



**Kraus Flooring Property
525-565 Conestoga Road,
Waterloo**

Scoped Environmental Impact Study

Prepared for:

Northfield Properties LP
80 New Bond Street,
London, United Kingdom
W1S 1SB



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

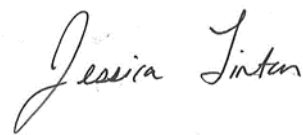
**KRAUS FLOORING PROPERTY
525-565 CONESTOGA ROAD, WATERLOO
SCOPED ENVIRONMENTAL IMPACT STUDY**

Project Team:

Jessica Linton
Ken Burrell
Steve Burgin
Gerry Schaus

Senior Biologist, Project Advisor
Terrestrial & Wetland Biologist, Project Manager
Aquatic Biologist
GIS Analyst

Report submitted on August 14, 2020



Jessica Linton, M.E.S.,
Project Advisor, Senior Biologist



Ken Burrell, M.E.S.,
Project Manager, Terrestrial & Wetland Biologist

TABLE OF CONTENTS

1.0	Introduction	3
1.1	Project Scoping	4
2.0	Biophysical Description of Study Area	5
2.1	Methods.....	5
2.1.1	Species at Risk	5
2.1.2	Significant Wildlife Habitat.....	6
2.1.3	Field Surveys	6
2.2	Results	7
2.2.1	Soils, Terrain, and Drainage.....	7
2.2.2	Vegetation and Vascular Flora	7
2.2.3	Aquatic Habitat Assessment	8
2.2.4	Species at Risk	12
2.2.5	Significant Wildlife Habitat.....	12
3.0	Assessment of Potential Impacts	13
3.1	Proposed Undertaking	13
3.2	Approach to Impact Analysis.....	13
3.3	Direct impacts.....	13
3.4	Indirect Impacts	14
3.4.1	Watercourse Crossings.....	15
3.4.2	Sediment and Erosion.....	16
3.4.3	Water Quality and Quantity	16
3.4.4	Supporting Natural Feature (Woodland).....	17
4.0	Conclusions	19
5.0	References.....	20

List of Figures

Figure 1.	Stormwater drainage feature from underground pipe outlet, facing southeast (June 5, 2020).....	9
Figure 2.	Drainage ditch at inlet to culvert #3, facing northwest (June 5, 2020).	10
Figure 3.	Drainage ditch along Hwy. 85, facing southeast (June 5, 2020).	10
Figure 4.	Culvert #3 outlet to Forwell Creek (June 5, 2020).	11

List of Tables

Table 1.	Development Impact Assessment and Mitigation Requirments.....	18
----------	---	----

List of Maps

- Map 1. Vegetation Communities and Monitoring Stations
- Map 2. Site Plan and Natural Heritage Features

List of Appendices

- Appendix I Site Plan (ABA Architects Inc.)
- Appendix II Terms of Reference and Agency Correspondence
- Appendix III Species at Risk / Significant Wildlife Habitat Screening
- Appendix IV Subject Property Vascular Flora List

1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained in March 2020 by Northfield Properties LP, to prepare a Scoped Environmental Impact Study (EIS) in support of a proposed mixed-use development at 525-565 Conestoga Road, Waterloo, Ontario. The property is currently occupied by an industrial complex; Kraus Carpets and Flooring, which closed in 2019 (Map 1).

The subject property is 10.72 ha and is identified as 'Urban Area'. Within the City of Waterloo's Official Plan (2020) the subject property is designated as Business Employment. Two Supporting Natural Features, identified by the City of Waterloo's Official Plan (2020) are present in the vicinity of the subject property: a perennial watercourse and an isolated woodland (Map 1). A portion of the lands are located within the Regulation Limit of the Grand River Conservation Authority (GRCA) associated with the Floodplain of Forwell Creek. The subject property is located outside of Wellhead Protection Areas (Region of Waterloo 2015). A proposed OPA/ZBA application for the subject property has triggered the requirement of a Scoped EIS due to its proximity to regulated natural heritage features, identified by the GRCA and City of Waterloo. The proposed redevelopment will feature the construction of 8 future development blocks comprising residential, office, and retail buildings, and 1 open space block. A pedestrian bridge, spanning Hwy. 85, to the west of the subject property, is proposed to link with the existing LRT transportation network.

This study has been developed in accordance with the GRCA guidelines for EIS reports (GRCA 2005) and the City of Waterloo's Official Plan (2020). This report summarizes background information on natural heritage features, as well as results of original field surveys of flora and fauna in the study area. The detailed characterization of existing natural features was used to inform an analysis of the significance and sensitivity of the natural features within the study area with consideration for GRCA and City of Waterloo policies. NRSI worked closely with the proponent to minimize impacts to natural features.

For the purposes of this report, the term 'subject property' refers to the property described as 525-565 Conestoga Road, Waterloo, Ontario. The term 'study area' includes the subject property and lands up to 120m from the subject property.

1.1 Project Scoping

A Terms of Reference (TOR) for the Scoped EIS was prepared and submitted to the GRCA and City of Waterloo on March 18, 2020. The proposed scope of work outlined was acceptable to the GRCA and City of Waterloo with minor comments. The TOR and the resulting comments from the City of Waterloo and GRCA are provided in Appendix II.

2.0 Biophysical Description of Study Area

2.1 Methods

A scoped field program was completed to inform the Scoped EIS and was outlined in the approved Terms of Reference (Appendix II). To inform this Scoped EIS, relevant existing background information was collected, including from the following sources:

- Grand River Conservation Authority online mapping (GRCA 2020),
- Region of Waterloo Official Plan (2015),
- Ontario GeoHub (Land Information Ontario),
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020),
- Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2008),
- Ontario Butterfly Atlas (Jones et al., 2019),
- Atlas of the Mammals of Ontario (Dobbyn 1994),
- Make a Map: Natural Heritage Areas (MNRF 2020), and
- Aquatic Species at Risk Map (DFO 2020).

2.1.1 Species at Risk

Based on background data collected, a number of Species at Risk (SAR) were identified as having records from within the vicinity of study area. SAR are those listed on the Species at Risk in Ontario List (OMECP 2019). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed by COSSARO as Endangered or Threatened are protected by the *Endangered Species Act* (ESA), 2007, which includes protection to their habitat, and are referred to herein as “regulated SAR”.

A preliminary screening exercise was conducted on these species to identify which species may have suitable habitat within the study area. This involved cross-referencing the preferred habitat for reported SAR (OMECP 2019, OMNR 2000) against habitats known to occur within the subject property or adjacent properties. This was completed to ensure that the potential presence of all SAR within the study area was adequately assessed in this EIS and is provided in the approved TOR (Appendix II).

Final results of the SAR screening exercise, based on original field surveys and habitats present, are provided in Appendix III.

2.1.2 Significant Wildlife Habitat

Based on background information review and desktop analysis, a preliminary screening for potential Significant Wildlife Habitat (SWH) was completed within the study area (Appendix II). This review compared site conditions with criteria set in the SWH Ecoregion 6E Criterion Schedule (OMNRF 2012) to determine the presence of any candidate SWH.

Full results of the SWH screening exercise, based on original field surveys are provided in Appendix III.

2.1.3 Field Surveys

NRSI previously completed a SAR screening assessment for the subject property, which included a field investigation to verify site conditions and identify any candidate SAR habitats, on June 11, 2015. Information from this assessment informed the field surveys for this Scoped EIS. The following field surveys were completed in 2020:

- Ecological Land Classification (ELC) mapping (Lee et al. 1998) and a spring vascular flora inventory was completed on June 5, 2020 throughout the study area.
- Tree Cavity Assessment was completed throughout the development area on June 5, 2020, following guidance from the MNRF (2017) to identify potential bat habitat.
- An Aquatic Habitat Assessment was completed on June 5, 2020 to confirm conditions documented by NRSI in June 2015. Physical parameters documented include:
 - Substrate type;
 - Channel depth, width, bankfull width, etc.;
 - Water temperature;
 - Dissolved oxygen;
 - pH, conductivity and total dissolved solids;
 - General bank stability;
 - Riparian and aquatic vegetation;
 - Cover type and quality; and
 - Flow conditions.

2.2 Results

2.2.1 Soils, Terrain, and Drainage

Background data indicates that the dominant soil type found within the general area is a well drained, gently sloping, loam (Presant and Wiklund 1971). The subject property is generally characterized by rolling topography, gently sloping from northeast to southwest (WalterFedy Inc. 2020). The study area is highly developed in nature and the subject property is largely impervious in nature (i.e. >75%) (WalterFedy Inc. 2020).

A drain, located along the western side of the subject property, drains from north-south, running alongside Highway 85. A covered drainage feature also bisects the southern third of the subject property. This feature is largely covered by pavement, with water present in one, small area, adjacent to Hwy. 85. Forwell Creek, which occurs on the west side of Hwy. 85, runs from north-south, is a tributary to the Grand River and is highly channelized in nature. Aquatic features are shown on Map 1.

2.2.2 Vegetation and Vascular Flora

The majority of the subject property is developed and covered with impermeable surfaces including existing buildings, parking areas, and access roads. One vegetation community occurs in the southern portion of the property: Dry-Fresh Forb Meadow (MEFM1) (Map 1). This community type is also present on the western side of Hwy. 85, within the study area. Two, small, isolated Deciduous Forest (FOD) stands are located in the southern portion of the study area, on the western side of Hwy. 85.

A total of 47 species of vascular flora were documented during the NRSI field survey in 2020, of which 38 species were identified within the MEFM1 community (Appendix IV). Field surveys did not document any federally, provincially, or regionally significant plant species. Black Walnut (*Juglans nigra*) is considered a regionally significant plant species in circumstances where the vegetation community is noted to be natural in origin. Several Black Walnut specimens were documented within the MEFM1 community, however, given the anthropogenic nature of the study area, regional significance has not been afforded to these specimens.

A tree cavity assessment completed within the development area did not document any suitable cavities for bat species. Trees documented within the subject property were noted to be relatively small (i.e. <20 cm diameter at breast height), and encompassed a high proportion of non-native species, both of which are generally unsuitable for bat SAR.

2.2.3 Aquatic Habitat Assessment

The aquatic habitats are limited within the subject property. The drainage feature that occurs at the southwestern corner of the subject property primarily flows underground, except for a small portion that occurs at the surface. This area collects stormwater runoff from the adjacent lands. This stormwater is diverted to the southwestern edge of the subject property through an underground storm drain, which exits the subsurface pipe at the southernmost corner of the parking lot and transitions to a surface feature (Figure 1). The feature exits the subject property approximately 40m southeast from the pipe outlet and connects to a drainage ditch that extends along the east side of the Hwy. 85. During the June 5th site visit, a standing pool of water was observed at the outlet from the storm pipe, however, the remaining portion of the channel was dry to the roadside ditch. It was evident that the channel experiences high volumes of water at times during the year. It is characterized as ephemeral in nature and does not provide fish habitat.

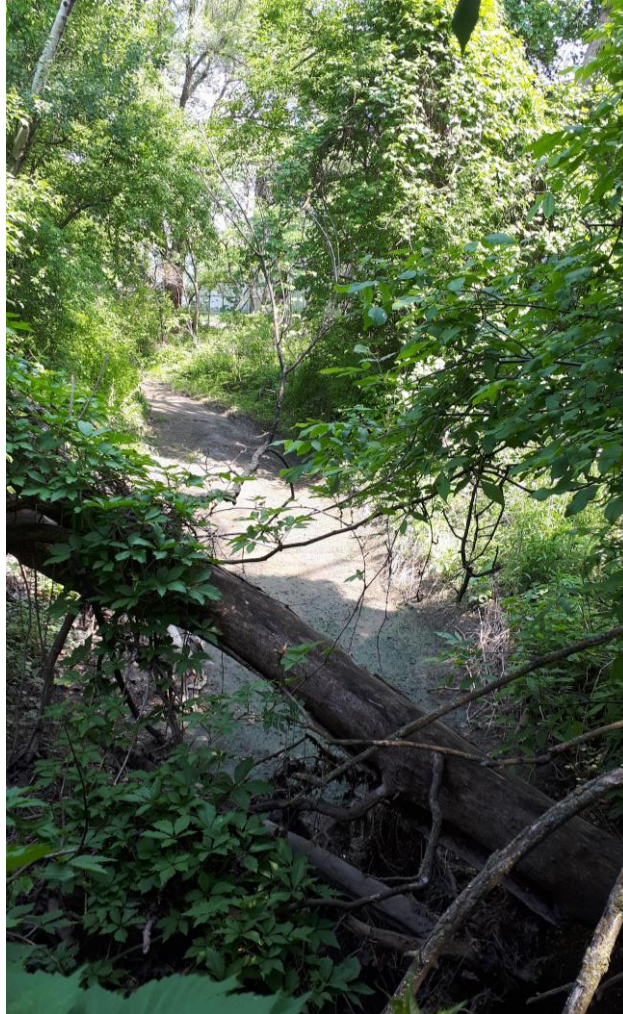


Figure 1. Stormwater drainage feature from underground pipe outlet, facing southeast (June 5, 2020).

The drainage ditch located along the east side of Hwy. 85 collects runoff from the adjacent lands and diverts it southeast to culvert #1, where it flows southwest under Hwy. 85 and outlets to Forwell Creek. The drainage ditch exists as a linear feature and is ephemeral in nature. Cattail sp. (*Typha sp.*), sedge sp. (*Carex sp.*), and grasses (*Poaceae sp.*) were present sporadically throughout the ditch. During the site visit small standing pools of water were observed along the length of the ditch at specific locations associated with the identified culverts (Figure 2) and at the outlet from the feature on the subject property (AHP-001, AHP-002, AHP-003, AHP-004, AHP-006); however, the remaining length of the ditch, running along the eastern side of Hwy. 85, was dry (Figure 3).



Figure 2. Drainage ditch at inlet to culvert #3, facing northwest (June 5, 2020).



Figure 3. Drainage ditch along Hwy. 85, facing southeast (June 5, 2020).

Due to the ephemeral nature of the drainage ditch it does not provide fish habitat. The outlet of culvert #1 was observed to be elevated above the water level in Forwell Creek on June 5th (Figure 4), effectively disconnecting the creek from the culvert and preventing fish from accessing the drainage ditch on the east side of Hwy. 85. Under high flow situations (i.e. spring freshet or large precipitation events) the level of Forwell Creek may be elevated above the bottom elevation of the culvert outlet, but due to the expected high volumes of water through culvert #1 from the east it is not expected that fish could navigate the culvert due to associated high water velocities.



Figure 4. Culvert #3 outlet to Forwell Creek (June 5, 2020).

Forwell Creek exists as a permanent feature that flows south along the west side of Hwy. 85. The channel is relatively straight and confined due to the road embankment along the east side. Within the channel the creek exhibits riffles, relatively small pools, and long runs with water depths ranging from 0.03 to approximately 0.3m on June 5, 2020. Substrates are dominated by gravel and sand with areas of cobble and silt also observed. Woody debris is present in relatively low abundance, and is generally associated with pools on the downstream side where the flow has eroded the channel bed. The channel has experienced downcutting, as evidenced by bank erosion and relatively steep banks, measuring up to approximately 1.0 m. However, this erosion and downcutting has also resulted in undercut banks at some locations, which provide

additional fish habitat. For the assessed sections of the creek the wetted width ranged from 0.4 to 2.3 m. During the site visit the water temperature was 21°C at 12:00 at AHP-007 and 24°C at 11:00 at AHP-005. Conductivity was approximately 2.4 mS, total dissolved solids was approximately 1.3 ppt, and pH ranged from 7.6 at the downstream survey location to 9.15 at the upstream survey location. Small-bodied fish were observed throughout Forwell Creek in relatively high abundance, which confirms that the creek provides direct fish habitat.

2.2.4 Species at Risk

Field surveys did not document the presence of any SAR. A SAR screening exercise was finalized with the input of original field surveys and was cross-referenced with habitat present on-site (Appendix III). Suitable habitat is not present for any SAR in the subject property due to the intensive and industrial nature of the study area.

Habitat for Wavy-rayed Lampmussel includes small to medium-size rivers with gravel and/or sandy substrates. Wavy-rayed Lampmussel's host fish are Smallmouth (*Micropterus dolomieu*) and Largemouth Bass (*Micropterus salmoides*). Based on these habitat requirements, portions of Forwell Creek may provide suitable habitat for Wavy-rayed Lampmussel, albeit marginally.

2.2.5 Significant Wildlife Habitat

NRSI conducted a screening exercise that utilized general evaluation criteria set out in the SWH Technical Guide, Ecoregion 6E Criterion Schedule (OMNRF 2012), to identify the presence of candidate SWH within the subject property. Based on the background information review, desktop analysis, and field studies, there are no confirmed or candidate SWH types within the subject property. Refer to the final SWH screening exercise (Appendix III) for an analysis of each SWH type assessed within the subject property.

3.0 Assessment of Potential Impacts

3.1 Proposed Undertaking

The impact analysis presented here is based on the Site Plan, prepared by ABA Architects Inc. (Appendix I) and the Functional Servicing and Stormwater Management Report, prepared by WalterFedy Inc. (2020). The redevelopment proposed on the subject property will fall under a Plan of Subdivision and will create 8 development blocks. As part of the redevelopment, access to and from each block will be provided via a common, privately-owned, internal roadway off of Conestoga Road (WalterFedy Inc. 2020). The construction of the 8 development blocks will comprise residential, office, and retail buildings, and development of these blocks will be phased in their build-out (WalterFedy Inc. 2020). A pedestrian bridge, spanning Hwy. 85, to the west of the subject property is proposed to link with the existing LRT transportation network. Three pedestrian bridge options are currently proposed; the preferred pedestrian option will be refined through consultation with the City of Waterloo and RMOW.

3.2 Approach to Impact Analysis

The discussed potential impacts are determined by comparing the characteristics of the existing natural features within the study area and their functions to typical residential and construction processes. Where a development proposal overlaps with the natural features, impacts may arise. The following is a description of the types of impacts that will be discussed.

- Direct impacts to the natural features within the development area associated with disruption or displacement caused by any potential future 'footprint' of an undertaking.
- Indirect impacts associated with changes in site conditions, such as sediment and erosion and water quantity/quality.
- Induced impacts associated with impacts after the development is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.

3.3 Direct impacts

The location of natural features and evaluation of their ecological function should be the basis for any development layout. Direct impacts to these natural features should be

avoided where at all possible. Direct impacts are limited to tree and vegetation removals and impacts to wildlife and their habitats.

Direct impacts associated with the proposed development are limited to the removal of vegetation and several isolated trees, primarily comprised of non-native or invasive species. Other vegetation to be cleared includes shrubs, forbs, and grasses from the proposed development footprint. No significant plant species will be impacted.

At the time of writing, three options for the crossing location have been identified (see Appendix I). In all options, the crossing location will avoid in-water work and the proposed crossing location will take advantage of an existing disturbed open area. Care has been taken to minimize the direct footprint of construction, and the design of the bridge will avoid bends in the watercourse. There will be no need for any physical realignment of Forwell Creek, and the crossing will not inhibit fish movement or act as a barrier. Additionally, the risk to flood damage to upstream or downstream properties will be negligible, given the bridge design and crossing location. As such, no negative impacts are anticipated to any watercourses.

Table 1 summarizes potential impacts associated with vegetation removal and the mitigation strategies recommended.

3.4 Indirect Impacts

The following section outlines potential sources of indirect impacts associated with the proposed development:

- Watercourse crossings,
- Sediment and erosion,
- Water quality and quantity, and
- Supporting Natural Feature (Woodland).

These indirect impacts and the recommended mitigation measures are detailed in Table 1 in accordance with each stage of the project.

3.4.1 Watercourse Crossings

Section 9.1.2 (Crossings) of GRCA policies (GRCA 2015) regarding development within watercourses indicates that the bridge construction may be permitted in accordance with the General Policies (Sections 7.1.2-7.1.3), provided that it can be demonstrated that:

- a) crossings avoid any bends in the watercourse to the extent practical,*
- b) crossings are located to take advantage of existing impacted or open areas on the channel bank or valley slope, wherever possible,*
- c) crossing structures avoid the Riverine Erosion Hazard in order to accommodate natural watercourse movement, wherever possible,*
- d) the risk of flood damage to upstream or downstream properties is reduced through site and infrastructure design, wherever possible,*
- e) there is no inhibition of fish passage,*
- f) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions,*
- g) physical realignments or alterations to the river, creek, stream or watercourse channel associated with a new crossing are avoided or are in accordance with the policies in Section 9.1.16, and*
- h) maintenance requirements are minimized.*

In evaluating the approach which would result in the least amount of impact to the watercourse, the project team considered several design features, in addition to best management practices aimed to limit and reduce negative impacts as much as possible. Through the design process the new bridge has been developed to reduce impacts to the watercourse and surrounding area.

A DFO self-assessment will be completed, following final engineering design of the pedestrian bridge, documenting consideration to the watercourse and fish habitat in relation to the proposed pedestrian bridge. DFO review of this project is not anticipated because the project involves a pedestrian bridge without direct (footprint) impacts to the watercourse and the lack of in-water work. There will be no loss to fish habitat and the construction will not act as a barrier to fish movement.

3.4.2 Sediment and Erosion

Erosion and sediment control was provided as part of the Functional Servicing and Stormwater Management Report prepared by WalterFedy Inc. (2020). Prior to any grading or servicing works commencing onsite, erosion and sedimentation control measures shall be implemented. The following measures with regards to erosion and sediment control are provided:

- All erosion control measures are to be inspected and monitored, and repairs are to be completed as required
- All materials and equipment used for the purpose of site preparation and project completion should be operated and stored in a manner that prevents any materials from leaving the site
- To minimize the amount of earth from being tracked onto the roadways, a mud mat should be installed, prior to primary construction occurring.
- To prevent sediment runoff from the subject property and development area, light-duty silt fencing will be installed around the perimeter of the site and at the base of all stockpiles present.
- Silt fencing will be erected before grading begins to protect adjacent and downstream areas from migration of sediment in overland flow.
- Following completion of construction, and site stabilization, all erosion and sediment control measures and accumulated sediment are to be removed.

Significant impact is not anticipated if the above development procedures are followed.

3.4.3 Water Quality and Quantity

The approach to stormwater management for the proposed development is summarized in the following sections. The reader is referred to the Functional Servicing and Stormwater Management Report (WalterFedy Inc. 2020) for further details.

In the current condition, the subject property is largely impervious (e.g., estimated at 82%) and there are no controls to reduce peak outflows (WalterFedy Inc. 2020). Based on the general imperviousness nature of the subject property, findings from WalterFedy Inc. (2020) indicate that the site does not contribute to maintaining the baseflow to Forwell Creek.

Given the existing condition of the subject property, water infiltration is currently hindered due to the subject property being developed in nature. The proposed development design will either keep the overall imperviousness of the subject property at the same levels in the current condition or slightly below, while each development block will provide measures to reduce peak flows through attenuation within the overall system (WalterFedy Inc. 2020). At the time of writing it is also anticipated that the proposed development may contain green roofs which will further contribute to runoff reduction from the site, overall (WalterFedy Inc. 2020).

In the current condition the utility corridor is entirely paved; the proposed development proposes the corridor to be developed into an amenity feature. As such, the proposed development will contribute to reducing the imperviousness of this area, promoting infiltration (WalterFedy Inc. 2020). Water from the interal road network will be collected and treated through an oil-grit separator or other low impact development measure prior to discharge (WalterFedy Inc. 2020).

