
Asclepias syriaca	Common Milkweed	S5	0	5
Aster lanceolatus ssp. lanceolatus	Panicled Aster	S5	3	-3
Aster novae-angliae	New England Aster	S5	2	-3
Barbarea vulgaris	Common Wintercress	SE5	0	0
Bidens frondosa	Devil's Beggar-ticks	S5	3	-3
Bromus inermis ssp. inermis	Smooth Brome	SE5	0	5
Carex bebbii	Bebb's Sedge	S5	3	-5
Carex vulpinoidea	Fox Sedge	S5	3	-5
Catalpa speciosa	Northern Catalpa	SE1	0	3
Chelidonium majus	Celandine	SE5	0	5
Chrysanthemum leucanthemum	Ox-eye Daisy	SE5	0	5
Cichorium intybus	Chicory	SE5	0	5
Cirsium arvense	Canada Thistle	SE5	0	3
Convolvulus arvensis	Field Bindweed	SE5	0	5
Cornus stolonifera	Red-osier Dogwood	S5	2	-3
Crataegus monogyna	One-seeded Hawthorn	SE5	0	5
Dactylis glomerata	Orchard Grass	SE5	0	3
Daucus carota	Wild Carrot	SE5	0	5
Dianthus armeria	Deptford Pink	SE5	0	5

Dipsacus fullonum ssp. sylvestris	Common Teasel	SE5	0	5
Echinochloa crusgalli	Barnyard Grass	SE5	0	-3
Echium vulgare	Viper's Bugloss	SE5	0	5
Elaeagnus angustifolia	Russian Olive	SE3	0	4
Elymus repens	Quack Grass	SE5	0	3
Equisetum arvense	Field Horsetail	S5	0	0
Erigeron annuus	Daisy Fleabane	S5	0	1
Erigeron philadelphicus ssp. philadelphicus	Philadelphia Fleabane	S5	1	-3
Euthamia graminifolia	Grass-leaved Goldenrod	S5	2	-2
Fragaria virginiana ssp. virginiana	Common Strawberry	S5	2	1
Hesperis matronalis	Dame's Rocket	SE5	0	5
Juncus effusus ssp. solutus	Soft Rush	S5	4	-5
Leonurus cardiaca ssp. cardiaca	Motherwort	SE5	0	5
Linaria vulgaris	Butter-and-eggs	SE5	0	5
Lonicera tatarica	Tartarian Honeysuckle	SE5	0	3
Lotus corniculatis	Birds-foot Trefoil	SE5	0	1
Lythrum salicaria	Purple Loosestrife	SE5	0	-5
Malus coronaria	Wild Crabapple	S4	5	5
Phalaris arundinacea	Reed Canary Grass	S5	0	-4
Phleum pratense	Timothy	SE5	0	3
Phragmites australis	Common Reed	S5	0	-4
Picea glauca	White Spruce	S5	6	3
Pinus nigra	Austrian Pine	SE2	0	-5
Plantago major	Common Plantain	SE5	0	-1
Poa pratensis ssp. pratensis	Kentucky Blue Grass	S5	0	1
Polygonum persicaria	Lady's Thumb	SE5	0	-3
Prunus virginiana ssp. virginiana	Choke Cherry	S5	2	1
Pyrus communis	Common Pear	SE4	0	5