When compared to the current condition of the site, controls provided through the proposed stormwater management strategy will help to positively influence inputs into the system. In the current condition there are no stormwater management controls in place and very little pervious surfaces. Under the proposed condition, surface water runoff to be controlled and infiltration within the subject property will increase. As such, no negative impacts to fish or fish habitat are anticipated based on the proposed development and associated storm water management strategy.

3.4.4 Supporting Natural Feature (Woodland)

A Deciduous Woodland (FOD) identified as a Supporting Natural Feature, per the City of Waterloo Official Plan (2020), is present within the study area, located along the western side of Hwy. 85 (Map 1). During construction of the pedestrian bridge, tree protection fencing should be placed along the northern boundary of this feature to protect it from sedimentation. However, due to the distance between this feature and the development area, no negative impacts on this features form or function is anticipated.

Table 1. Development Impact Assessment and Mitigation Requirements

Project Stage	Proposed Timeline	Potential Impacts	Mitigation Required
Site Preparation Refer to Functional Servicing and Stormwater Management Report (WalterFedy Inc. 2020)	Confirmation through Permit Approval	• Sedimentation and erosion • Indirect impacts to wildlife	• Delineation of construction zone (survey staking/flagging). • Installation of erosion and sediment control measures. • Regular inspection of the erosion and sediment control measures to ensure they are functioning as intended.
Demolition, Site Grading, and Construction Refer to Functional Servicing and Stormwater Management Report (WalterFedy Inc. 2020) and Site Plan (ABA Architects Inc.; Appendix I)	Confirmation through Permit Approval	• Sedimentation and erosion • Indirect impacts to wildlife • Vegetation removal	• Demolition and removal timing should be targeted to the greatest extent possible when vegetation is dormant. • If topsoil removal and stockpiling is required, it will be located in a designated area. These areas should be located away from any of the drainage ditches and will be surrounded by erosion and sediment control fencing. • Exclusion fencing/sediment control measures shall remain in place throughout the life of the project and regularly inspected to ensure good working condition. • All fueling of machinery will take place in a designated area >30m from the watercourse/drainage features. • A mud mat will be installed at the entrance to the property to reduce excess soils from being displaced off site.
Restoration components of the activity (e.g. landscaping, re-seeding, etc.)	Ongoing	• N/A	• Backfill, reinstate topsoil and hydro-seed (native mix to be used) areas excavated for grading and culvert installation. • Stockpiled topsoil to be re-used on-site. • Restoration/seeding/planting will occur within the subject property immediately following works in this area. A detailed planting and restoration plan will be prepared with final site desing.

4.0 Conclusions

Natural Resource Solutions Inc. (NRSI) was retained in March 2020 by Northfield Properties LP to complete a Scoped Environmental Impact Study in support of a proposed mixed-use development at 525-565 Conestoga Road, Waterloo, Ontario. The existing property is highly developed in nature and does not provide natural habitat. As part of the proposed development a pedestrian bridge is proposed to span Hwy. 85 to the west, where it will provide access to an existing transportation network.

Original field surveys, completed by NRSI, documented and characterized the subject property and watercourse throughout the study area. Field surveys determined that Forwell Creek is highly channelized. Habitat for SAR was not found to be present within the subject property, and SWH was not found to be present within the study area. Marginal habitat is present within Forwell Creek for Wavy-rayed Lampmussel, however, no negative impacts are anticipated based on the development design provided.

NRSI worked closely with the project team to design the construction footprint with the least impact possible and improvements to natural habitats where required. Potential impacts associated with the bridge construction at the watercourse crossing have been mitigated through construction timing, sediment and erosion control measures, maintenance of water flows, and landscape plantings. As such, negative impacts to the watercourse and natural heritage system are not anticipated.

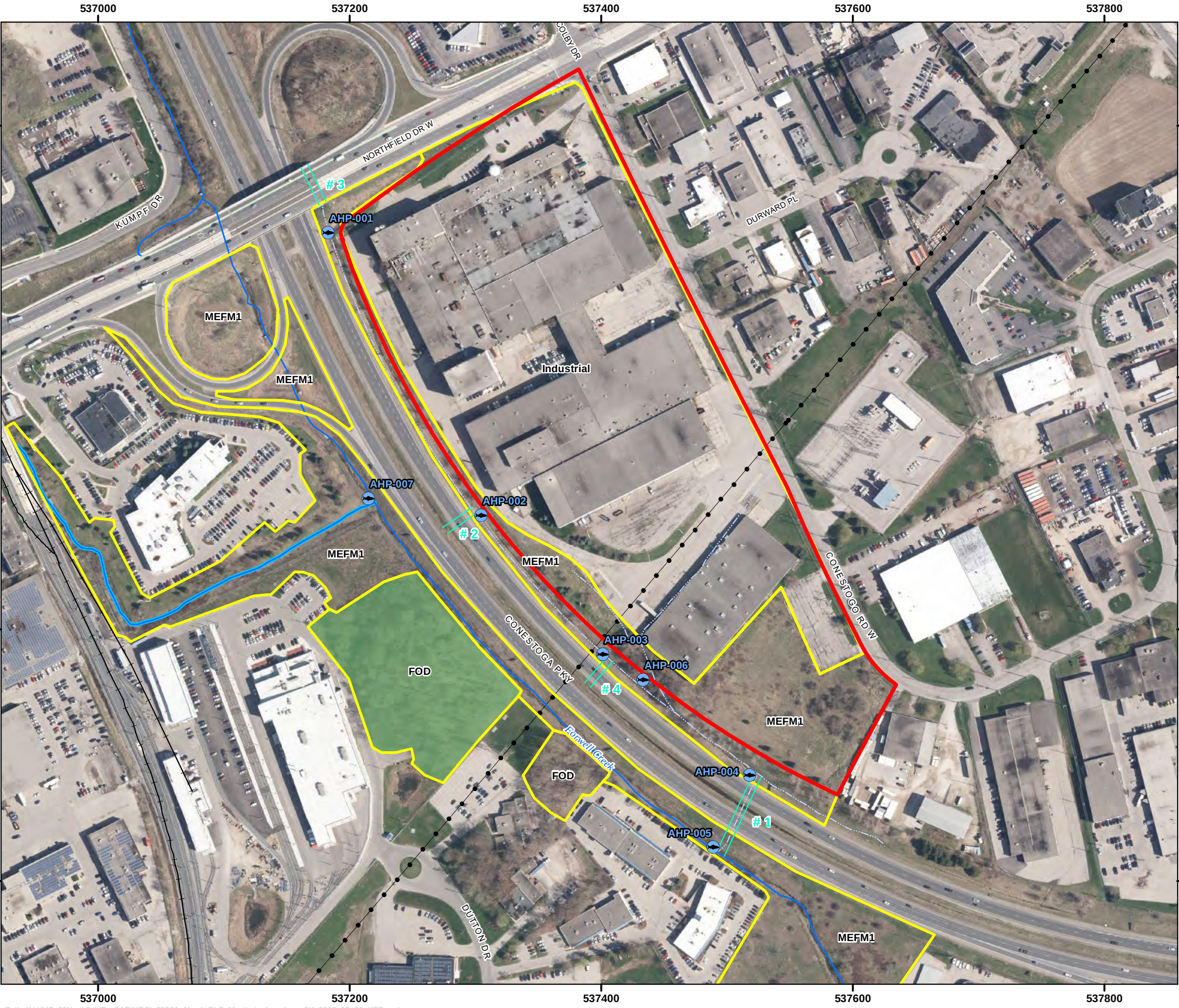
5.0 References

- Bird Studies Canada (BSC), Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2008. Ontario Breeding Bird Atlas Database. Accessed February 12, 2020. (<http://www.birdsontario.org/atlas/aboutdata.jsp?lang=en>).
- Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.
- Grand River Conservation Authority (GRCA). 2005. GRCA's EIS Guidelines and Submissions Standards for Wetlands. August 26, 2005.
- Grand River Conservation Authority (GRCA). 2013. Policies for the Administration for the Development Interference with Wetlands and Alterations of Shorelines and Watercourses Regulation: Ontario Regulation 150/06. January 25, 2013.
- Grand River Conservation Authority (GRCA). 2020. Grand River Conservation Network: Interactive Mapping Tool. <https://www.grandriver.ca/en/Planning-Development/Map-Your-Property.aspx>.
- Government of Canada. 1994. Migratory Birds Convention Act (MBCA) and Regulations. May 3, 2013. (<http://www.ec.gc.ca/nature/default.asp?lang=En&n=7CEBB77D-1>).
- Jones, C., R. Layberry, and A. Macnaughton. 2019. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Last updated April 2019. (<http://www.ontarioinsects.org/atlasonline.htm>) (Accessed February 12, 2020).
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2017. Survey Protocol for Species at Risk Bats within Treed Habitats. April 2017.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2020. Natural Heritage Information Centre (NHIC) Database. Accessed February 12, 2020.
- Ontario Nature. 2020. Ontario Reptile and Amphibian Atlas. Accessed February 12, 2020. Available at: (<https://www.ontarionature.org/dynamic-maps/dynamic-maps/>).
- Presant, E.W. and R.E. Wiklund. 1971. The Soils of Waterloo County. Report #44 of the Ontario Soil Survey. Research Branch, Canada Department of Agriculture, Department of Soil Science- University of Guelph, and Ontario Department of Agriculture and Food.

Region of Waterloo. 2015. Regional Official Plan. Approved June 2015 Consolidation.
(<https://www.regionofwaterloo.ca/en/regional-government/land-use-planning.aspx>).

WalterFedy Inc. 2020. Functional Servicing & Stormwater Management Report.
Prepared for Hilco Captial. July 2020.

MAPS



Path: X:\1647_65NorthfieldDr_SAR\NRSI_2396A_Map1_ELC_MonitoringLocations_3K_2020_07_22_KEF.mxd

525-565 Conestoga Road Scoped Environmental Impact Study

Vegetation Communities and Monitoring Stations

Legend

Subject Property

Utility Line

Railway

Aquatic Habitat Point (AHP)

Culvert

Permanent Feature

Intermittent/Ephemeral Feature

Ecological Land Classification (ELC)

(FOD) Deciduous Forest

(MEFM1) Dry-Fresh Forb Meadow Ecosite

Supporting Natural Feature (City of Waterloo 2020)

Perennial Watercourse

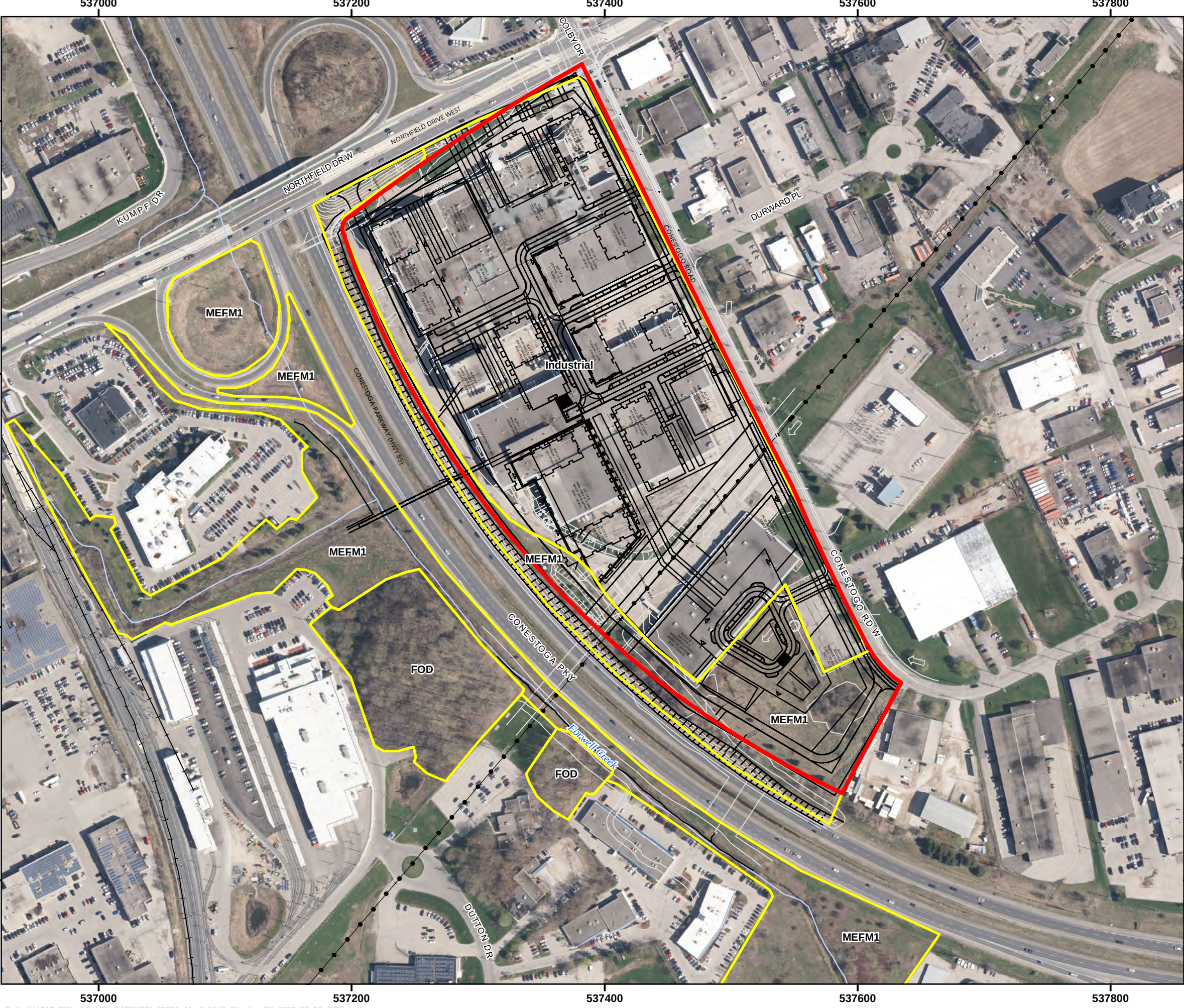
Supporting Natural Feature

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRF© Copyright: Queen's Printer Ontario. Imagery: First Base Solutions Inc (2019).

Project: 1647
Date: July 23, 2020

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000



Path: X:\1647_65NorthfieldDr_SAR\NRSI_2396A_Map2_NHS_Siteplan_3K_2020_08_06_GCS.mxd

Map 2

525-565 Conestoga Road
Scoped Environmental
Impact Study

Site Plan and
Natural Heritage Features

Legend

Subject Property

Utility Line

Proposed Site Plan

Existing Conditions

Railway

Watercourse

Ecological Land Classification (ELC)

(FOD) Deciduous Forest

(MEFM1) Dry-Fresh Forb Meadow Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRF© Copyright: Queen's Printer Ontario. Imagery: First Base Solutions Inc (2019).

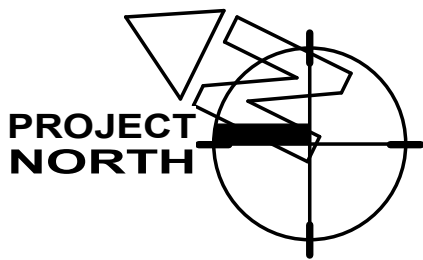
Project: 1647
Date: August 6, 2020

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

050100150200 Metres



APPENDIX I
Site Plan (ABA Architechts Inc.)



THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED.

No.	REVISIONS	DATE

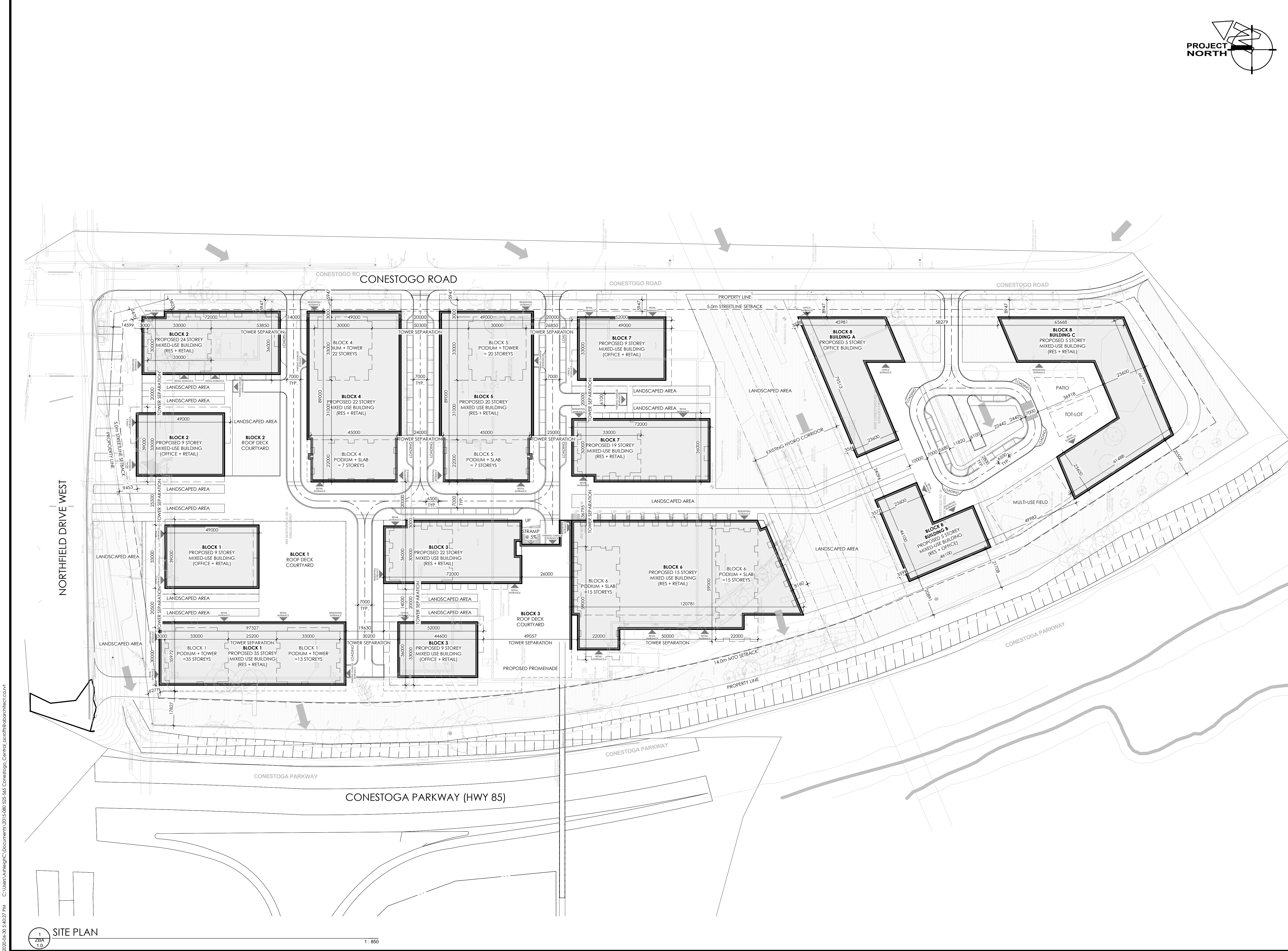


CLIENT
HILCO

PROJECT NAME
525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON, N2L 0A8

DRAWING TITLE
SITE PLAN

SCALE	DRAWING NUMBER
1 : 850	ZBA 1.0
SHEET SIZE	
24X36	
PROJECT NUMBER	2015-080



2020-06-30 5:40:27 PM C:\Users\Aba\OneDrive\Documents\2015-080-525-565 Conestogo_Central_Jacobi\aba\architect\site\csr\1



SITE PLAN

1 : 850



THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK

DRAWINGS ARE NOT TO BE SCALED.

[illegible]

CHRONOLOGY	DATE



aba architects inc

CUE

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 2C9
0A8

DRAWING TITLE

PARKING PLANS

SCALE

1 : 850

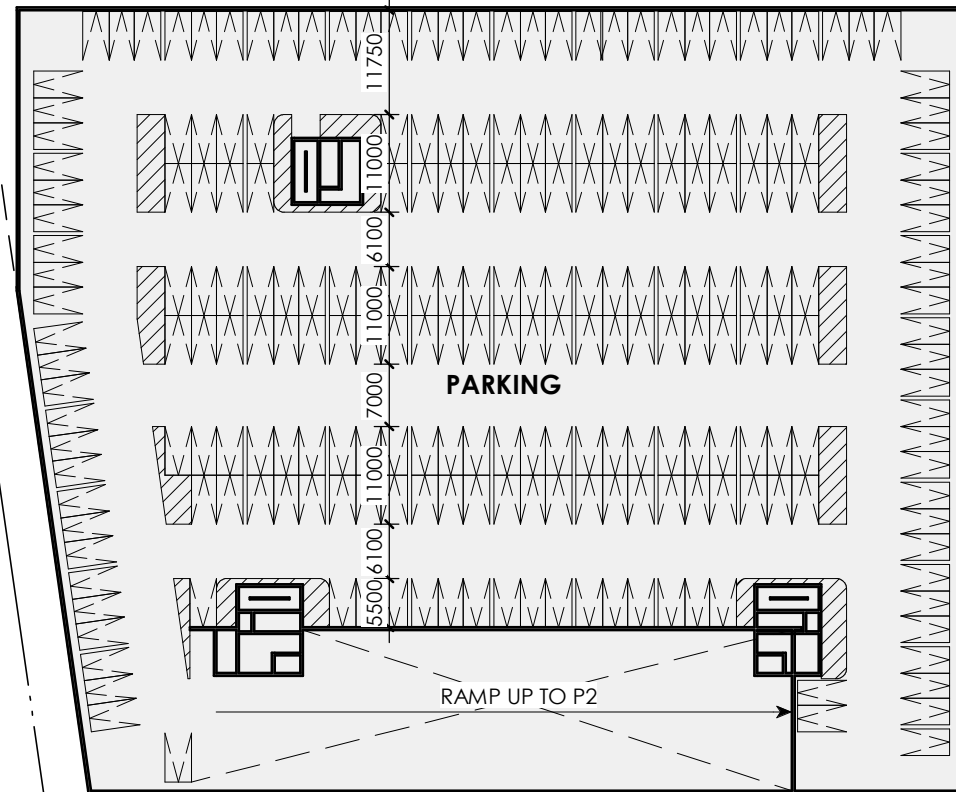
SHEET SIZE

PROJECT

2015-08

DRAWING NUMBER

ZBA 2.0



1 : 850



THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED

[illegible][illegible]

CITE

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 2C9
Q48

DRAWING TITLE

PARKING PLANS

1 : 850

24X36

PROJECT NUMBER
2015-08

DRAWING NUMBER

ZBA 2.1



3
ZBA
2.1

1 : 850

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED

[illegible]