Ranunculus acris	Tall Buttercup	SE5	0	-2
Rhamnus cathartica	Common Buckthorn	SE5	0	3
Rhus typhina	Staghorn Sumac	S5	1	5
Rosa multiflora	Multiflora Rose	SE4	0	3
Rubus idaeus ssp. melanolasius	Wild Red Raspberry	S5	0	-2
Rumex acetosella ssp. acetosella	Sheep Sorrel	SE5	0	0
Rumex crispus	Curly Dock	SE5	0	-1
Salix fragilis	Crack Willow	SE5	0	-1
Solidago canadensis	Canada Goldenrod	S5	1	3
Taraxacum officinale	Common Dandelion	SE5	0	3
Trifolium campestre	Large Hop Clover	SE5	0	5
Trifolium hybridum ssp. elegans	Alsike Clover	SE5	0	1
Trifolium pratense	Red Clover	SE5	0	2
Typha angustifolia	Narrow-leaved Cattail	S5	3	-5
Ulmus pumila	Siberian Elm	SE3	0	5
Urtica dioica ssp. gracilis	Slender Stinging Nettle	S5	2	-1
Verbascum thapsus	Common Mullein	SE5	0	5
Verbena hastata	Blue Vervain	S5	4	-4
Viburnum opulus	European Highbush Cranberry	SE4	0	0
Vicia cracca	Cow Vetch	SE5	0	5
Vitis riparia	Riverbank Grape	S5	0	-2

1 - Southern Ontario Vascular Plant Species List - 3rd Edition (Bradley 2013)
2 - Federal SARA Registry
3 - MNRF Species at Risk list
4 - Regional status according to Hamilton Natural Areas Inventory Project 3rd Edition (2014), "The Vascular Plants of Hamilton, ON (Goodban)"
I = Introduced, h = uncommon in the City of Hamilton, H = Rare in the City of Hamilton
5 - Sranks - S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperiled; SNA(SE) = conservation status ranking not applicable (exotic), -status uncertain
6 - NHIC Database information

Appendix C

SAR Screening Table

Species		Habitat Protection Type	Species' Status in Ontario[1]	S-Rank[2]	Information Source[3]	Habitat Requirements[3]	Potential Habitat	Rationale
Scientific Name	**Common Name**							
Castanea dentata	American Chestnut	Yes - General Habitat Protection.	Endangered	S1S2	MNRF	Prefers dryer upland deciduous forests with sandy, acidic to neutral soils.	No	Habitat not present on Subject Property or in adjacent lands.
Frasera carolinensis	American Columbo/ Carolina Gentian	Yes - General Habitat Protection.	Endangered	S2	MNRF	Open deciduous forests, and to a lesser extent along open forest edges and dense shrub thickets. Commonly found in dry uplands.	No	Habitat not present on Subject Property or in adjacent lands.
Panax quinquefolius	American Ginseng	Yes - General Habitat Protection.	Endangered	S2	MNRF	Rich, moist, but well-drained, and relatively mature deciduous woods dominated by Sugar Maple, White Ash and American Basswood.	No	Habitat not present on Subject Property or in adjacent lands.
Phegopteris hexagonoptera	Broad Beech Fern	None	Special Concern	S3	MNRF	Rich soils in deciduous forests often dominated by Maple and Beech. Requires mois soil and usually grows in full shade.	No	Habitat not present on Subject Property or in adjacent lands.
Juglans cinerea	Butternut	Yes - General Habitat Protection.	Endangered	S2?	MNRF	Grows alone or in small groups in deciduous forests. Prefers moist, well-drained soi often found along streams. Does not do well in shade.	No	Habitat not present on Subject Property or in adjacent lands.
Cornus florida	Eastern Flowering Dogwood	Yes – Habitat Regulation	Endangered	S2?	MNRF	Under taller trees, in mid-age to mature deciduous or mixed forests. Commonly found in floodplains, slopes, bluffs, ravines, sometimes roadsides and fence rows.	No	Habitat not present on Subject Property or in adjacent lands.
Trichophorum planifolium	Few-flowered Club-rush/ Bashful Bulrush	Yes – Habitat Regulation	Endangered	S1	MNRF	Steep slopes of oak forests.	No	Habitat not present on Subject Property or in adjacent lands.
Arisaema dracontium	Green Dragon	None	Special Concern	S3	MNRF	Wet deciduous forests along streams. Particularly in maple, red ash and white elm forests.	No	Habitat not present on Subject Property or in adjacent lands.
Pycnanthemum incanum	Hoary Mountain Mint	Yes – General Habitat Protection	Endangered	S1	MNRF	Dry, Oak woodland, on steep slopes that are warmer than normal. Open areas with ample sunlight, in habitats with depend on fire for maintenance.	No	Habitat not present on Subject Property or in adjacent lands.
Morus rubra	Red Mulberry	Yes – General Habitat Protection	Endangered	S2	MNRF	Moist, Forested valleys and floodplains. Sandy and limestone-based loamy soils. Prefers sun from breaks in canopy.	No	Habitat not present on Subject Property or in adjacent lands.
Chimaphila maculata	Spotted Wintergreen	Yes- General Habitat Protection	Endangered	S2	MNRF	Dry oak-pine woodlands with sandy soils.	No	Habitat not present on Subject Property or in adjacent lands.
Eurybia divaricata	White Wood Aster	Yes – General Habitat Protection	Threatened	S2S3	MNRF	Open, dry deciduous forests dominated by Sugar Maple and Beech. Found mixed ir with other asters.	No	Habitat not present on Subject Property or in adjacent lands.
Colinus virginianus	Northern Bobwhite	Yes - General Habitat Protection.	Endangered	S1	MNRF	Savannahs, grasslands, abandoned farm fields, along brushy fencerows and other similar sites. In winter, can forage in small forest areas.	No	Habitat not present on Subject Property or in adjacent lands.