CHRONOLOGY	DATE



CUEN

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 2C9
0A8

DRAWING TITLE

PARKING PLANS

SCALE

1 : 850

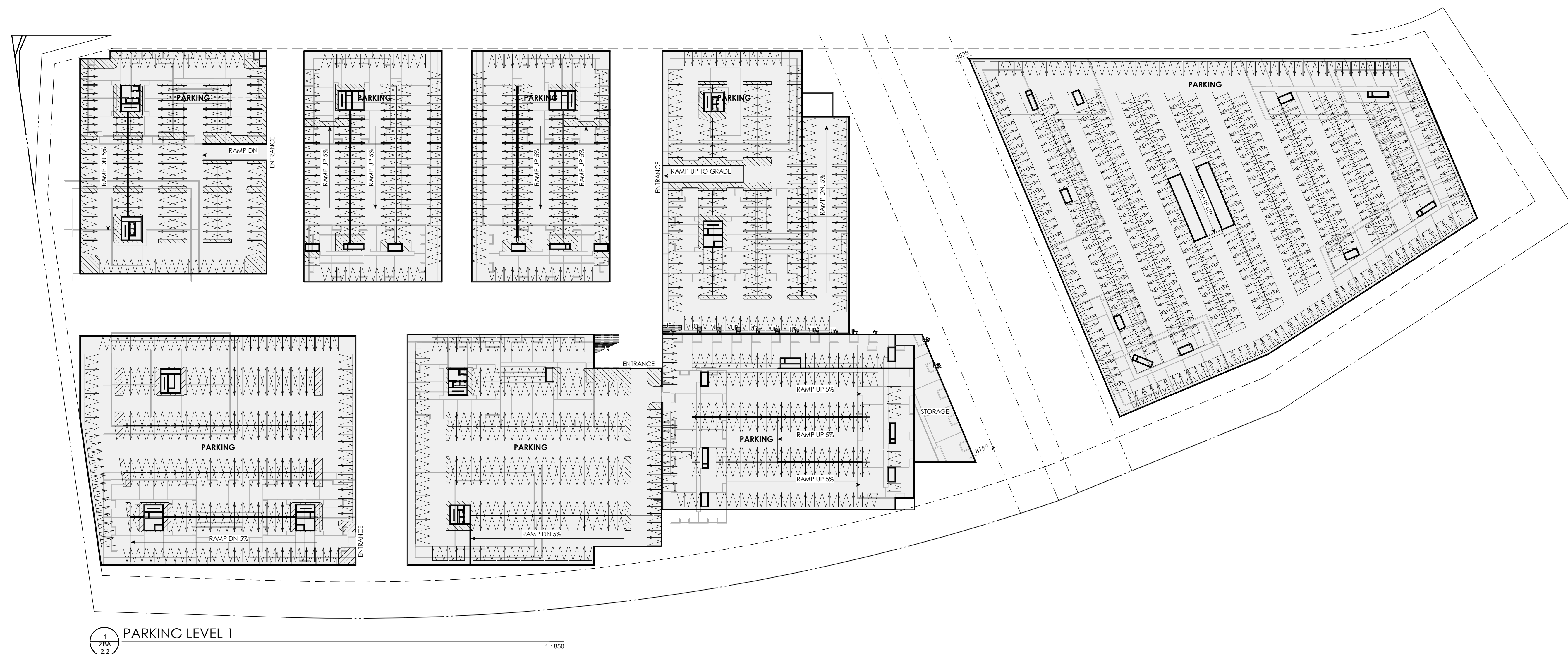
SHEET SIZE

24X36

PROJECT NUMBER

DRAFTING NUMBER

ZBA 2.2





THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED

[illegible][illegible]

aba architects inc

CLIENT

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 2C8

DRAFTING TITLE

PARKING PLANS - BLOCK 4 + 5

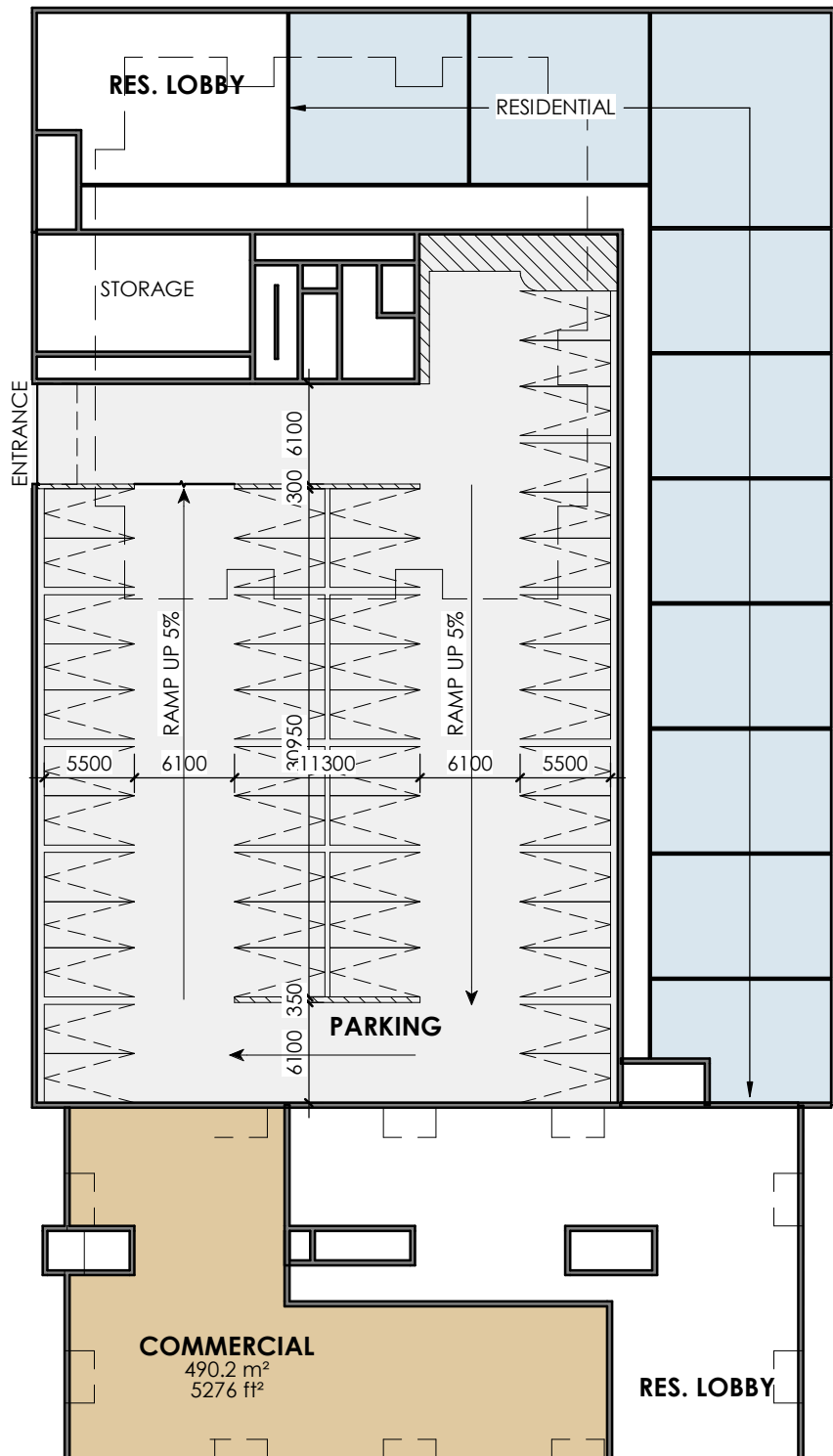
SCALE
1 : 450

SHEET SIZE
24X36

PROJECT NUMBER
2015-08

DRAWING NUMBER

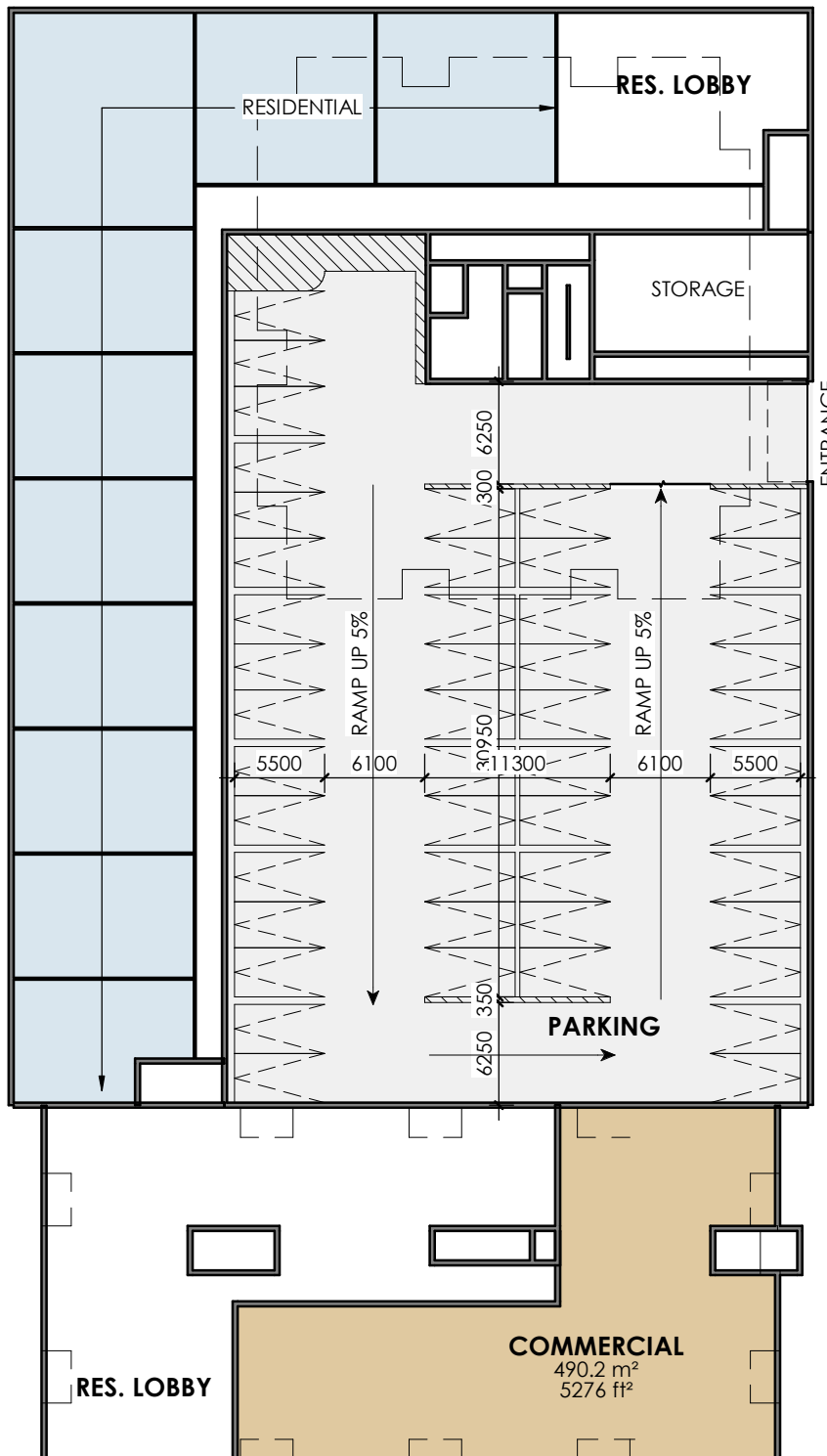
ZBA 2.3



2
ZBA
2.3

BLOCK 4/5 L1

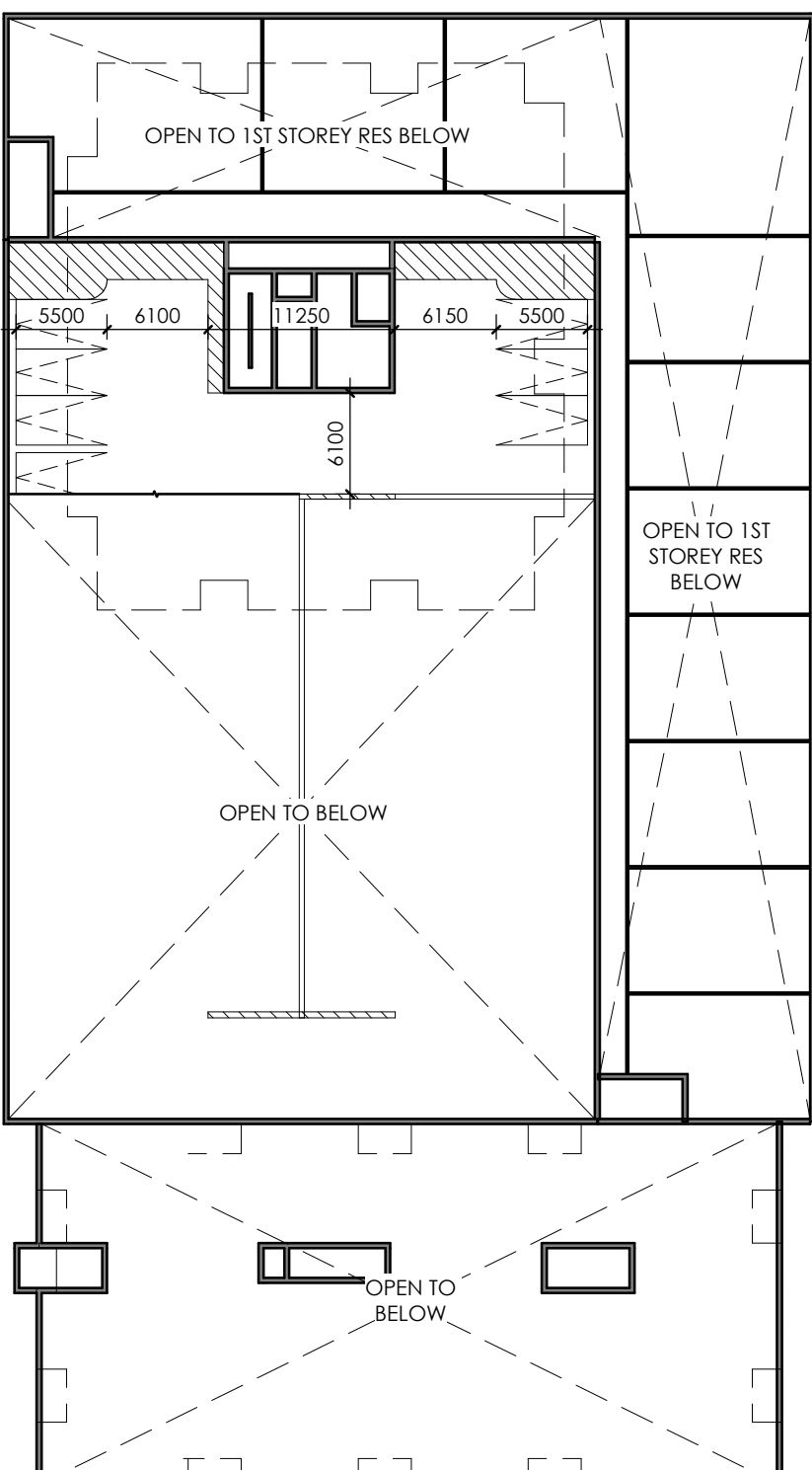
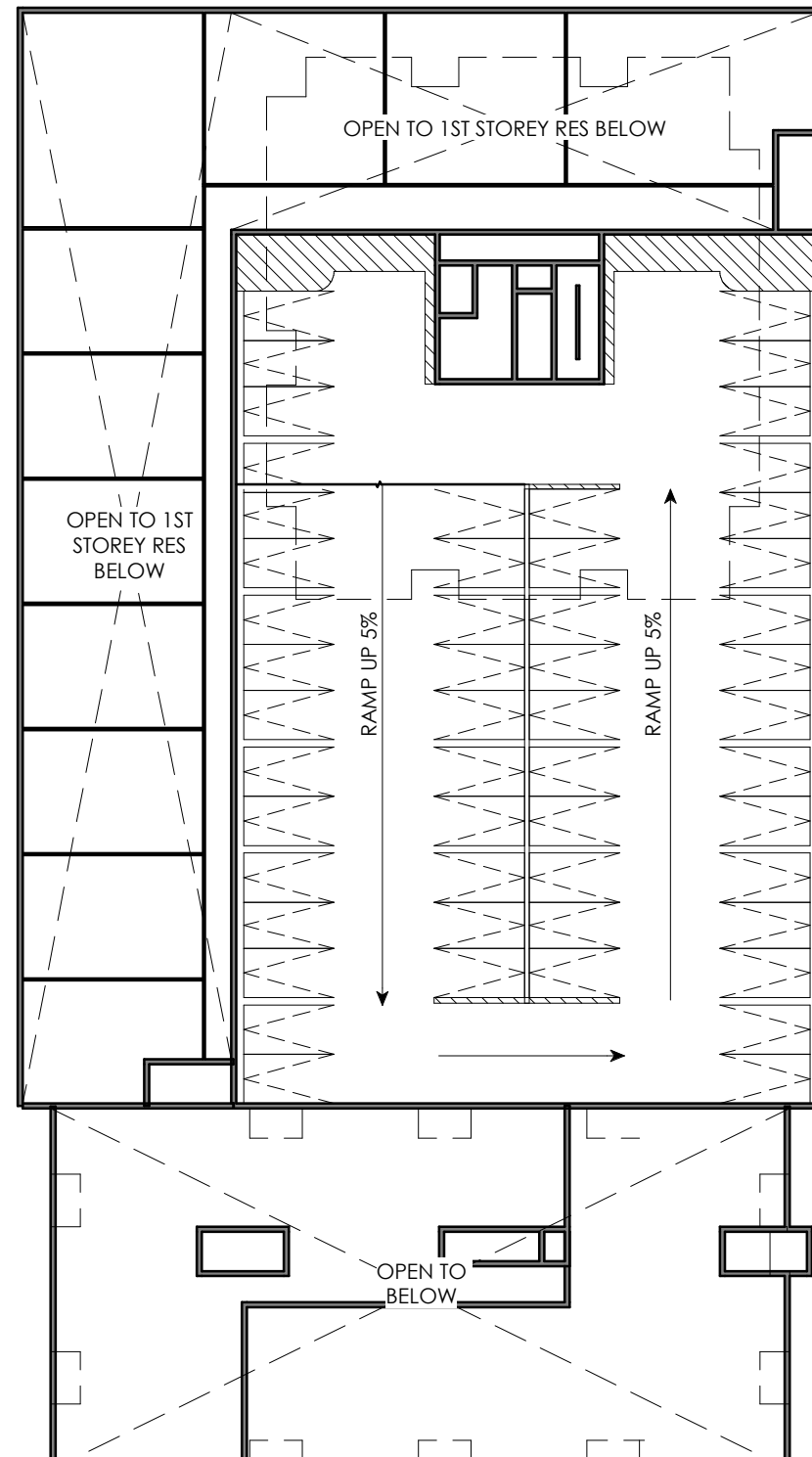
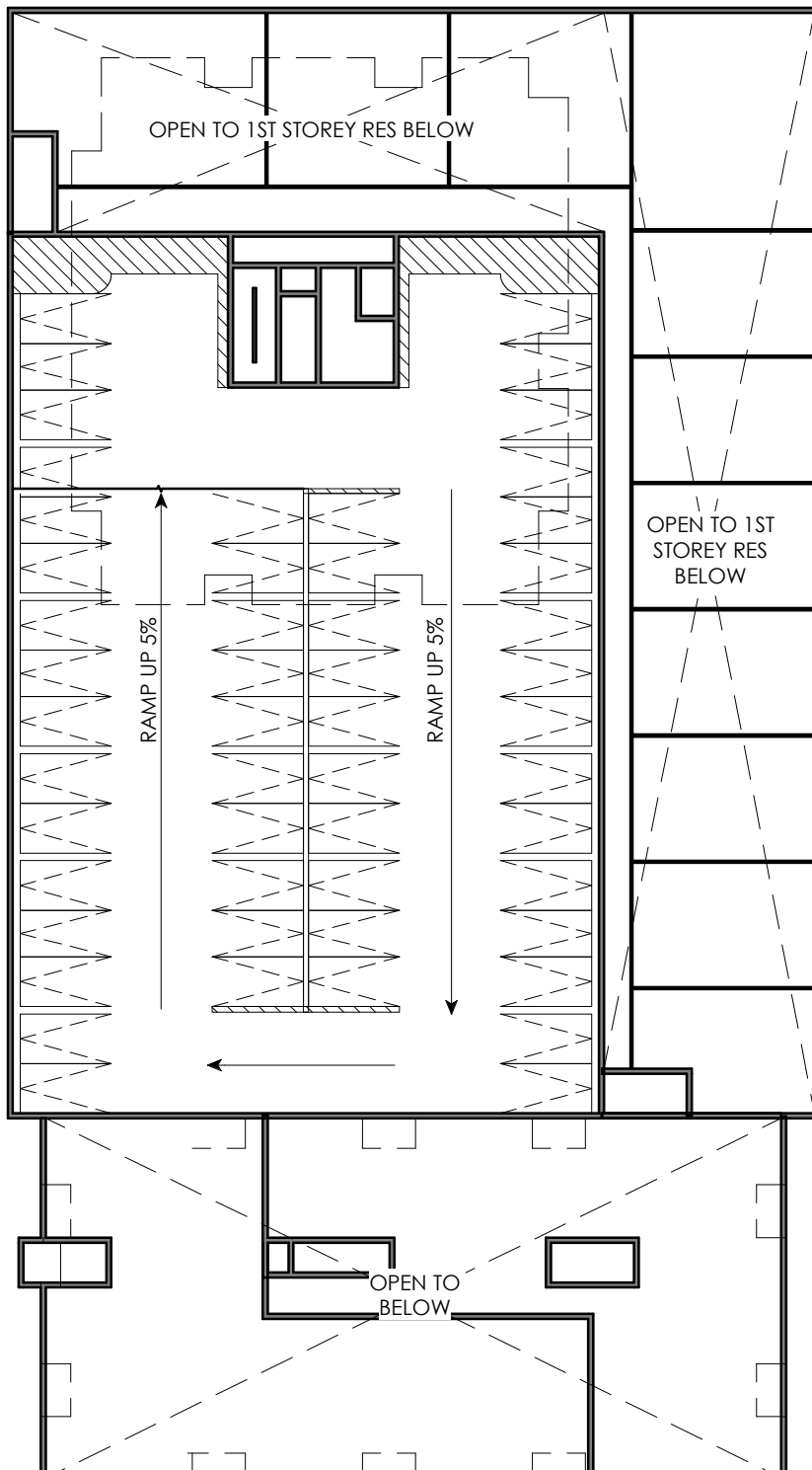
1:450



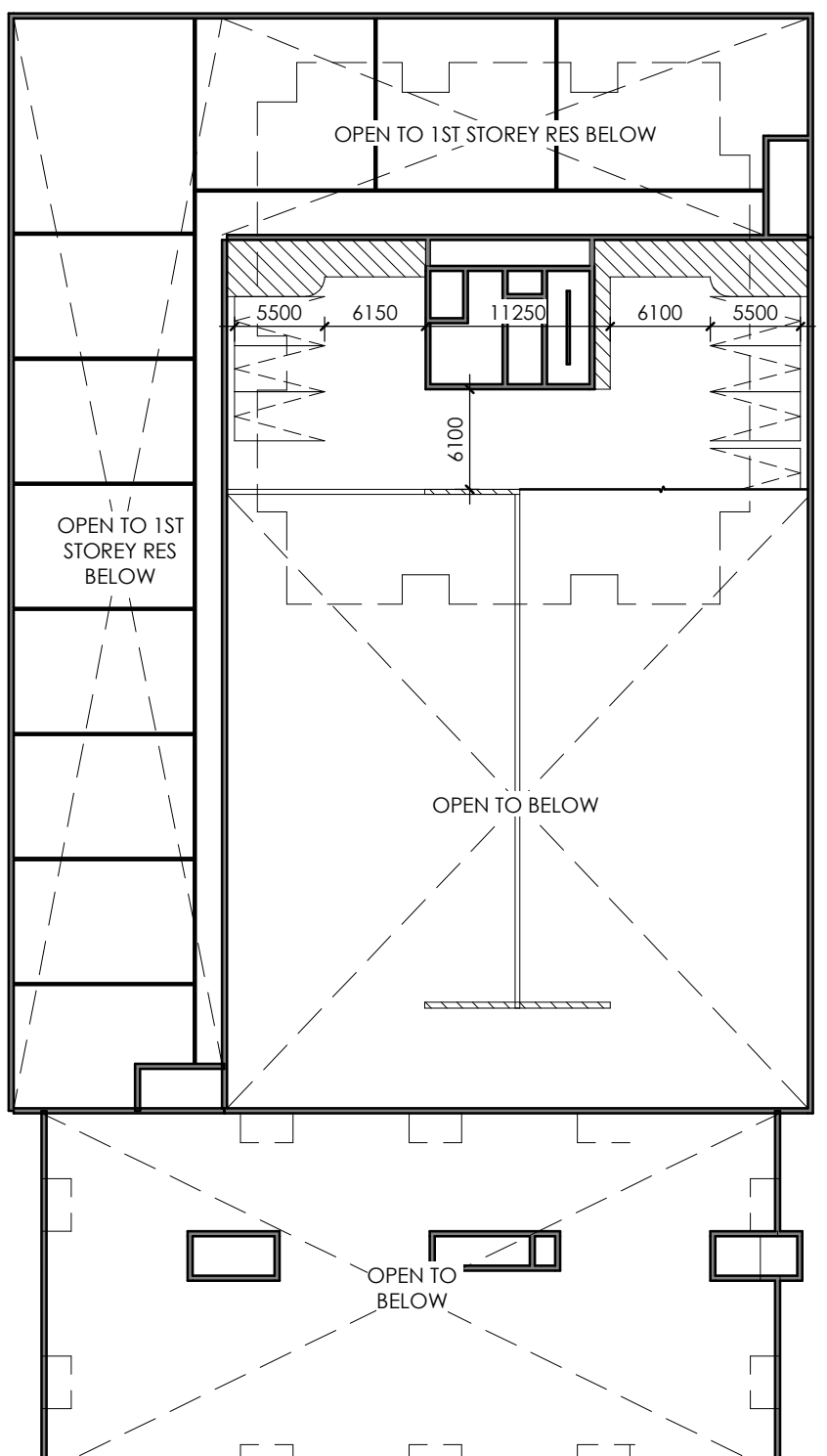
1
ZBA
23

BLOCK 4/5 L2

1 : 450




 BLOCK 4/5 L3
 1 : 450





THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK

DRAWINGS ARE NOT TO BE SCALED

[illegible]

CHRONOLOGY	DATE



aba architects in

CIIE

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 2C9
0A8

DRAWING TITLE

PARKING PLAN
BLOCK 6

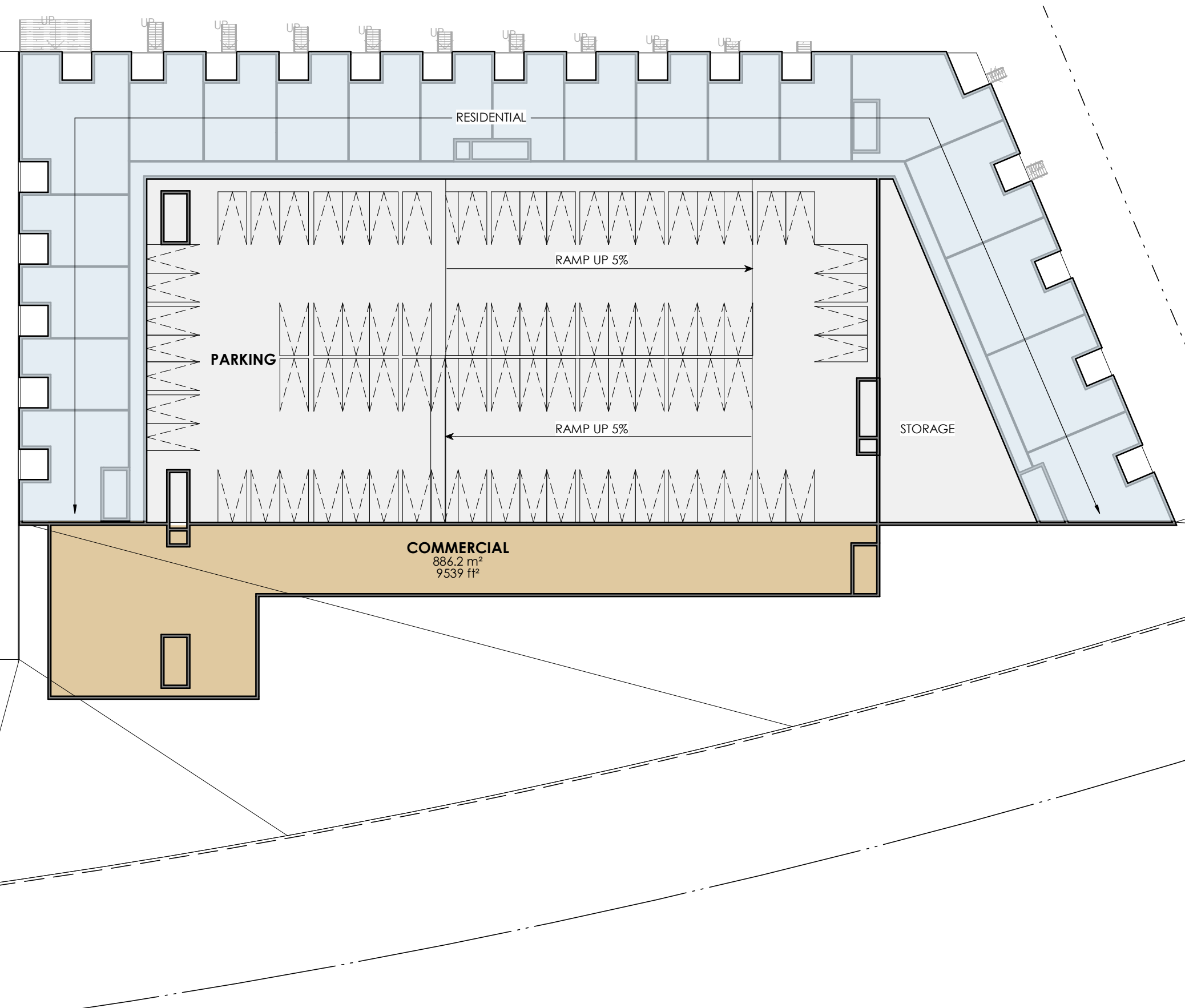
SCALE
1 : 450

SHEET SIZE
24X36

PROJECT NUMBER
2015-08

DRAWING NUMBER

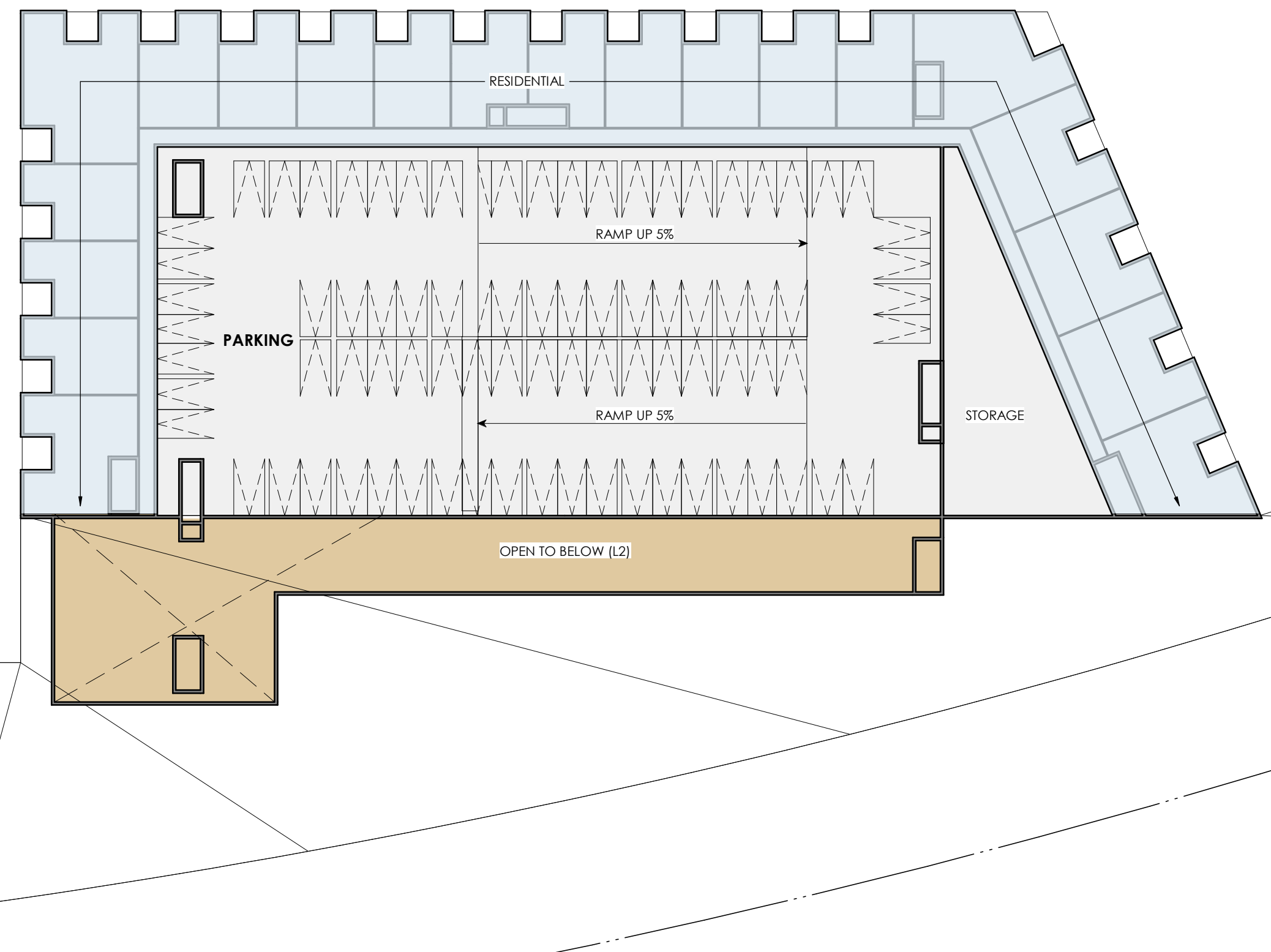
ZBA 2.4



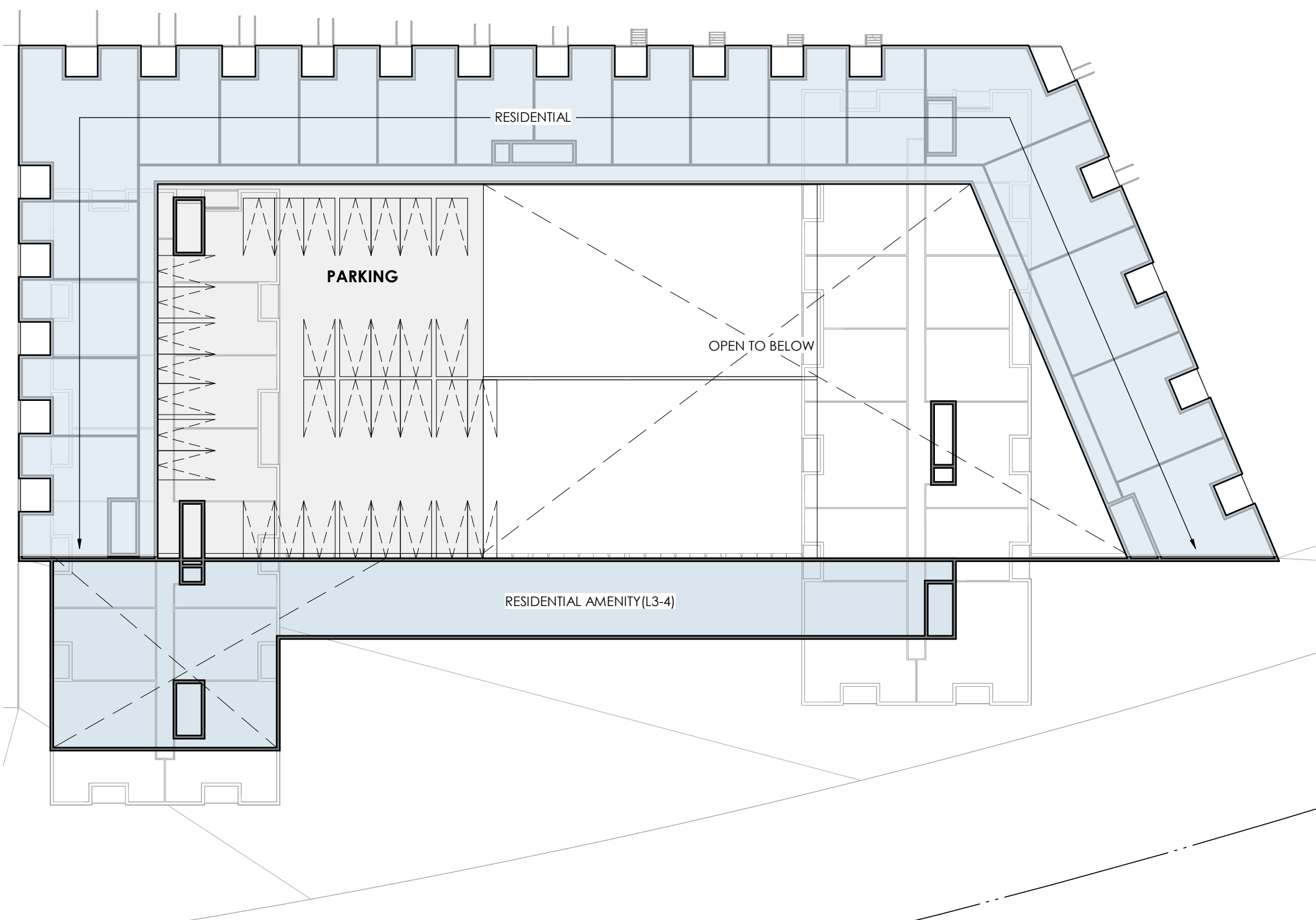
2
ZBA
2.4

BLOCK 6 MIXED-USE LEVEL 1

1 : 450



BLOCK 6 MIXED-USE LEVEL 2-3



3
ZBA

BLOCK 6 MIXED-USE LEVEL 4.

1 : 450

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible][illegible]

HILCO

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

ELEVATIONS

1 : 500

24X36



THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible][illegible]

HILCO

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

ELEVATIONS

LD/VC.1



THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible][illegible]

CLIENT

HILCO

PROJECT NAME

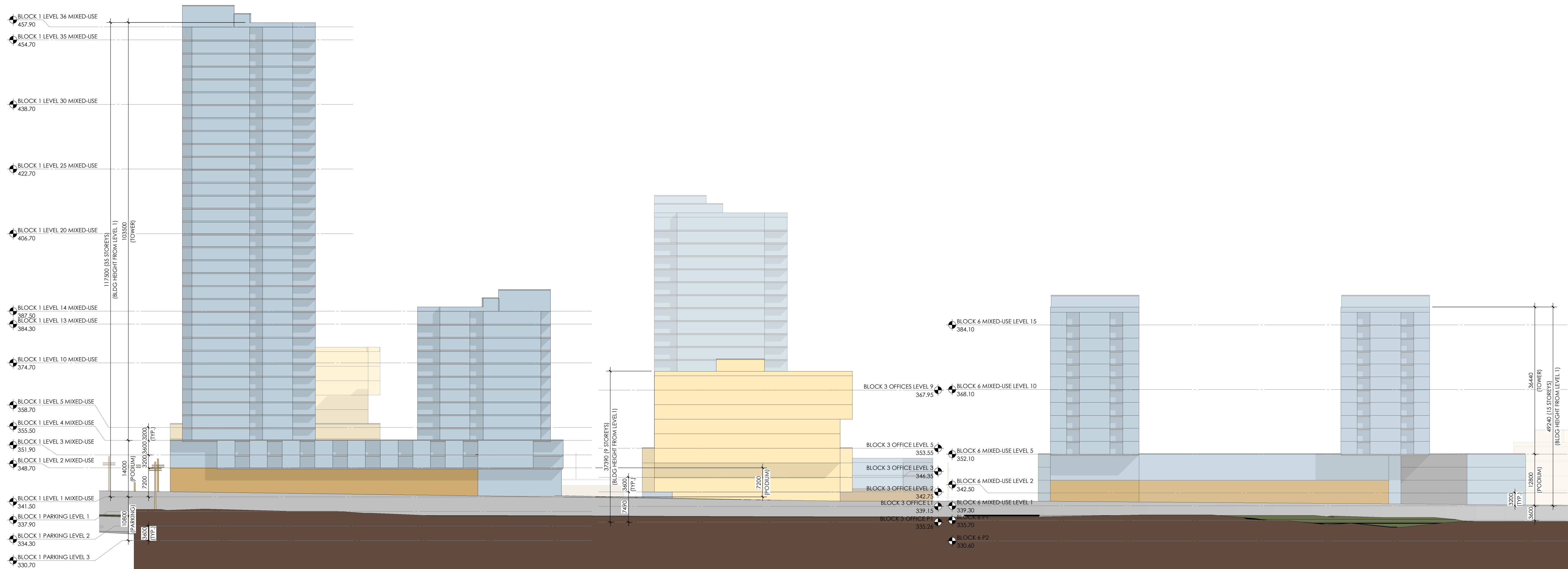
525-565 CONESTOGO

525-565 CONESTOGO ROAD, WATERLOO, ON. N2L 0A8

DRAWING TITLE

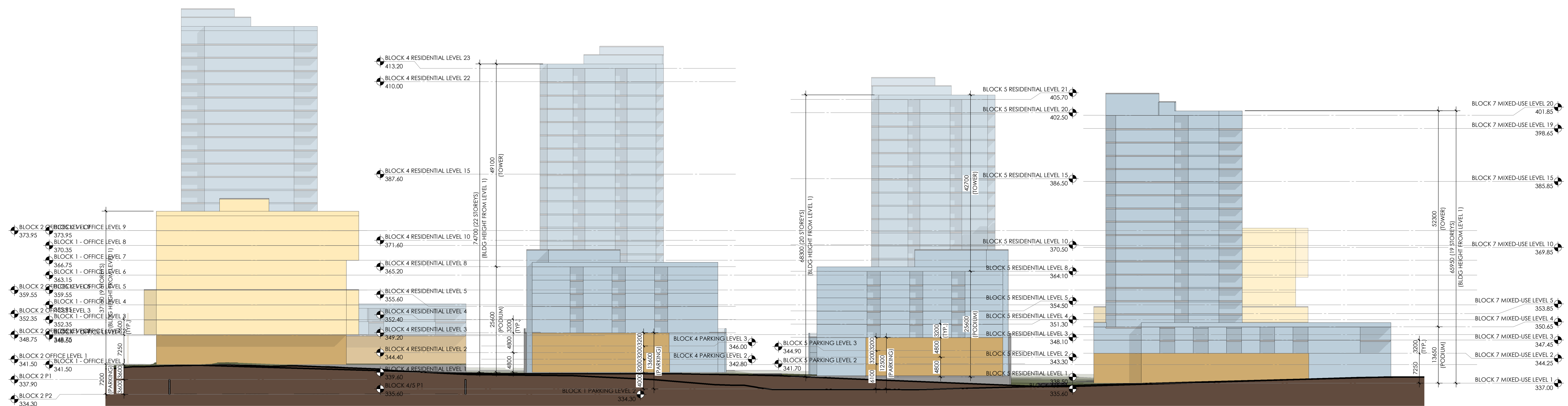
ELEVATIONS

SCALE 1 : 500	DRAWING NUMBER ZBA 3.2
SHEET SIZE 24X36	
PROJECT NUMBER 2015-080	



1 WEST ELEVATION/EXPRESSWAY ELEVATION
ZBA
3.2

1 : 500



2
ZBA
3.2

WEST ELEVATION/INTERNAL STREET

1 : 500

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible]

PROJECT NAME

525-565 CONESTOGO

525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

DRAWING TITLE
ELEVATIONS

SCALE 1 : 500	DRAWING NUMBER ZBA 3.3
SHEET SIZE 24X36	
PROJECT NUMBER 2015-080	

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible][illegible]

HILCO

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

INTERNAL STREET ELEVATION



1 : 500



1 : 500



1 : 500

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

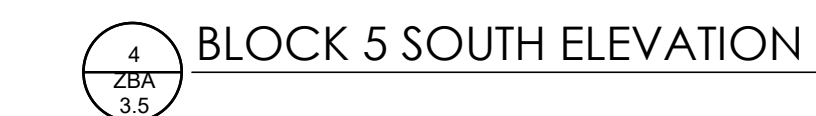
[illegible][illegible]

HILCO

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

INTERNAL STREET ELEVATION

ZBA 3.5



THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

[illegible][illegible]

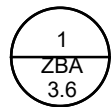
HILCO

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

INTERNAL STREET
ELEVATION

PROJECT NUMBER
2015-080

ZBA 3.6



1 : 500

THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED.