Icteria virens	Yellow-breasted Chat	Yes - General Habitat Protection.	Endangered	S2B	MNRF	Thickets and scrub, especially where clearings have become overgrown	No	Habitat not present on Subject Property or in adjacent lands.
Empidonax virescens	Acadian Flycatcher	Yes - General Habitat Protection.	Endangered	S2, S3B	MNRF	Mature, shady forests with ravines, or in forested swamps with lots of maple and beech trees.	No	Habitat not present on Subject Property or in adjacent lands.
Haliaeeus leucocephalus	Bald Eagle	None	Special Concern	S2N, S4B	MNRF	Variety of habitats and forest types, almost always near a major lake or river where they do most of hunting.	Yes	Adjacent to Lake Ontario. Breeding Bird Surveys conducted for the property did not identify any occurrences of this species.
Tyto alba	Barn Owl	Yes – Habitat Regulation.	Endangered	S1	MNRF	Lives year round at nest site utilizing barns, abandoned buildings, cliff faces, natura cavities. Hunts over grasslands.	No	Habitat not present on Subject Property or in adjacent lands.
Hirundo rusica	Barn Swallow	Yes - General Habitat Protection.	Threatened	S4B	MNRF	Human-made structure, bridges, barns, culverts.	No	Nesting habitat not present on Subject Property or in adjacent lands. Foraging visitants observed on property.
Childonias niger	Black Tern	None	Special Concern	S3B	MNRF	Build nests in shallow marshes, typically Cattails with standing water.	No	Habitat not present on Subject Property or in adjacent lands.
Dolichonyx oryzivorus	Bobolink	Yes - General Habitat Protection.	Threatened	S4B	MNRF	Tallgrass prairie, open meadows, hayfields, open grass fields.	No	Habitat not present on Subject Property or in adjacent lands.
Cardellina canadensis	Canada Warbler	None	Special Concern	S4B	MNRF	Range of deciduous and coniferous, usually wet forest types, with a well-developed dense shrub layer.	No	Habitat not present on Subject Property or in adjacent lands.
Setophaga cerulea	Cerulean Warbler	Yes - General Habitat Protection.	Threatened	S3B	MNRF	Mature, deciduous forests with large, tall trees and an open under storey.	No	Habitat not present on Subject Property or in adjacent lands.
Chaetura pelagica	Chimney Swift	Yes - General Habitat Protection.	Threatened	S4B,S4N	MNRF	Urban settlements where they nest and roost in chimneys or other manmade structures. Previously, cave walls and hollow trees or tree cavities.	No	Habitat not present on Subject Property or in adjacent lands.
Chordeiles minor	Common Nighthawk	None	Special Concern	S4B	MNRF	Open areas with little or no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores and mine tailings. May also nest in open, anthropogenic sites.	No	Habitat not present on Subject Property or in adjacent lands.
Sturnella magna	Eastern Meadowlark	Yes - General Habitat Protection.	Threatened	S4B	MNRF	Moderately tall grasslands, such as pastures and hayfields. Also, other croplands, orchards, shrubby overgrown fields, roadsides, airports and other open areas.	No	Habitat not present on Subject Property or in adjacent lands.
Antrostomus vociferus	Eastern Whip-poor-will	Yes - General Habitat Protection.	Threatened	S4B	MNRF	Mix of open and forested areas, such as savannahs, open woodlands or openings in mature deciduous and coniferous forests.	No	Habitat not present on Subject Property or in adjacent lands.
Vermivora chrysoptera	Golden-winged Warbler	None	Special Concern	S4B	MNRF	Young shrubs surrounded by mature forest-locations that have recently been disturbed.	No	Habitat not present on Subject Property or in adjacent lands.
Ammodramus henslowii	Henslow's Sparrow	Yes - General Habitat Protection.	Endangered	SHB	MNRF	Abandoned farm fields, pastures and wet meadows. Prefers tall, dense grasslands with little shrub and tree cover.	No	Habitat not present on Subject Property or in adjacent lands.