[illegible][illegible]

CUENT

HILCO

PROJECT NAME

525-565 CONESTOGO
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

DRAWING TITLE

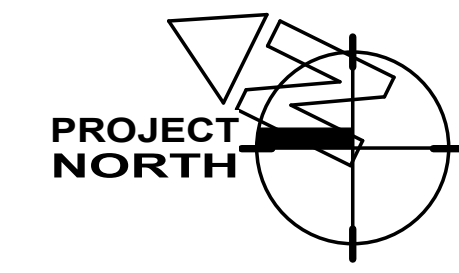
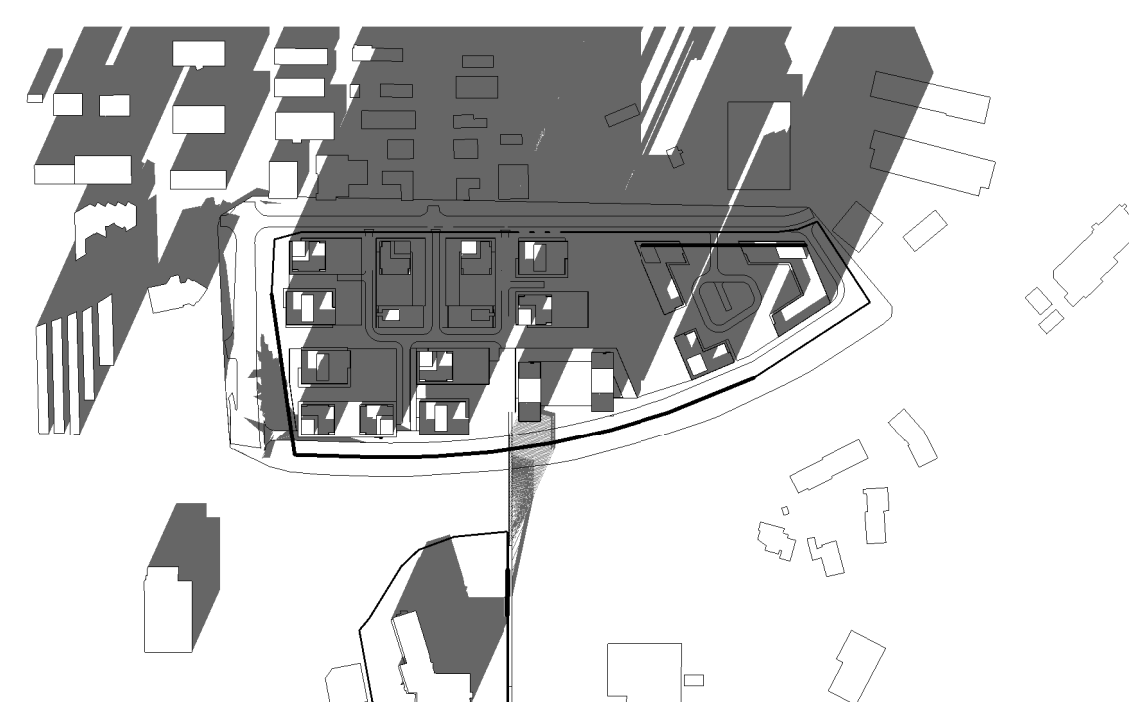
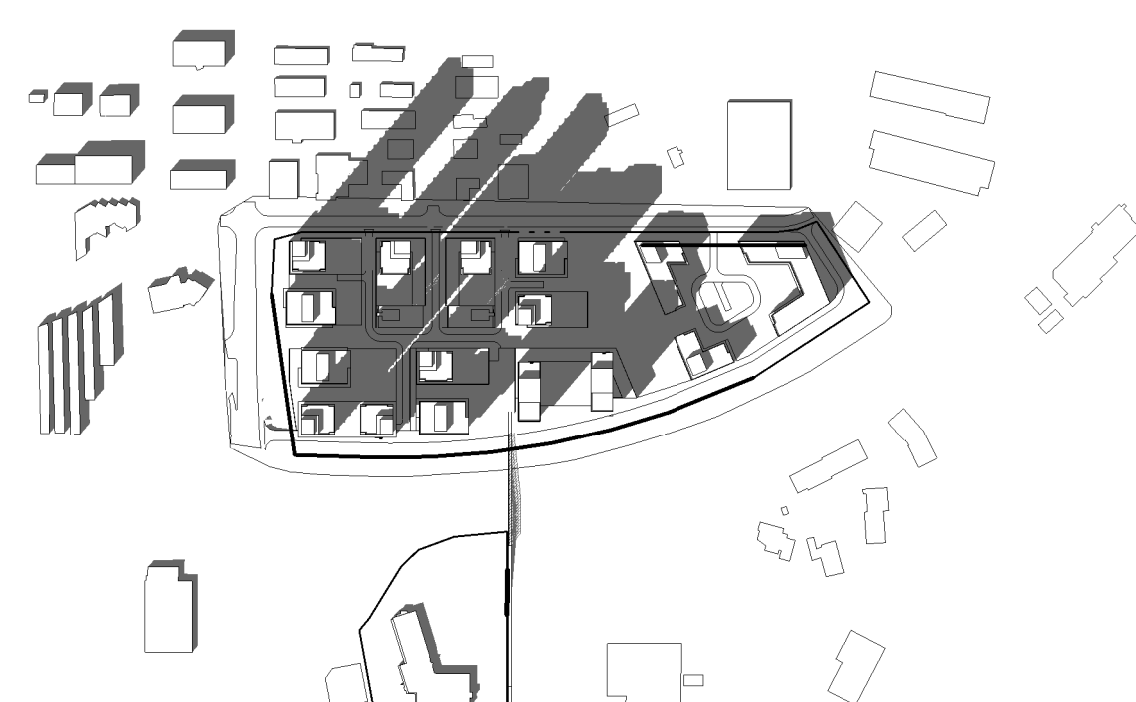
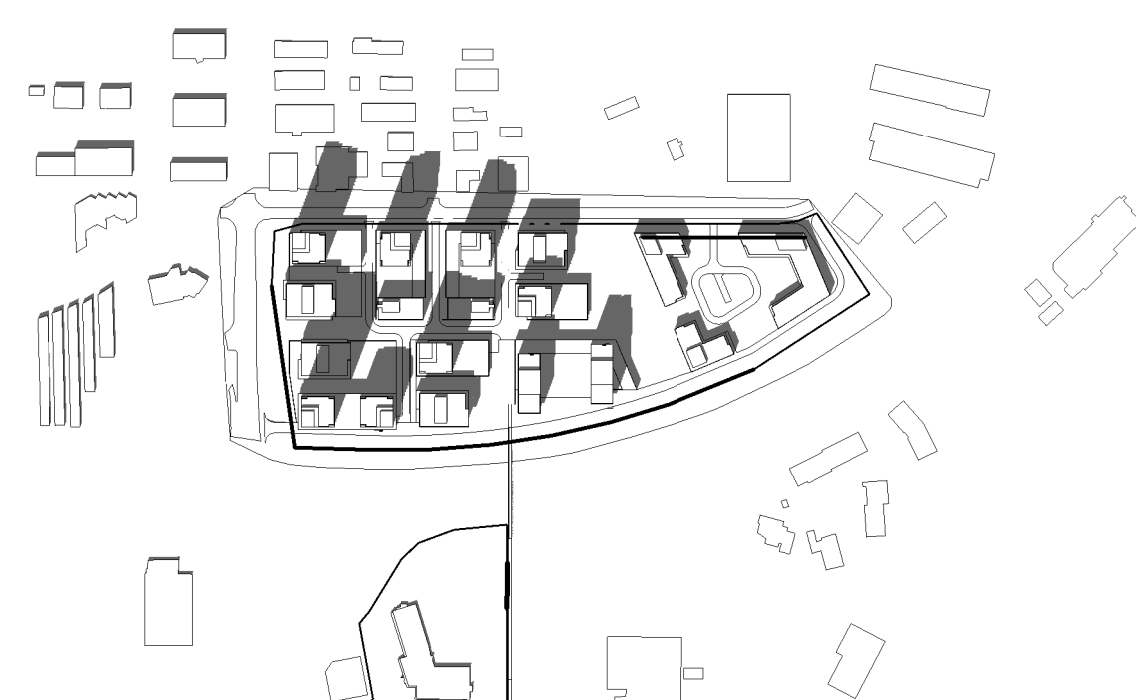
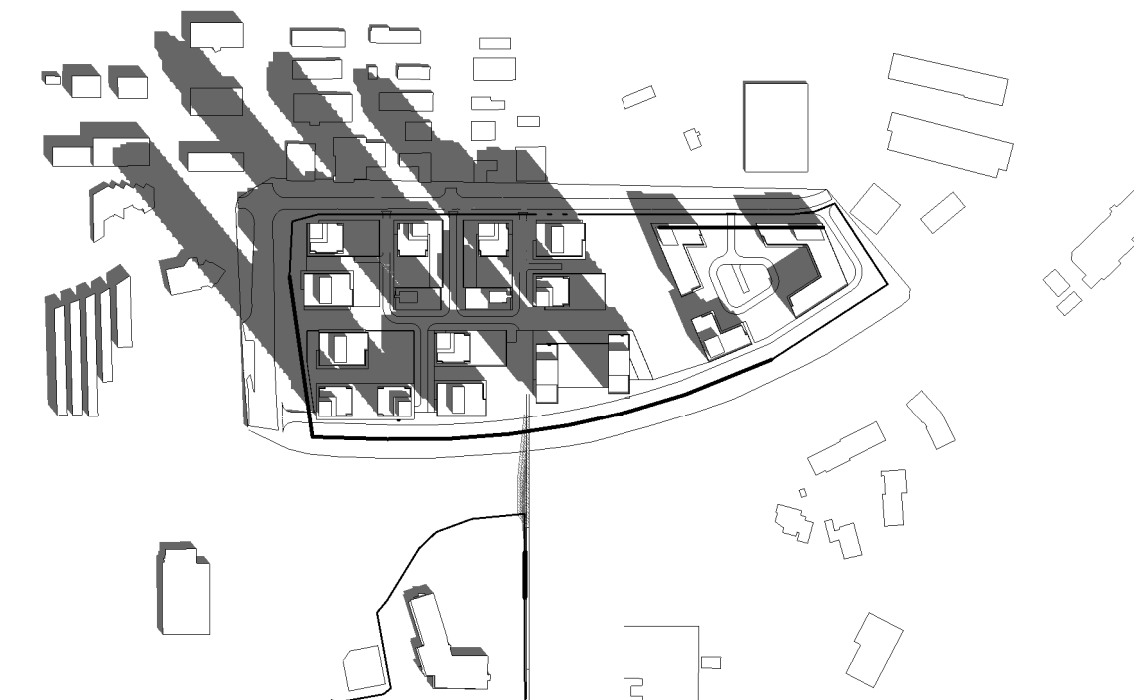
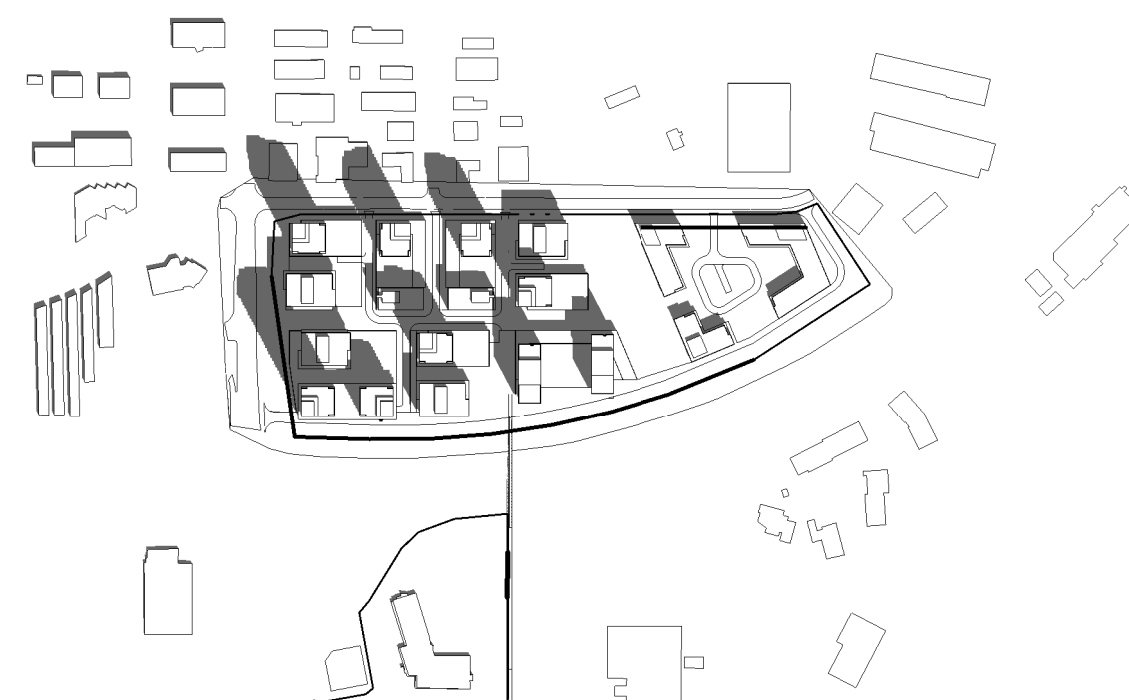
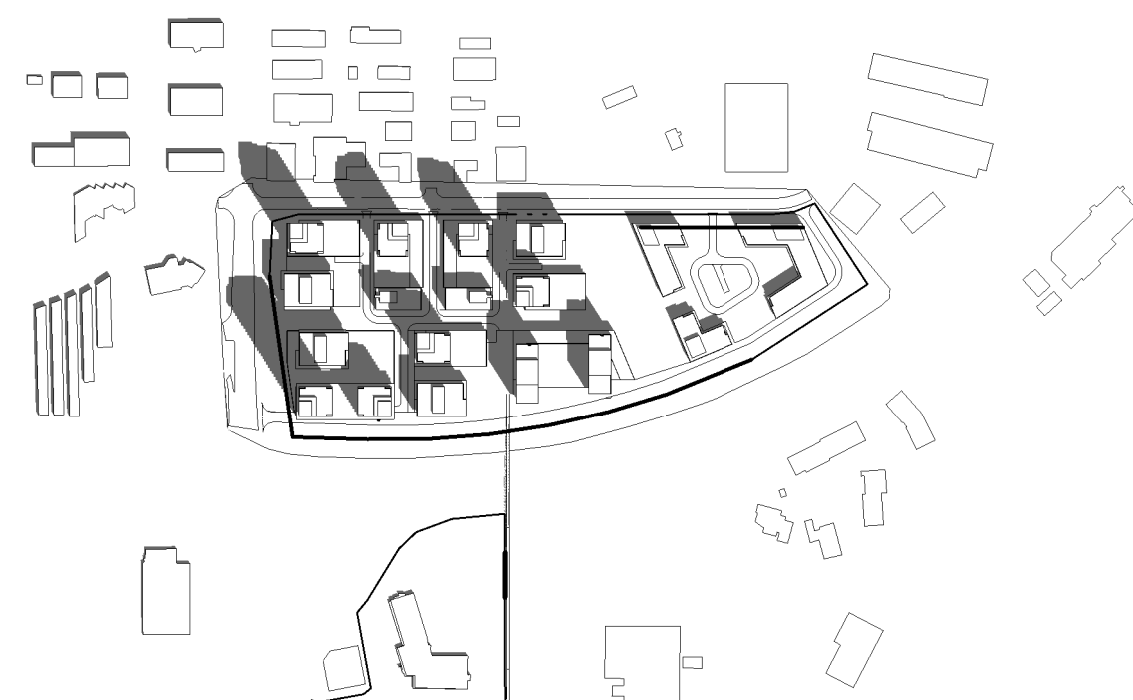
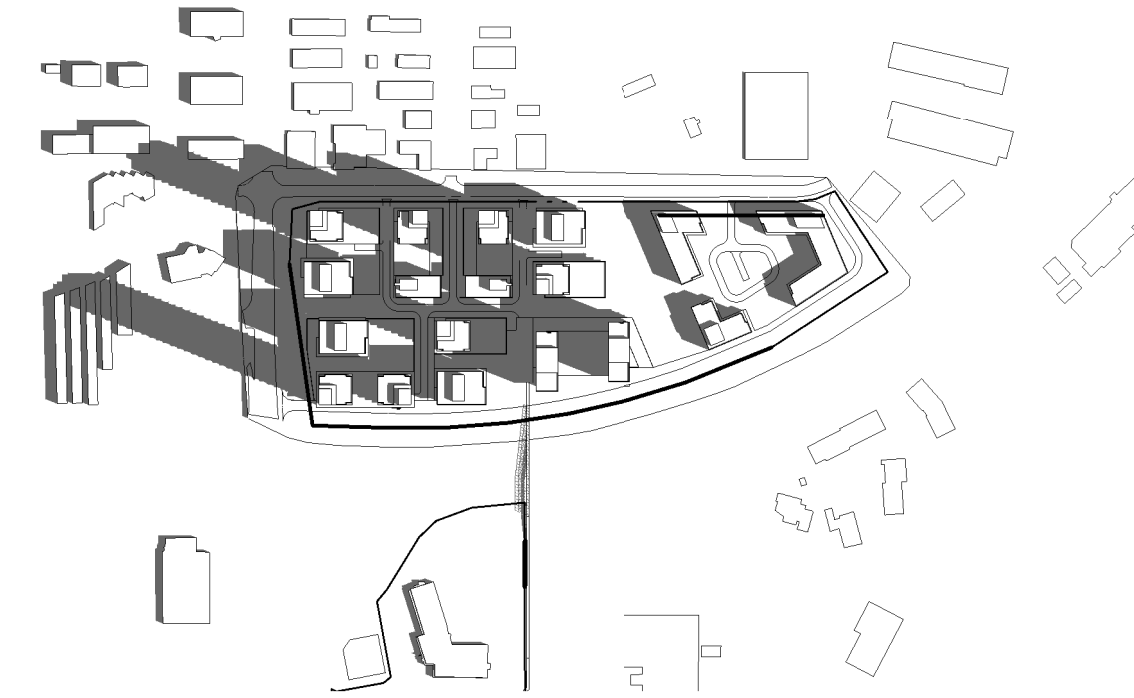
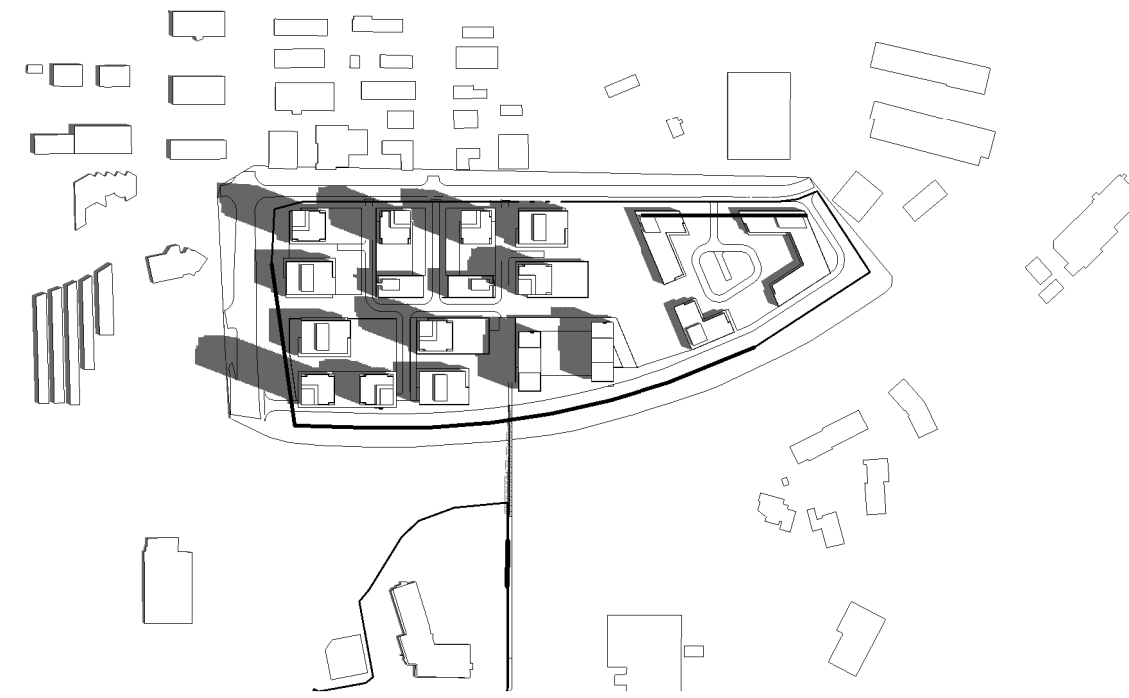
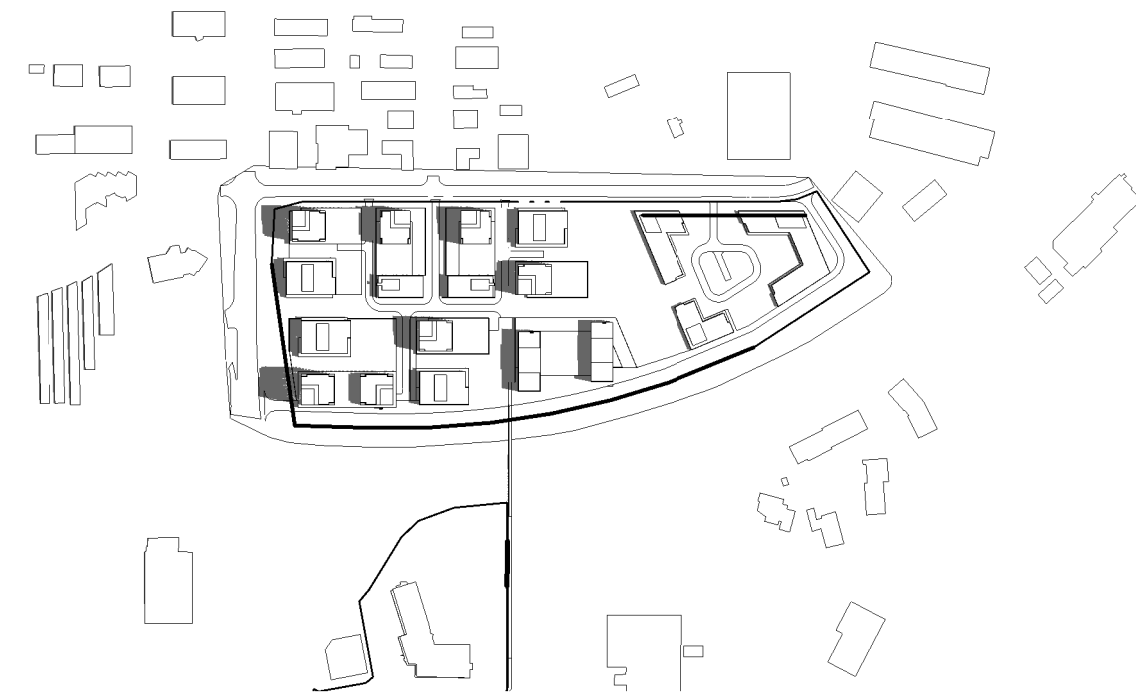
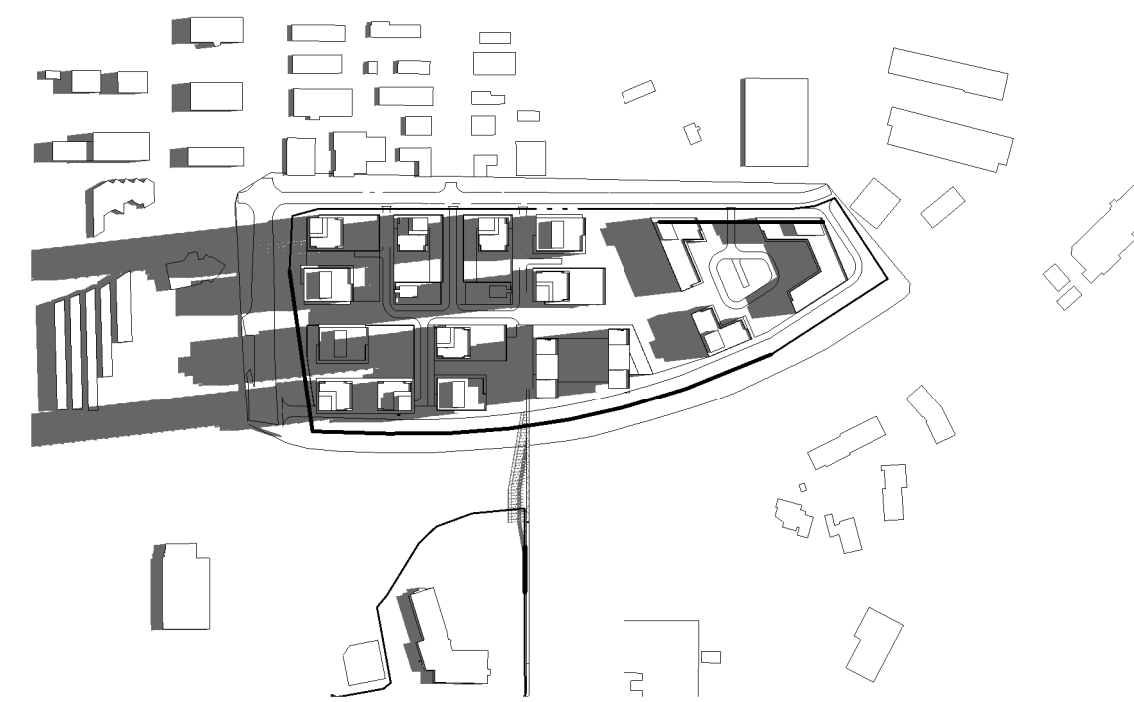
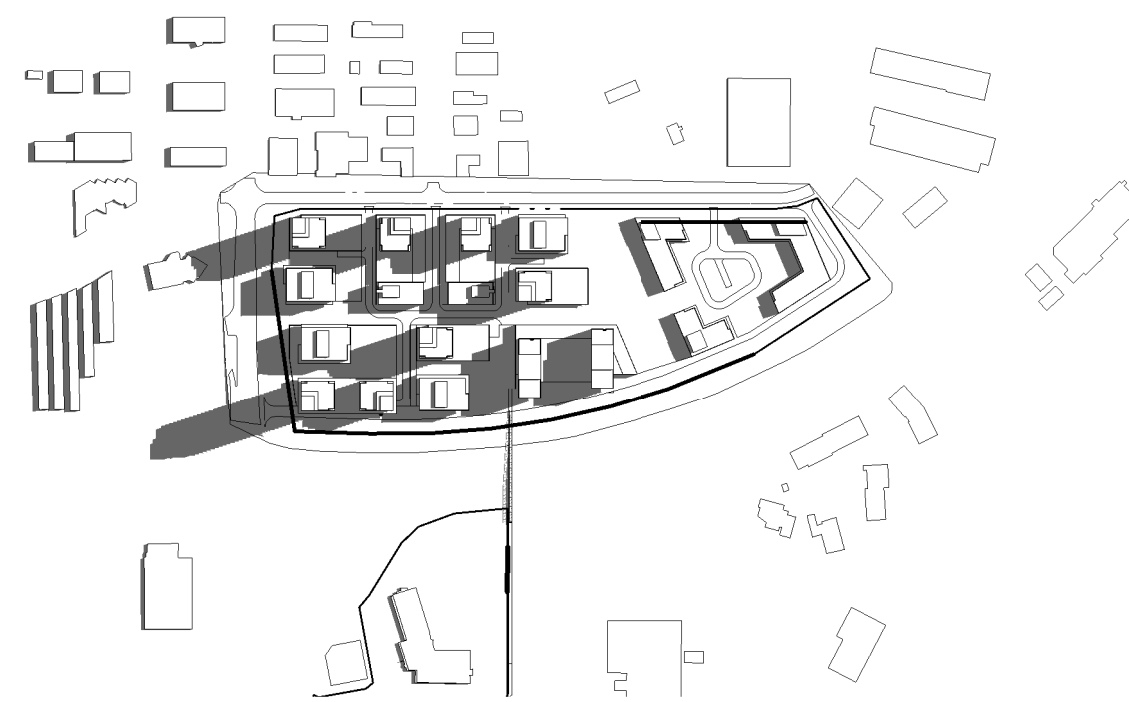
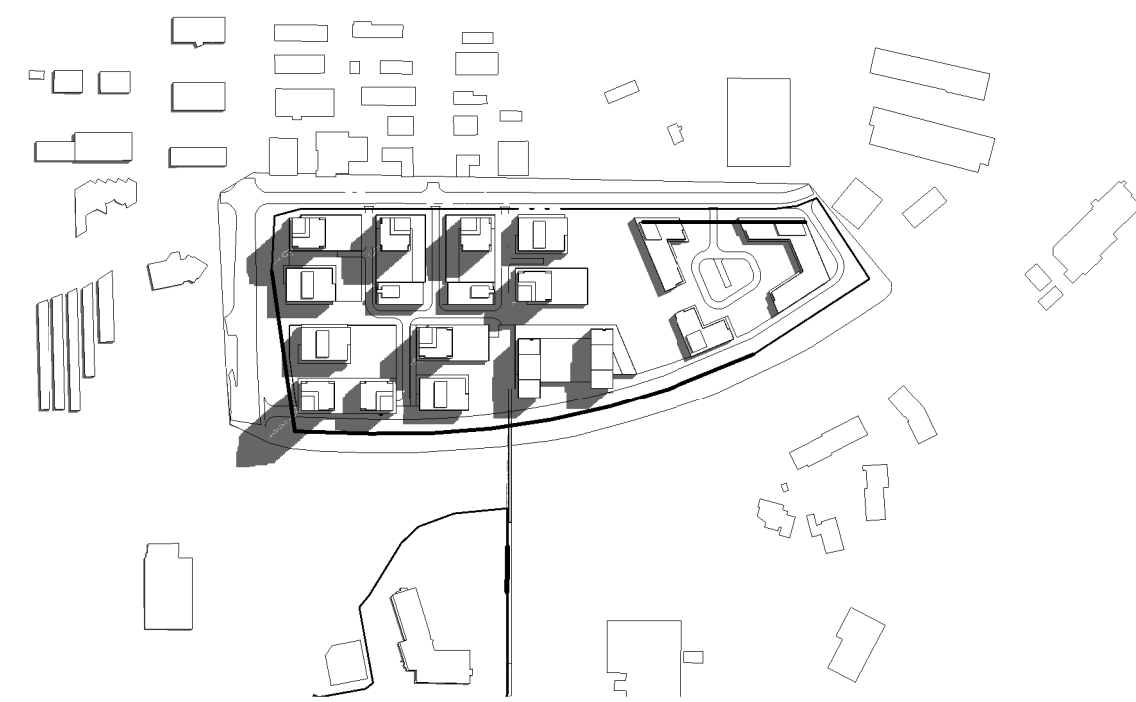
3D LAND USE DIAGRAM