Rallus elegans	King Rail	Yes - General Habitat Protection.	Endangered	S2B	MNRF	Densely vegetated freshwater marshes with open shallow water that merges with shrubby areas. Prefer larger, coastal wetlands.	No	Habitat not present on Subject Property or in adjacent lands.
Ixobrychus exilis	Least Bittern	Yes - General Habitat Protection.	Threatened	S4B	MNRF	Wetland habitats, strongly prefers cattail marshes with a mix of open pools and channels.	No	Habitat not present on Subject Property or in adjacent lands.
Parkesia motacilla	Louisiana Waterthrush	Yes - General Habitat Protection.	Threatened	S3B	MNRF	Steep, forested ravines with fast-flowing streams. Prefers cold and clear streams, bu less frequently found in heavily wooded, deciduous swamps with large pools of open water.	No	Habitat not present on Subject Property or in adjacent lands.
Falco peregrinus	Peregrine Falcon	None	Special Concern	S3B	MNRF	Tall, steep cliff ledges close to large bodies of water. Urban sites on tall buildings as well.	No	Habitat not present on Subject Property or in adjacent lands.
Protonotaria citrea	Prothonotary Warbler	Yes - General Habitat Protection.	Endangered	S1B	MNRF	Flooded woodlands or swamps. Silver maple, ash, yellow birch with holes used for nesting.	No	Habitat not present on Subject Property or in adjacent lands.
Melanerpes erythrocephalus	Red-headed Woodpecker	None	Special Concern	S4B	MNRF	Open woodland and woodland edges, often found in parks, golf courses and cemeteries.	No	Habitat not present on Subject Property or in adjacent lands.
Asio flammeus	Short-eared Owl	None	Special Concern	S2N, S4B	MNRF	Open areas such as grasslands, marshes and tundra.	No	Habitat not present on Subject Property or in adjacent lands.
Ambystoma jeffersonianum	Jefferson Salamander	Yes – Habitat Regulation	Endangered	S2	MNRF	Moist woodlands with loose soil and vernal pooling.	No	Habitat not present on Subject Property or in adjacent lands.
Emydoidea blandingii	Blanding's Turtle	Yes, General Habitat Protection	Threatened	S3	MNRF	Shallow water in large wetlands and shallow lakes with abundant aquatic plant life.	No	Habitat not present on Subject Property or in adjacent lands.
Heterodon platirhinos	Eastern Hog-nosed Snake	Yes, General Habitat Protection	Threatened	S3	MNRF	Sandy, well-drained habitats such as beaches and dry forests.	No	Habitat not present on Subject Property or in adjacent lands.
Thamnophis sauritus	Eastern Ribbonsnake	None	Special Concern	S4	MNRF	Found close to shallow water, marshes with shallow water.	No	Habitat not present on Subject Property or in adjacent lands.
Graptemys geographica	Northern Map Turtle	None	Special Concern	S3	MNRF	Rivers and lakeshores with high quality water and suitable basking sites.	No	Habitat not present on Subject Property or in adjacent lands.
Chelydra serpentina	Snapping Turtle	None	Special Concern	S3	MNRF	Shallow waters with soft mud and leaf litter. Sandy or gravel areas along streams fo nesting.	No	Habitat not present on Subject Property or in adjacent lands.
Apalone spinifera	Spiny Softshell	Yes, General Habitat Protection	Endangered	S2	MNRF	Rivers and lakes, creeks and ditches, highly aquatic. Deep pools and basking sites. Open Sand or gravel for nesting.	No	Habitat not present on Subject Property or in adjacent lands.
Taxidea taxus jacksoni	American Badger	Yes, General Habitat Protection	Endangered	S2	MNRF	Tall grass prairie, sand barrens and farmland.	No	Habitat not present on Subject Property or in adjacent lands.
Myotis lucifugus	Little Brown Myotis	Yes, General Habitat Protection	Endangered	S4	MNRF	Roost in trees and buildings.	No	Habitat not present on Subject Property or in adjacent lands.