SCALE 1 : 1	DRAWING NUMBER ZBA 4.0
SHEET SIZE 24X36	
PROJECT NUMBER 2015-080	

ZBA 4.0

This 3D architectural rendering depicts a large-scale residential development. The complex is composed of numerous high-rise towers, each color-coded to represent different building types or phases. The color palette includes red, green, pink, purple, yellow, orange, and blue. The towers are arranged in a dense cluster, with some featuring stepped or tiered designs. The development is situated within a defined urban footprint, indicated by green lines that trace the boundaries of roads and pedestrian walkways. In the foreground, a bridge structure spans a water feature, providing access to the development. The surrounding context is represented by various grey rectangular blocks, suggesting an existing urban fabric. The overall design emphasizes a mix of building heights and colors to create a vibrant and integrated community.

SCALE	DRAWING NUMBER
SHEET SIZE	ZBA 4.1
24X36	
PROJECT NUMBER	
2015-080	



THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ABA ARCHITECTS INC. & CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ABA ARCHITECTS INC.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED.

[illegible][illegible]

CUENT

HILCO

PROJECT NAME

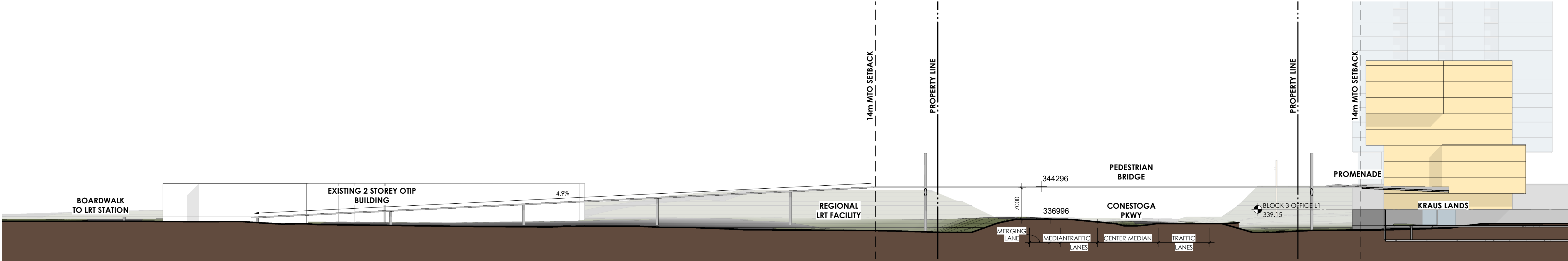
525-565 CONESTOGO

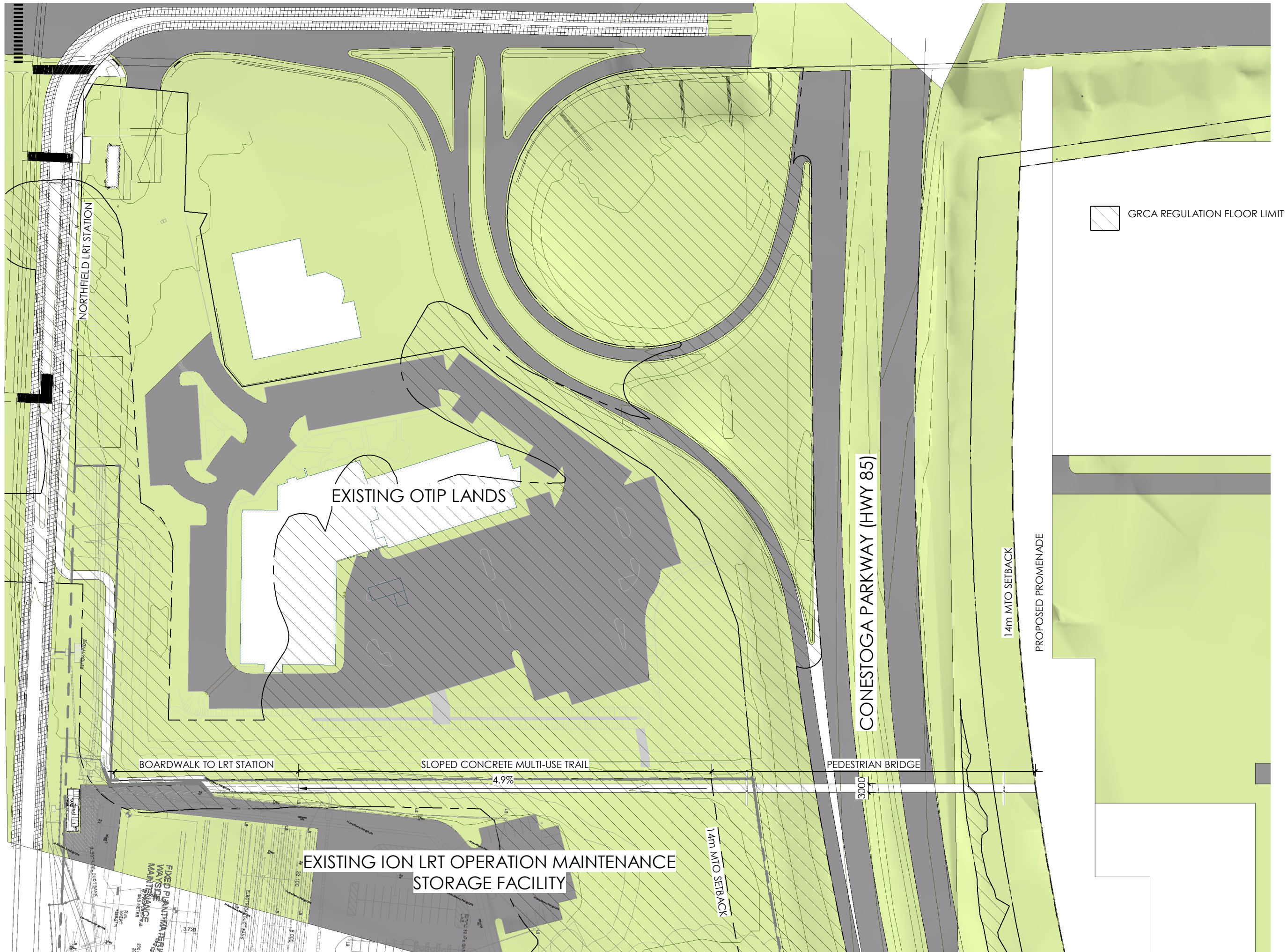
525-565 CONESTOGO ROAD, WATERLOO, ON. N2L
0A8

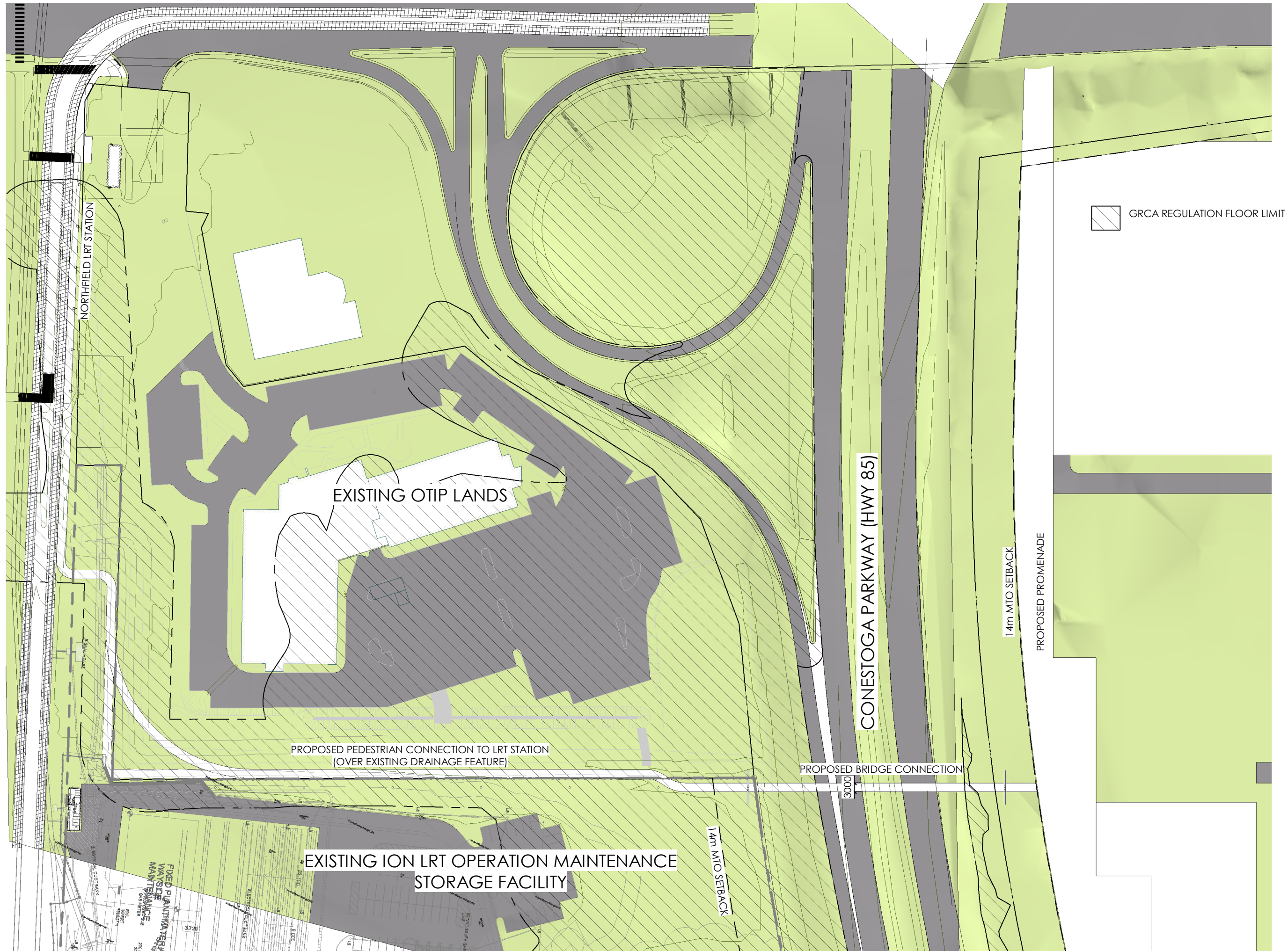
DRAWING TITLE

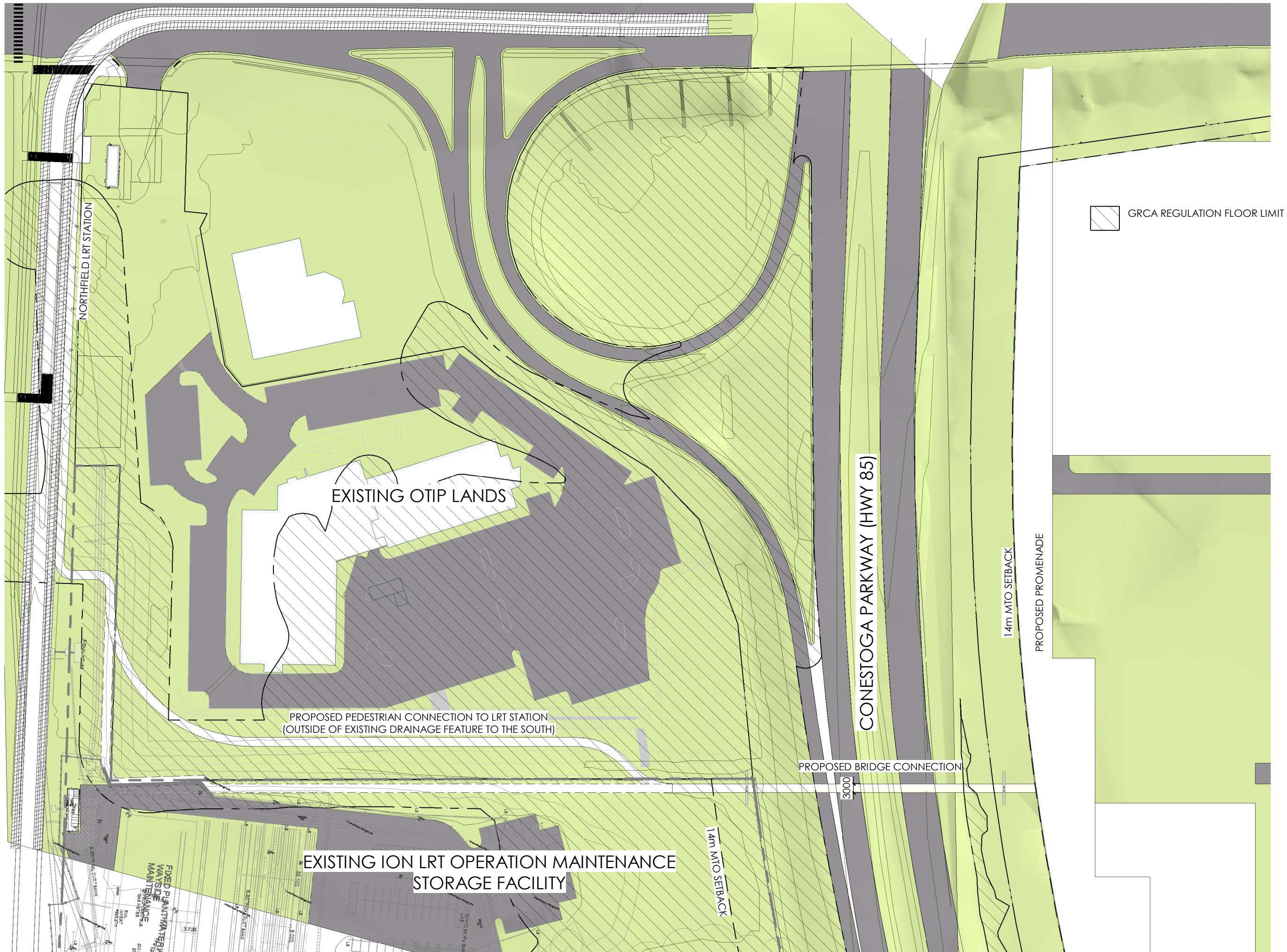
SHADOW STUDY
(PROPOSED)

SCALE 1 : 7500	DRAWING NUMBER ZBA 5.1
SHEET SIZE 24X36	
PROJECT NUMBER 2015-080	









APPENDIX II

Kraus Flooring Property Scoped EIS Terms of Reference



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

March 18, 2020

2396A

Andrew Herreman, Resource Planner
Grand River Conservation Authority
400 Clyde Road, PO Box 729,
Cambridge Ontario
N1R 5W6

Dear Mr. Herreman,

Re: 65 Northfield Drive, Waterloo, Ontario
Scoped Environmental Impact Study – Terms of Reference

Natural Resource Solutions Inc. (NRSI) has been retained by Hilco Capital to prepare a Scoped Environmental Impact Study (EIS) in support of a proposed mixed-use development at 1647 Northfield Drive, Waterloo, Ontario (Map 1). The property is currently occupied by a manufacturing operation (Kraus Flooring).

The subject property is identified as 'Urban Area' and is located outside of identified Wellhead Protection Areas under the Region of Waterloo Official Plan (2015). Under the City of Waterloo's Official Plan (2020) the subject property is zoned as Business Employment. A portion of the lands are located within the Regulation Limit of the Grand River Conservation Authority (GRCA) associated with the Floodplain of Forwell Creek. A proposed "private" OPA/ZBA application for the subject property has triggered the requirement of a Scoped EIS due to its proximity to regulated natural heritage features.

The following Terms of Reference (TOR) outlines the steps required to complete the scoped EIS for the proposed development within the subject property in accordance with the *Grand River Conservation Authority Environmental Impact Study Guidelines and Submission Standards for Wetlands* (GRCA 2005). Please do not hesitate to contact me if you have any questions or comments regarding the following TOR.

Sincerely,
Natural Resource Solutions Inc.

Ken Burrell, M.E.S.,
Terrestrial and Wetland's Biologist

Cc:	Robyn McMullen	City of Waterloo
	Hugh Whitcomb	Hilco Capital
	Chris Pidgeon	GSP Group Inc.

**65 Northfield Drive, Waterloo – Kraus Flooring
Scoped Environmental Impact Study
Terms of Reference
March 18, 2020**

Proposed Undertaking

The proposed development includes a comprehensive redesign of the property, including the creation of a mixed-use mid to high rise area consisting of medium density residential, offices, retail spaces, and recreational areas.

The completion of the Scoped EIS will be divided into three main components:

- (1) Background information collection and project scoping,
- (2) Field work completion and natural feature characterization, and
- (3) EIS report preparation.

1. Background Information Collection and Project Scoping

Background Data Collection

As part of preliminary investigations, NRSI has reviewed existing natural heritage information in order to identify key natural heritage features and species that are reported, or have the potential to occur within the subject property and the adjacent lands (up to 120m). The following background information sources have been reviewed or consulted in preparation of this TOR:

- Grand River Conservation Authority online mapping (GRCA 2020),
- Region of Waterloo Regional Official Plan (2015),
- Ontario GeoHub (Land Information Ontario),
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2020),
- Ontario Breeding Bird Atlas (OBBA) (BSC et al. 2008),
- Ontario Butterfly Atlas (Jones et al. 2019),
- Atlas of the Mammals of Ontario (Dobbyn 1994),
- Make A Map: Natural Heritage Areas (MNRF 2020), and
- Aquatic Species at Risk Map (DFO 2020).

NRSI accessed the NHIC database to review the information available from square 17NJ31 that overlap with the subject property (MNRF 2020). MNRF and MECP have been contacted to request applicable natural feature information in relation to the subject property.

Species at Risk

A screening has been completed to determine the potential for Species at Risk (SAR) and their habitat to be present on the site. NRSI biologists undertook an aquatic habitat assessment on June 11, 2015 to inform a SAR screening for the property. Habitat adjacent to the subject property was found to potentially provide habitat for Wavy-rayed Lampmussel (*Lampsilis fasciola*), however, suitable habitat within the subject property is not present. Based on this habitat assessment and current aerial imagery, consideration for Barn Swallow (*Hirundo rustica*), Northern (*Myotis septentrionalis*) and Little Brown Myotis (*Myotis lucifugus*), and Tricolored Bat (*Perimyotis subflavus*) is required. See Appendix I for the preliminary SAR screening.

Significant Wildlife Habitat

Potential Significant Wildlife Habitat (SWH) types were screened based on NRSI's knowledge of the natural features on and adjacent to the subject property and using discrete significance criteria established by the MNRF (MNRF 2015). Based on NRSI's site assessment in June 2015, current aerial imagery, and our knowledge of the subject property, there are no Candidate SWH features present. The results of the SWH screening are provided in Appendix II.

2. Field Surveys and Characterization

Based on the background information collected to date and the results of the aquatic habitat assessment conducted in 2015 the following field program is proposed:

Aquatic Habitat Assessment

Existing aquatic habitat features within the subject property and adjacent lands will be characterized to confirm conditions observed in 2015. As part of the assessment of aquatic habitats within the study area the following physical parameters will be documented:

- Substrate type;
- Channel depth, width, bankfull width, etc.;
- Water temperature;
- Dissolved oxygen;
- pH, conductivity and total dissolved solids;
- General bank stability;
- Riparian and aquatic vegetation;
- Cover type and quality; and
- Flow conditions.

Ecological Land Classification

The lands on-site will be mapped according to the Ecological Land Classification (ELC) methods for southern Ontario (Lee et al. 1998).

Tree Cavity Assessment

An assessment of trees ≥ 10 cm DBH and snags within the subject property will be undertaken to identify suitable maternity roosting habitat for bat SAR. Assessments will follow MNRF guidelines (MNRF 2017).

Incidental Observations

Incidental observations of all wildlife species, including mammals, birds, herpetofauna, butterflies, and odonata will be recorded while on site. This will include direct observations, as well as observations of signs such as tracks, scat, vocalizations, etc.

Following the completion of the field survey, the natural features, including any habitat for SAR/SCC and SWH will be characterized, and any constraints identified according to their significance or sensitivity. Where applicable, recommendations will be provided within the EIS with regards to appropriate development siting and any buffers, as appropriate.

3. Scoped Environmental Impact Study

Impact Assessment

The details of the proposed undertaking will be reviewed and compared to the existing conditions on the subject property. Any areas of conflict between significant features,

buffers, etc. and the development will be discussed with the client and options for minimizing impacts will be recommended. The impact of the development will be determined based on the direct and indirect effects of the proposal.

It is anticipated the potential for direct impacts will be limited to vegetation removals. Recommendations for mitigating impacts will be provided such as timing windows and delineation of the construction zone.

The proposed development may indirectly impact the adjacent drains and Forwell Creek. The assessment of potential direct and indirect impacts to these watercourses will focus on the potential changes to flows, impacts to aquatic habitat, and erosion and sedimentation. Recommendations with regard to mitigation of residual impacts will be made and opportunities for enhancement will be highlighted.

Reporting

The findings of the natural feature characterization and the impact assessment with associated mitigation will be summarized in a Scoped EIS report. The report will include the approved TOR, records of agency correspondence, the findings of the EIS, and a description of the proposed undertaking, including how the development conforms to relevant policies.

Mapping will be provided showing the subject property, natural heritage features, and monitoring locations. Screening documents and all species lists will also be appended.

References

- Bird Studies Canada (BSC), Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2008. Ontario Breeding Bird Atlas Database. Accessed February 12, 2020. (<http://www.birdsontario.org/atlas/aboutdata.jsp?lang=en>).
- City of Waterloo. 2020. City of Waterloo Official Plan. Approved January 2020. (<https://www.waterloo.ca/en/government/official-plan.aspx>).
- Dobbyn, J.S. 1994. Atlas of the Mammals of Ontario. Don Mills, Federation of Ontario Naturalists.
- Grand River Conservation Authority (GRCA). 2005. GRCA's EIS Guidelines and Submissions Standards for Wetlands. August 26, 2005.
- Grand River Conservation Authority (GRCA). 2013. Policies for the Administration for the Development Interference with Wetlands and Alterations of Shorelines and Watercourses Regulation: Ontario Regulation 150/06. January 25, 2013.
- Grand River Conservation Authority (GRCA). 2020. Grand River Conservation Network: Interactive Mapping Tool. <https://www.grandriver.ca/en/Planning-Development/Map-Your-Property.aspx>.
- Jones, C., R. Layberry, and A. Macnaughton. 2019. Ontario Butterfly Atlas Online. Toronto Entomologists' Association. Last updated April 2019. (<http://www.ontarioinsects.org/atlasonline.htm>).
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2017. Survey Protocol for Species at Risk Bats within Treed Habitats. April 2017.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2020. Natural Heritage Information Centre (NHIC) Database. Accessed February 12, 2020.
- Ontario Nature. 2020. Ontario Reptile and Amphibian Atlas. Available at: (<https://www.ontarionature.org/dynamic-maps/dynamic-maps/>).
- Region of Waterloo. 2015. Regional Official Plan. Approved June 2015 Consolidation. (<https://www.regionofwaterloo.ca/en/regional-government/land-use-planning.aspx>).

Map
Subject Property



Path: X:\1647_65NorthfieldDr_SAR\NRSI_2396A_Map1_Subject Property_3K_2020_03_18_KEF.mxd

Map 1

65 Northfield Drive
(Krauss Flooring)
Scoped Environmental
Impact Study
Subject Property

Legend

Subject Property

Utility Line

Highway

Primary Road

Secondary Road

Railway

Watercourse

GRCA Drainage Feature (not present)

Drainage Ditch

Ecological Land Classification (ELC)
(MEFM1) Dry-Fresh Forb Meadow Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRF© Copyright: Queen's Printer Ontario. Imagery: First Base Solutions Inc (2019).

Project: 1647
Date: March 18, 2020

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

050100150

Metres

Appendix I

Species at Risk/Species of Conservation Concern Screening Table

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
Birds								
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR	T	Schedule 1	BSC et al. 2008	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	No. Suitable nesting habitat not present.
<i>Chlidonias niger</i>	Black Tern	S3B	SC	NAR	--	BSC et al. 2008	Wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; returns to same area to nest each year in loose colonies; must have shallow (0.5 to 1m deep) water and areas of open water near nests; requires marshes >20 ha in size; feeds over adjacent grasslands for insects; also feeds on fish, crayfish and frogs.	No
<i>Chordeiles minor</i>	Common Nighthawk	S4B	SC	T	Schedule 1	BSC et al. 2008	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No. Buildings on-site do not support suitable nest sites. Presence of congregating gulls in this area of Waterloo (specifically near Conestoga Mall) during the summer months preclude the opportunity and ability for this species to nest nearby.
<i>Contopus virens</i>	Eastern Wood-Pewee	S4B	SC	SC	--	BSC et al. 2008	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	No
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	T	No Schedule	BSC et al. 2008	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No
<i>Empidonax virescens</i>	Acadian Flycatcher	S2S3B	END	E	Schedule 1	BSC et al. 2008	Mature, shady, deciduous forests; heavily wooded ravines; creek bottoms or river swamps; availability of good quality habitat is limiting factor; needs at least 30 ha of forest.	No
<i>Falco peregrinus</i>	Peregrine Falcon	S3B	SC	SC	Schedule 1	BSC et al. 2008	Rock cliffs, crags, especially situated near water; tall buildings in urban centres.	No
<i>Hirundo rustica</i>	Barn Swallow	S4B	THR	T	--	BSC et al. 2008	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Possible. A visual search for nests will be undertaken throughout the site.
<i>Hylocichla mustelina</i>	Wood Thrush	S4B	SC	T	--	BSC et al. 2008	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	No
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	S4B	SC	T	Schedule 1	BSC et al. 2008	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks.	No
<i>Setophaga cerulea</i>	Cerulean Warbler	S3B	THR	E	Schedule 1	BSC et al. 2008	Mature deciduous woodland of Great Lakes- St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha).	No
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR	T	No Schedule	BSC et al. 2008	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
Herpetofauna								
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	S2	END	E	Schedule 1	Ontario Nature 2019	Inhabit deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	No
<i>Chelydra serpentina serpentina</i>	Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019	Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddybanks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	No
<i>Emydoidea blandingii</i>	Blanding's Turtle (<i>Great Lakes/St Lawrence population</i>)	S3	THR	T	Schedule 1	Ontario Nature 2019	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed.	No
<i>Graptemys geographica</i>	Northern Map Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019	Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water.	No
<i>Pseudacris triseriata pop. 2</i>	Western Chorus Frog (Great Lakes/St. Lawrence - Canadian Shield Population)	S3	NAR	T	Schedule 1	Ontario Nature 2019	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools.	No. Suitable habitat is not present within the subject property. Adjacent drains are highly disturbed (along Hwy. 85) and do not provide suitable anuran habitat or connectivity to natural areas.
<i>Thamnophis sauritus septentrionalis</i>	Eastern Ribbonsnake	S3	SC	SC	Schedule 1	Ontario Nature 2019	Sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows, grassy marshes or sphagnum bogs; borders of ponds, lakes or streams; hibernates in groups.	No
Mammals								
<i>Taxidea taxus jacksoni</i>	American Badger	S2	E	END	Schedule 1	Dobbyn 1994	Generally prefer open habitats, whether natural (grasslands) or man-made (agricultural fields, road right-of-ways, golf courses).	No
<i>Myotis lucifugus</i>	Little Brown Myotis	S4	END	E	Schedule 1	Dobbyn 1994	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	Possible. A bat cavity assessment will be completed throughout the subject property.
<i>Myotis septentrionalis</i>	Northern Myotis	S3	END	E	Schedule 1	Dobbyn 1994	Summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	Possible. A bat cavity assessment will be completed throughout the subject property.
<i>Perimyotis subflavus</i>	Tri-colored Bat	S3?	END	E	Schedule 1	Dobbyn 1994	Open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free, warm caves, mines or rock crevices.	Possible. A bat cavity assessment will be completed throughout the subject property.

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
Insects								
<i>Danaus plexippus</i>	Monarch	S2N, S4B	SC	E	Schedule 1	Jones et al. 2019	Open areas with milkweed species (<i>Asclepias</i> spp.).	No. Open areas are of insufficient size to provide suitable areas for foraging.
<i>Pieris virginiensis</i>	West Virginia White	S3	--	SC	--	Jones et al. 2019	Generally prefer moist, rich, deciduous woodlands. The larvae feed only on the leaves of the toothworts (<i>Cardamine</i> spp.).	No
Fish and Mussels								
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	S1	THR	SC	Schedule 1	MNRF 2019	Small to medium-size rivers with gravel and/or sandy substrates. Host fish is Smallmouth (<i>Micropterus dolomieu</i>) and Largemouth Bass (<i>Micropterus salmoides</i>).	No. Suitable habitat is not present within the subject property, however, suitable habitat may be present adjacent to the site. An aquatic habitat assessment will be completed to determine potential habitat presence.

^{1,2}MNRF 2019, ^{3,4}Government of Canada 2019, ⁵OMNR 2000, ⁶Layberry et al. 1998, ⁷Reznicek et al. 2011

LEGEND	
SRANK	
S1	Critically Imperiled
S2	Imperiled
S3	Vulnerable
S4	Apparently Secure
SNA	Unranked
S#?	Rank Uncertain
SH	Possibly Extirpated (Historical)
B	Applicable to Breeding Pop.
N	Applicable to Non-breeding Pop.
COSSARO / COSEWIC	
NAR/NAR	Not at Risk
SC/SC	Special Concern
THR/T	Threatened
END/E	Endangered
SARA Schedule	
Schedule 1	Officially Protected under SARA

Appendix II

Significant Wildlife Habitat Screening Table

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
<u>Rationale:</u> Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available ^{exlviii} . <u>Information Sources</u> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat ^{cxlviii} . • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST ^{cxlix} Index #7 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
<u>Rationale:</u> Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	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. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100 ⁱ or more of listed species for 7 days ⁱ , results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH ^{cxlix} • The combined area of the ELC ecosites and a 100m radius area is the SWH ^{cxlviii} • Wetland area and shorelines associated with sites identified within the SWHTG ^{cxlviii} Appendix K ^{cxlix} are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST ^{cxlix} Index #7 provides development effects and mitigation measures.	Suitable aquatic habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
<u>Rationale:</u> High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	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, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area ^{cxlviii} • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" ^{ccxi} • SWHMiST ^{cxlix} Index #8 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Raptor Wintering Area					
<u>Rational:</u> Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern:</u> Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites need to be > 20 ha ^{cxlviii, cxlix} with a combination of forest and upland. ^{xvi, xvii, xviii, xix, xx, xxi} Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands ^{cxlix} Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water, large trees and snags available for roosting <u>Information Sources</u> • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) ^{cxlix} for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" ^{ccxi} • SWHMiST ^{cxlix} Index #10 and #11 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Bat Hibernacula					
<u>Rationale</u> Bat hibernacula are rare habitats in Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	- Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. - Active mine sites should not be considered as SWH - The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> - OMNRF for possible locations and contact for local experts - Natural Heritage Information Center (NHIC) Bat Hibernaculum - Ministry of Northern Development and Mines for location of mine shafts. - Clubs that explore caves (eg. Sierra Club) - University Biology Departments with bat experts.	- All sites with confirmed hibernating bats are SWH. - The habitat area includes a 200m radius around the entrance of the hibernaculum^{cxlviii, ccvii} for most. - Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"^{ccv} - SWHMiST^{cxlix} Index #1 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Bat Maternity Colonies					
<u>Rationale:</u> Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in buildings ^{xxii, xxv, xxvi, xxvii, xxxi} (buildings are not considered to be SWH). - Maternity roosts are not found in caves and mines in Ontario^{xxii} - Maternity colonies located in Mature deciduous or mixed forest stands^{ccix, ccx} with >10/ha large diameter (>25cm dbh) wildlife trees^{ccvii} - Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3^{ccxiv} or class 1 or 2^{ccxii} - Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred^{ccx} <u>Information Sources</u> - OMNRF for possible locations and contact for local experts - University Biology Departments with bat experts.	- Maternity Colonies with confirmed use by: >10 Big Brown Bats >5 Adult Female Silver-haired Bats - The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. - Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for wind Power Projects"^{ccv} - SWHMiS T^{cxlix} Index #12 provides development effects and mitigation measures.	Suitable treed habitat is not present within the study area. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Bat Migratory Stopover Area					
	Hoary Bat Eastern Red Bat Silver-haired Bat	No specified 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 migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown. <u>Information Sources</u> • OMNR for possible locations and contact for local experts • University of Waterloo, Biology Department	Long Point has been identified as a significant stopover habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration ^{ccxv} • The confirmation criteria and habitat areas for this SWH are still being determined. • SWHDSS ^{cxlix} Index #38 provides development effects and mitigation measures	Criteria unavailable to assess significance of habitat within the subject property.
Wildlife Habitat: Turtle Wintering Area					
<u>Rationale:</u> Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen ^{cx, cxl, cxviii} . • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) ^{cvii} • Congregation of turtles is more common where wintering areas are limited and therefore significant ^{cx, cxl, cxli, cxlii} . • SWHMiST ^{cxlix} Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitable overwintering habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Snake Hibernaculum					
<u>Rationale:</u> Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake <u>Special Concern:</u> Milksnake Eastern Ribbonsnake <u>Lizard:</u> <u>Special Concern</u> (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	- For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the 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^{cxliv, i, ii, iii, cxlii}. - 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. - Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources - In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). - Reports and other information from CAs. - Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs - Natural Heritage Information Center (NHIC) - OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: - Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. - Congregations of a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWHⁱ - SWHMiST^{cxlix} Index #13 provides development effects and mitigation measures for snake hibernacula. - Presence of any active hibernaculum for skink is significant. - SWHMiST^{cxlix} Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
<u>Rationale:</u> Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	- 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 (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. - Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources - Reports and other information available from CAs - Ontario Breeding Bird Atlas^{ccv} - Bird Studies Canada; <i>NatureCounts</i> http://www.birdscanada.org/birdmon/ - Field Naturalist clubs	Studies confirming: - Presence of 1 or more nesting sites with 8^{cxlvix} or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. - A colony identified as SWH will include a 50m radius habitat area from the peripheral nests^{ccvii} - Field surveys to observe and count swallow nests are to be completed during the breeding season Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} - SWHMiST^{cxlix} Index #4 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
<u>Rationale:</u> Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	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 15m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas^{ccv}, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5ⁱ or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH^{cc}, ccvii • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiST^{cxlix} Index #5 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
<u>Rationale:</u> Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas^{ccv}, rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Ternⁱ. • Presence of 5 or more pairs for Brewer's Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH^{cc}, ccvii • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi} • SWHMiST^{cxlix} Index #6 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
<u>Rationale:</u> Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern:</u> Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: <u>Field:</u> CUM CUS CUT <u>Forest:</u> FOC FOM FOD CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario ^{cxlix} . • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south ^{xxxii, xxxiii, xxxiv, xxxv, xxxvi} . • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat cxlviii, cxlix. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes ^{xxxvii, xxxviii, xxxix, xl, xli} . <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct) ^{xliii} . MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day ^{xxxvii} , significant variation can occur between years and multiple years of sampling should occur ^{xl, xlii} . • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST ^{cxlix} Index #16 provides development effects and mitigation measures.	Study area not located within 5 km of Lake Ontario. Not SWH
Wildlife Habitat: Landbird Migratory Stopover Areas					
<u>Rationale:</u> Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha ⁱ in size and within 5km ^{iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv} of Lake Ontario. • If multiple woodlands are located along the shoreline, those woodlands <2km from Lake Ontario are more significant ^{cxlix} • Sites have a variety of habitats; forest, grassland and wetland complexes ^{cxlix} . • The largest sites are more significant ^{cxlix} • Woodlots and forest fragments are important habitats to migrating birds ^{ccxviii} , these features located along the shore and located within 5km of Lake Ontario are Candidate SWH ^{cxlviii} . <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMiST ^{cxlix} Index #9 provides development effects and mitigation measures.	Study area not located within 5 km of Lake Ontario. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Deer Yarding Areas					
<u>Rationale:</u> Winter habitat for deer is considered to be the main factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	- Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. - The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%^{cxciiv}. - OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual"^{mcxcv} - Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: - Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH^{lvi, lvii, lviii, lix, lx, l}. - Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). - Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations^{cxcv}. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST^{cxlix} Index #2 provides development effects and mitigation measures.	Deer overwintering habitat not identified by MNRF within or adjacent to the subject property. Not SWH
Wildlife Habitat: Deer Winter Congregation Areas					
<u>Rationale:</u> Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions ^{cxlviii}	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	- Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. - Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands^{cxlviii}. - If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. - 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^{ccxxiv}. - Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> - MNRF District Offices - LIO/NRVIS	Studies confirm: - Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF^{cxlviii}. - Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR^l. - Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques^{ccxxiv}, ground or road surveys, or a pellet count deer density survey^{ccxxv}. - If a SWH is determined for Deer Wintering Area of if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST^{cxlix} Index #2 provides development effects and mitigation measures.	Deer overwintering habitat not identified by MNRF within or adjacent to the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Cliff and Talus Slopes					
<u>Rationale:</u> Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: 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. <u>Information Sources</u> • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes ^{boxviii} • SWHMiST ^{cxlix} Index #21 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Sand Barrens					
<u>Rationale:</u> Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: 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%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. 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%.	Any sand barren area, >0.5ha in size. <u>Information Sources</u> • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens ^{boxviii} • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics) ⁱ . • SWHMiST ^{cxlix} Index #20 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Alvar					
<u>Rationale:</u> Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	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 branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	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 plant. Undisturbed alvars can be phyto- and zoo geographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover ^{lxviii} .	An Alvar site > 0.5 ha in size ^{lxv} . <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists ^{lxvi} . • Ontario Nature – Conserving Great Lakes Alvars ^{ccviii} . • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five Alvar indicator species ^{lxv} , ^{cxlix} at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses ^{lxv} . • SWHMiST ^{cxlix} Index #17 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Old Growth Forest					
<u>Rationale:</u> Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest í. <u>Information Sources</u> • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat ^{cxlviii} • The stand will have experienced no recognizable forestry activities ^{cxlviii} • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand ^{lxviii} • SWHDSS ^{cxlix} Index #23 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Savannah					
<u>Rationale:</u> Savannahs are extremely rare habitats in Ontario.	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. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in^{bxv} Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used^{cxlviii}. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics sp.). • SWHMiST^{cxlix} Index #18 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Tallgrass Prairie					
<u>Rationale:</u> Tallgrass Prairies are extremely rare habitats in Ontario.	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. <u>Information Sources</u> • OMNR Districts • Natural Heritage Information Center (NHIC) has location information available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in^{bxv} Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used^{cxlviii}. • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST^{cxlix} Index #19 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Other Rare Vegetation Communities					
<u>Rationale:</u> Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG ^{cxlviii} . Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M ^{cxlviii} The OMNR/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG ^{cxlviii} . • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures.	Other rare vegetation types not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
<u>Rationale:</u> Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	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 120m ^{cxlix} 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 120m of each individual wetland where waterfowl nesting is known to occur ^{cxlix} . • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m ^{cxlviii} from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST ^{cxlix} Index #25 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
<u>Rationale:</u> Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey <u>Special Concern:</u> Bald Eagle	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. • 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. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas ^{ccv} or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area ^{cxlviii} . • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important ^{cxlviii} . • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH ^{cv} , ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat ^{cv} . • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant ^{ccvii} • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMiST ^{cxlix} Index #26 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
<u>Rationale:</u> Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	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 >10ha of interior habitat ^{lxxxviii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii} . Interior habitat determined with a 200m buffer ^{cxlviii} . • 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 Cooper's 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. <u>Information Sources</u> • OMNRF • Check the Ontario Breeding Bird Atlas ^{ccv} or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant ^{cxlviii} . • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of habitat is the SWH ^{ccvii} . • Barred Owl – a 200m radius around the nest is the SWH ^{ccvii} . • Broad-winged Hawk and Coopers Hawk – a 100m radius around the nest is the SWH ^{ccvii} . • Sharp-shinned Hawk – a 50m radius around the nest is the SWH ^{ccvii} . • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST ^{cxlix} Index #27 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Turtle Nesting Area					
<u>Rationale:</u> These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) ^{cxlviii} 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. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH ⁱ • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH ^{cxlviii} . • Travel routes from wetland to nesting area are to be considered within the SWH ^{cxlix} . • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST ^{cxlix} Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas 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 ^{cxvii, cxlix} . • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species ^{cxix, cxx, cxxi, cxxii, cxiii, cxiv} <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists clubs and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat ^{cxlviii} • SWHMiST ^{cxlix} Index #30 provides development effects and mitigation measures	Subject property entirely anthropogenic. Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	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) ^{ccvii} within or adjacent (within 120m) to a woodland (no minimum size) ^{cbxxxii, bxiii, bxv, bxvi, bxvii, bxviii, bxix, bxx} 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 ^{cxlviii} <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • OMNRF wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) ^{bxvi} or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys ^{cviii} will be required during the spring March-June when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the woodland area plus a 230m radius of woodland area ^{bxiii,bxv, bxvi, bxvii, bxviii, bxix, bxx, bxxi} if a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is the be included in the habitat. • SWHMiST ^{cxlix} Index #14 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
<u>Rationale:</u> These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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 >500m2 (about 25m diameter)^{ccvii} 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^{clxxxiv}. • 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. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 -individuals (adults or eggs masses)^{boxi, boxiii}, or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys^{cviii} will be required during spring March to June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST^{cxlix} Index #15 provides development effects and mitigation measures.	Suitable wetland habitat not present within the subject property. Not SWH
Woodland Area-Sensitive Bird Breeding Habitat					
<u>Rationale:</u> Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: 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.^{cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxi, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cli, clii, cliii, cliv, clv, clvii, clviii, clix} • Interior forest habitats are at least 200m from forest edge habitat. <u>Information Sources</u> • Local bird clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to greatest value to interior species • Reports and other information available from CAs.	• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • SWHMiST^{cxlix} Index #34 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
<u>Rationale:</u> Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan <u>Special Concern:</u> Black Tern Yellow Rail	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^{cxxiv}. • 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. <u>Information Sources</u> • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas^{ccv}	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed speciesⁱ. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWHⁱ. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}. • SWHMiST^{cxlix} Index #35 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Open Country Bird Breeding Habitat					
<u>Rationale:</u> This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow <u>Special Concern:</u> Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha ^{clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix} . 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) ⁱ . 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. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas^{ccv} • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}. • SWHMiST^{cxlix} Index #32 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
<u>Rationale:</u> This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	<u>Indicator spp.:</u> Brown Thrasher Clay-coloured Sparrow <u>Common spp.:</u> Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher <u>Special Concern:</u> Yellow-breasted Chat Golden-winged Warbler	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^{cxiv} 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 live-stock pasturing in the last 5 years)ⁱ. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species ^{cbxiii}. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas^{ccv} • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common speciesⁱ. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • SWHMiST^{cxlix} Index #33 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Terrestrial Crayfish					
<u>Rationale:</u> Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ^{ccii}	Chimney or Digger Crayfish: (<i>Fallicambarus fodiens</i>) Devil Crawfish or Meadow Crayfish: (<i>Cambarus Diogenes</i>)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites^{cci} • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH • Surveys should be done April to August during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult^{cci} • SWHMiST^{cxlix} Index #36 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
<u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is 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 ^{boxviii} . <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website: "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas ^{ccv} • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures.	Subject property is highly industrialized, habitat is not present for any Special Concern or Provincially Rare plant and animal species. Site visits to confirm no Special Concern or Provincially Rare plant and animal species are present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat ^{cbxxiv, cbxxv, cbxxvi, cbxxvii, cbxxviii, cbxxix, cbxxx, cbxxxi} . Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule ⁱ . <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • Field Naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant ^{cxlix} . • Corridors should have at least 15m of vegetation on both sides of waterway ^{cxlix} or be up to 200m wide ^{cxlix} of woodland habitat and with gaps <20m ^{cxlix} . • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat ^{cxlix} . • SWHMiST ^{cxlix} Index #40 provides development effects and mitigation measures.	Amphibian Breeding Habitat (Wetland) not present within the subject property. Therefore, amphibian movement corridors are not applicable. Not SWH
Wildlife Habitat: Deer Movement Corridors					
Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule ⁱ . • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion ^{cbxxxii, cbxxxiii, cxlix, cxciiv} . • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center (NHIC) • Reports and other information available from CAs • Field Naturalist Clubs	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering yard should be unbroken by roads and residential areas. • Corridors should be at least 200m wide ^{cxlix} with gaps <20m ^{cxlix} and if following riparian area with at least 15m of vegetation on both sides of waterway ^{cxlix} . Shorter corridors are more significant than longer corridors ^{cxlix} . • SWHMiST ^{cxlix} Index #39 provides development effects and mitigation measures.	Deer Wintering Habitat not present within the subject property. Therefore, deer movement corridors are not applicable. Not SWH