Myotis septentrionalis	Northern Myotis	Yes, General Habitat Protection	Endangered	S3	MNRF	Boreal forests.	No	Habitat not present on Subject Property or in adjacent lands.
Microtus pinetorum	Woodland Vole	None	Special Concern	S3?	MNRF	Mature deciduous forest in the Carolinian region.	No	Habitat not present on Subject Property or in adjacent lands.
Anguilla rostrata	American Eel	Yes, General Habitat Protection	Endangered	S1?	MNRF	Fresh water and salt water areas that are accessible from the Atlantic ocean.	No	Habitat not present on Subject Property or in adjacent lands.
Esox americanus vermiculatu	Grass Pickerel	None	Special Concern	S3	MNRF	Wetlands, ponds, slow-moving streams and shallow bays or larger lakes.	No	Habitat not present on Subject Property or in adjacent lands.
Clinostomus elongatus	Redside Dace	Yes – Habitat Regulation	Endangered	S2	MNRF	Pools and slow-moving areas of small streams and headwaters with a gravel bottom. In areas with overhanging grasses and shrubs.	No	Habitat not present on Subject Property or in adjacent lands.
Notropis photogenis	Silver Shiner	Yes, General Habitat Protection	Threatened	S2S3	MNRF	Moderate to large size streams with swift currents, free of weeds and clean gravel o boulder bottoms.	No	Habitat not present on Subject Property or in adjacent lands.
Danaus plexippus	Monarch	None	Special Concern	S2N, S4B	MNRF	Meadows, open areas where milkweed grows. Adults found in more diverse habitats.	Yes	Habitat present on site.
Pieris virginiensis	West Virginia White	None	Special Concern	S3	MNRF	Moist deciduous woods. Requires toothwort.	No	Habitat not present on Subject Property or in adjacent lands.
Ligumia nasuta	Eastern Pondmussel	Yes, General Habitat Protection	Endangered	S1	MNRF	Sheltered areas of lakes, slow moving rivers and canals, sand or mud bottoms.	No	Habitat not present on Subject Property or in adjacent lands.
Villosa iris	Rainbow Mussel	None	Special Concern	S2S3	MNRF	Medium sized rivers with a moderate to strong current and sand, rocky, or gravel bottoms. Found near riffles and shallow edges.	No	Habitat not present on Subject Property or in adjacent lands.

1= Species at Risk in Ontario List (Searchable List) from https://www.ontario.ca/environment-and-energy/species-risk-ontario-list.
2= NHIC Species List (Species of Conservation Concern/Tracked Only), updated 2017-04-18 from https://www.ontario.ca/page/get-natural-heritage-information.
3= Various Species Profiles, OMNRF, accessible via https://www.ontario.ca/environment-and-energy/species-risk-ontario-list