¹MNRF 2015

Subject: RE: FW: [EXTERNAL] Krauss Lands Scoped Environmental Impact Study Terms of Reference (proj2396A)

From: Robyn McMullen <Robyn.McMullen@waterloo.ca>

Date: 3/25/2020, 1:05 PM

To: Ken Burrell <kburrell@nrsl.on.ca>

CC: Trevor Heywood <theywood@grandriver.ca>, Jessica Linton <jlinton@nrsl.on.ca>

Hi Ken,

I've reviewed the proposed Terms of Reference for the scoped EIS and am generally satisfied with it. However, I do offer the following comments and points of clarification.

1. The need for a scoped EIS was triggered by the City's Official Plan policies, as our mapping indicates there is a designated Supporting Natural Feature (i.e. a perennial watercourse) on and adjacent to the site. Our mapping is included below for reference.
2. The City of Waterloo Official Plan should be included in the list of background information sources on page 2.
3. When conducting the Impact Assessment and preparing the Report please ensure the applicable policies of the City's Official Plan are addressed (Section 8.2, particularly 8.2.5). The City's Official plan can be found at <https://www.waterloo.ca/en/government/official-plan.aspx>.

Kind regards,

Robyn McMullen, MCIP, RPP

Policy Planner, Growth Management

Integrated Planning and Public Works, City of Waterloo

100 Regina Street South

PO Box 337, Station Waterloo

Waterloo, ON, N2J 4A8
P: 519-747-8531
TTY: 1-866-786-3941
E: robyn.mcmullen@waterloo.ca
www.waterloo.ca

From: Ken Burrell <kburrell@nrsi.on.ca>
Sent: March 18, 2020 3:41 PM
To: Robyn McMullen <Robyn.McMullen@waterloo.ca>
Cc: Trevor Heywood <theywood@grandriver.ca>; Jessica Linton <jlinton@nrsi.on.ca>
Subject: Re: FW: [EXTERNAL] Krauss Lands Scoped Environmental Impact Study Terms of Reference (proj2396A)

Hi Robyn,

Thanks for your note. We'll look forward to your review.

Thank you,
Ken

file:///S:/Projects/

Ken Burrell M.E.S.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
415 Phillip Street, Unit C
Waterloo, ON N2L 3X2
(p) 519-725-2227 Ext. 403 (f) 519-725-2575
(w) www.nrsi.on.ca (e) kburrell@nrsi.on.ca
cid @nrsinews

On 3/18/2020 3:39 PM, Robyn McMullen wrote:

Hi Ken,

It was actually the City's Official Plan policies that triggered the need for the scoped EIS so I will be reviewing the Terms of Reference along with GRCA.

Kind regards,

Robyn McMullen, MCIP, RPP
Policy Planner, Growth Management
Integrated Planning and Public Works, City of Waterloo
100 Regina Street South
PO Box 337, Station Waterloo
Waterloo, ON, N2J 4A8
P: 519-747-8531
TTY: 1-866-786-3941
E: robyn.mcmullen@waterloo.ca
www.waterloo.ca

From: Ken Burrell <kburrell@nrsi.on.ca>

Sent: March 18, 2020 1:56 PM

To: aherreman@grandriver.ca

Cc: Robyn McMullen <Robyn.McMullen@waterloo.ca>; hugh.whitcomb@hilcocapital.com;
cpidgeon@gspgroup.ca; Jessica Linton <jlinton@nrsl.on.ca>

Subject: [EXTERNAL] Krauss Lands Scoped Environmental Impact Study Terms of Reference (proj2396A)

Good afternoon Andrew,

Please find attached the Terms of Reference in support of a Scoped Environmental Impact Study for the proposed redevelopment of the Krauss Lands, located at 65 Northfield Drive, Waterloo.

We would appreciate your review and comments at your earliest convenience.

If you have any questions or concerns, please do not hesitate to contact me.

Kind regards,

Ken

--

file:///S:/Projects/

Ken Burrell M.E.S.

Terrestrial and Wetland Biologist

Natural Resource Solutions Inc.

415 Phillip Street, Unit C

Waterloo, ON N2L 3X2

(p) 519-725-2227 Ext. 403 (f) 519-725-2575

(w) www.nrsl.on.ca (e) kburrell@nrsl.on.ca

file [@nrslnews](https://www.instagram.com/nrslnews)

IMPORTANT NOTICE: This communication (including attachments) is intended solely for the named addressee(s) and may contain information that is privileged, confidential and exempt from disclosure. No waiver of confidence, privilege, protection or otherwise is made. If you are not the intended recipient of this communication, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited.

IMPORTANT NOTICE: This communication (including attachments) is intended solely for the named addressee(s) and may contain information that is privileged, confidential and exempt from disclosure. No waiver of confidence, privilege, protection or otherwise is made. If you are not the intended recipient of this communication, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited.

APPENDIX III

Species at Risk / Significant Wildlife Habitat Screenings

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
Birds								
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR	T	Schedule 1	BSC et al. 2008	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	No. Suitable nesting habitat not present.
<i>Chlidonias niger</i>	Black Tern	S3B	SC	NAR	--	BSC et al. 2008	Wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; returns to same area to nest each year in loose colonies; must have shallow (0.5 to 1m deep) water and areas of open water near nests; requires marshes >20 ha in size; feeds over adjacent grasslands for insects; also feeds on fish, crayfish and frogs.	No. Suitable habitat is not present.
<i>Chordeiles minor</i>	Common Nighthawk	S4B	SC	T	Schedule 1	BSC et al. 2008	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No. Buildings on-site do not support suitable nest sites. Presence of congregating gulls in this area of Waterloo (specifically near Conestoga Mall) during the summer months preclude the opportunity and ability for this species to nest nearby.
<i>Contopus virens</i>	Eastern Wood-Pewee	S4B	SC	SC	--	BSC et al. 2008	Open, deciduous, mixed or coniferous forest; predominated by oak with little understorey; forest clearings, edges; farm woodlots, parks.	No. Suitable habitat is not present.
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	T	No Schedule	BSC et al. 2008	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No. Suitable habitat is not present.
<i>Empidonax virescens</i>	Acadian Flycatcher	S2S3B	END	E	Schedule 1	BSC et al. 2008	Mature, shady, deciduous forests; heavily wooded ravines; creek bottoms or river swamps; availability of good quality habitat is limiting factor; needs at least 30 ha of forest.	No. Suitable habitat is not present.
<i>Falco peregrinus</i>	Peregrine Falcon	S3B	SC	SC	Schedule 1	BSC et al. 2008	Rock cliffs, crags, especially situated near water; tall buildings in urban centres.	No. Suitable habitat is not present.
<i>Hirundo rustica</i>	Barn Swallow	S4B	THR	T	--	BSC et al. 2008	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	No. A visual search for nests was undertaken throughout the site and did not document the species or its nests.
<i>Hylocichla mustelina</i>	Wood Thrush	S4B	SC	T	--	BSC et al. 2008	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	No. Suitable habitat is not present.
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker	S4B	SC	T	Schedule 1	BSC et al. 2008	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks.	No. Suitable habitat is not present.
<i>Setophaga cerulea</i>	Cerulean Warbler	S3B	THR	E	Schedule 1	BSC et al. 2008	Mature deciduous woodland of Great Lakes- St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha).	No. Suitable habitat is not present.

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR	T	No Schedule	BSC et al. 2008	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No. Suitable habitat is not present.
Herpetofauna								
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	S2	END	E	Schedule 1	Ontario Nature 2019	Inhabit deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	No. Suitable habitat is not present.
<i>Chelydra serpentina serpentina</i>	Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019	Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddybanks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	No. Suitable habitat is not present.
<i>Emydoidea blandingii</i>	Blanding's Turtle (<i>Great Lakes/St Lawrence population</i>)	S3	THR	T	Schedule 1	Ontario Nature 2019	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed.	No. Suitable habitat is not present.
<i>Graptemys geographica</i>	Northern Map Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2019	Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water.	No. Suitable habitat is not present.
<i>Pseudacris triseriata pop. 2</i>	Western Chorus Frog (Great Lakes/St. Lawrence - Canadian Shield Population)	S3	NAR	T	Schedule 1	Ontario Nature 2019	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools.	No. Suitable habitat is not present within the subject property. Adjacent drains are highly disturbed (along Hwy. 85) and do not provide suitable anuran habitat or connectivity to natural areas.
<i>Thamnophis sauritus septentrionalis</i>	Eastern Ribbonsnake	S3	SC	SC	Schedule 1	Ontario Nature 2019	Sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows, grassy marshes or sphagnum bogs; borders of ponds, lakes or streams; hibernates in groups.	No. Suitable habitat is not present.
No. Suitable habitat is not present.								
<i>Taxidea taxus jacksoni</i>	American Badger	S2	E	END	Schedule 1	Dobbyn 1994	Generally prefer open habitats, whether natural (grasslands) or man-made (agricultural fields, road right-of-ways, golf courses).	No. Suitable habitat is not present.
<i>Myotis lucifugus</i>	Little Brown Myotis	S4	END	E	Schedule 1	Dobbyn 1994	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	No. A bat cavity assessment was completed throughout the subject property and did not find suitable roosting or maternity trees. Most trees on-site are small (i.e. <20 cm DBH); a high proportion are coniferous, and non-native.

SAR/SCC Habitat Screening Assessment - Kraus Flooring

Scientific Name	Common Name	SRANK ¹	COSSARO ²	COSEWIC ³	SARA Schedule ⁴	Background Source	Habitat Preference ^{5,6,7}	Suitable Habitat within Subject Property?
<i>Myotis septentrionalis</i>	Northern Myotis	S3	END	E	Schedule 1	Dobbyn 1994	Summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	No. A bat cavity assessment was completed throughout the subject property and did not find suitable roosting or maternity trees. Most trees on-site are small (i.e. <20 cm DBH); a high proportion are coniferous, and non-native.
<i>Perimyotis subflavus</i>	Tri-colored Bat	S3?	END	E	Schedule 1	Dobbyn 1994	Open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free, warm caves, mines or rock crevices.	No. A bat cavity assessment was completed throughout the subject property and did not find suitable roosting or maternity trees. Most trees on-site are small (i.e. <20 cm DBH); a high proportion are coniferous, and non-native.
Insects								
<i>Danaus plexippus</i>	Monarch	S2N, S4B	SC	E	Schedule 1	Jones et al. 2019	Open areas with milkweed species (<i>Asclepias</i> spp.).	No. Open areas are of insufficient size to provide suitable areas for foraging. Milkweed not observed within the study area.
<i>Pieris virginensis</i>	West Virginia White	S3	--	SC	--	Jones et al. 2019	Generally prefer moist, rich, deciduous woodlands. The larvae feed only on the leaves of the toothworts (<i>Cardamine</i> spp.).	No. Suitable habitat is not present.
Fish and Mussels								
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	S1	THR	SC	Schedule 1	MNRF 2019	Small to medium-size rivers with gravel and/or sandy substrates. Host fish is Smallmouth (<i>Micropterus dolomieu</i>) and Largemouth Bass (<i>Micropterus salmoides</i>).	Suitable habitat is not present within the subject property. Marginal habitat is present within Forwell Creek.

^{1,2}MNRF 2019, ^{3,4}Government of Canada 2019, ⁵OMNR 2000, ⁶Layberry et al. 1998, ⁷Reznicek et al. 2011

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
SNA Unranked
S#? Rank Uncertain
SH Possibly Extirpated (Historical)
B Applicable to Breeding Pop.
N Applicable to Non-breeding Pop.
COSSARO / COSEWIC
NAR/NAR Not at Risk
SC/SC Special Concern
THR/T Threatened
END/E Endangered
SARA Schedule
Schedule 1 Officially Protected under SARA

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
<u>Rationale:</u> Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available ^{exlviii} . <u>Information Sources</u> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat ^{cxlviii} . • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST ^{cxlix} Index #7 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	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. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100ⁱ or more of listed species for 7 daysⁱ, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH^{cxlix} • The combined area of the ELC ecosites and a 100m radius area is the SWH^{cxlviii} • Wetland area and shorelines associated with sites identified within the SWHTG^{cxlviii} Appendix K^{cxlix} are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST^{cxlix} Index #7 provides development effects and mitigation measures.	Suitable aquatic habitat not present within the subject property. Not SWH
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	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, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area^{cxlviii} • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • SWHMiST^{cxlix} Index #8 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Raptor Wintering Area					

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
<u>Rational:</u> Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern:</u> Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering sites need to be > 20 ha ^{cxlviii, cxlix} with a combination of forest and upland; ^{xvi, xvii, xviii, xix, xx, xxi} . Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands ^{cxlix} Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water, large trees and snags available for roosting <u>Information Sources</u> • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) ^{cxlix} for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMiST ^{cxlix} Index #10 and #11 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Bat Hibernacula					
<u>Rationale</u> Bat hibernacula are rare habitats in Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200m radius around the entrance of the hibernaculum ^{cxlviii, ccvii} for most. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects” ^{ccv} • SWHMiST ^{cxlix} Index #1 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Bat Maternity Colonies					
<u>Rationale:</u> Known locations of forested bat maternity colonies is extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in buildings ^{xxii, xxv, xxvi, xxvii, xxxi} (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario ^{xxii} • Maternity colonies located in Mature deciduous or mixed forest stands ^{ccix, ccx} with >10/ha large diameter (>25cm dbh) wildlife trees ^{ccvii} • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 ^{ccxiv} or class 1 or 2 ^{ccxii} • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred ^{ccx} <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts.	• Maternity Colonies with confirmed use by: • >10 Big Brown Bats • >5 Adult Female Silver-haired Bats • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for wind Power Projects ^{ccv} • SWHMiS T ^{cxlix} Index #12 provides development effects and mitigation measures.	Suitable treed habitat is not present within the study area. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Bat Migratory Stopover Area					
	Hoary Bat Eastern Red Bat Silver-haired Bat	No specified 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 migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown. <u>Information Sources</u> • OMNR for possible locations and contact for local experts • University of Waterloo, Biology Department	Long Point has been identified as a significant stopover habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration ^{ccxv} • The confirmation criteria and habitat areas for this SWH are still being determined. • SWHDSS ^{cxlix} Index #38 provides development effects and mitigation measures	Criteria unavailable to assess significance of habitat within the subject property.
Wildlife Habitat: Turtle Wintering Area					
<u>Rationale:</u> Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen ^{cix, cx, cxi, cxviii} . • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) ^{cvii} • Congregation of turtles is more common where wintering areas are limited and therefore significant ^{cix, cx, cxi, cxii} . • SWHMiST ^{cxlix} Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitable overwintering habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Snake Hibernaculum					
<u>Rationale:</u> Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake <u>Special Concern:</u> Milksnake Eastern Ribbonsnake <u>Lizard:</u> <u>Special Concern</u> (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	- For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. The existence of features that go below the 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^{cxliv, l, li, lii, cxlii}. - 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. - Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources - In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). - Reports and other information from CAs. - Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs - Natural Heritage Information Center (NHIC) - OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: - Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. - Congregations of a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWHⁱ - SWHMiST^{cxlix} Index #13 provides development effects and mitigation measures for snake hibernacula. - Presence of any active hibernaculum for skink is significant. - SWHMiST^{cxlix} Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
<u>Rationale:</u> Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	- 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 (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. - Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources - Reports and other information available from CAs - Ontario Breeding Bird Atlas^{ccv} - Bird Studies Canada; <i>NatureCounts</i> http://www.birdscanada.org/birdmon/ - Field Naturalist clubs	Studies confirming: - Presence of 1 or more nesting sites with 8^{cxlvix} or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. - A colony identified as SWH will include a 50m radius habitat area from the peripheral nests^{ccvii} - Field surveys to observe and count swallow nests are to be completed during the breeding season Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} - SWHMiST^{cxlix} Index #4 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
<u>Rationale:</u> Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	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 15m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas^{ccv}, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5ⁱ or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH^{cc}, ccvii • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiST^{cxlix} Index #5 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
<u>Rationale:</u> Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer’s Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer’s Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> • Ontario Breeding Bird Atlas^{ccv}, rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Ternⁱ. • Presence of 5 or more pairs for Brewer’s Blackbird. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. • The edge of the colony and a minimum 150m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH^{cc}, ccvii • Studies would be done during May/June when actively nesting. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • SWHMiST^{cxlix} Index #6 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
<u>Rationale:</u> Butterfly stopovers areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern:</u> Monarch	Combination of ELC Community Series: Need to have present one Community Series from each landclass: <u>Field:</u> CUM CUS CUT <u>Forest:</u> FOC FOM FOD CUP Anecdotaly, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario ^{cxlix} . • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south ^{xxxii, xxxiii, xxxiv, xxxv, xxxvi} . • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat cxlviii, cxlix. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes ^{xxxvii, xxxviii, xxxix, xl, xli} . <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct) ^{xliii} . MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day ^{xxxvii} , significant variation can occur between years and multiple years of sampling should occur ^{xl, xlii} . • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. • SWHMiST ^{cxlix} Index #16 provides development effects and mitigation measures.	Study area not located within 5 km of Lake Ontario. Not SWH
Wildlife Habitat: Landbird Migratory Stopover Areas					
<u>Rationale:</u> Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha ⁱ in size and within 5km ^{iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv} of Lake Ontario. • If multiple woodlands are located along the shoreline, those woodlands <2km from Lake Ontario are more significant ^{cxlix} • Sites have a variety of habitats; forest, grassland and wetland complexes ^{cxlix} . • The largest sites are more significant ^{cxlix} • Woodlots and forest fragments are important habitats to migrating birds ^{ccxviii} , these features located along the shore and located within 5km of Lake Ontario are Candidate SWH ^{cxlviii} . <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMiST ^{cxlix} Index #9 provides development effects and mitigation measures.	Study area not located within 5 km of Lake Ontario. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Propety
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Deer Yarding Areas					
<u>Rationale:</u> Winter habitat for deer is considered to be the main factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM, FOC, SWM and SWC. Or these ELC Ecosites: CUP2 CUP3 FOD3 CUT	- Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. - The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%^{cxci}. - OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual"^{cxv} - Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: - Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH^{lvi, lvii, lviii, lix, lx, l}. - Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). - Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations^{cxv}. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST^{cxlix} Index #2 provides development effects and mitigation measures.	Deer overwintering habitat not identified by MNRF within or adjacent to the subject property. Not SWH
Wildlife Habitat: Deer Winter Congregation Areas					
<u>Rationale:</u> Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions ^{extviii}	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha may also be used.	- Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. - Deer movement during winter in the southern areas of Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands^{cxlviii}. - If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. - 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^{ccxiv}. - Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> - MNRF District Offices - LIO/NRVIS	Studies confirm: - Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF^{cxlviii}. - Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR^l. - Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques^{ccxxiv}, ground or road surveys, or a pellet count deer density survey^{ccxxv}. - If a SWH is determined for Deer Wintering Area of if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST^{cxlix} Index #2 provides development effects and mitigation measures.	Deer overwintering habitat not identified by MNRF within or adjacent to the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Cliff and Talus Slopes					
<u>Rationale:</u> Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: 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. <u>Information Sources</u> • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes ^{lxxviii} • SWHMiST ^{cxlix} Index #21 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Sand Barrens					
<u>Rationale:</u> Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: 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%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. 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%.	Any sand barren area, >0.5ha in size. <u>Information Sources</u> • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens ^{lxxviii} • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics) ^l . • SWHMiST ^{cxlix} Index #20 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	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 branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	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 plant. Undisturbed alvars can be phyto- and zoo geographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover^{lxxxviii}.	An Alvar site > 0.5 ha in size^{lxxxv}. <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists^{lxxxvi}. • Ontario Nature – Conserving Great Lakes Alvars^{ccviii}. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five Alvar indicator species^{lxxxv},^{cxlix} at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp.). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses^{lxxxv}. • SWHMiST^{cxlix} Index #17 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Old Growth Forest					
Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest í. <u>Information Sources</u> • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat^{cxlviii} • The stand will have experienced no recognizable forestry activities^{cxlviii} • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand^{lxxxviii} • SWHDSS^{cxlix} Index #23 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Savannah					
<u>Rationale:</u> Savannahs are extremely rare habitats in Ontario.	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. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in ^{bxv} Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used ^{cxlviii} . • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics sp.). • SWHMiST^{cxlix} Index #18 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH
Tallgrass Prairie					
<u>Rationale:</u> Tallgrass Prairies are extremely rare habitats in Ontario.	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. <u>Information Sources</u> • OMNR Districts • Natural Heritage Information Center (NHIC) has location information available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in ^{bxv} Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used ^{cxlviii} . • Area of the ELC Ecosite is the SWH • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST^{cxlix} Index #19 provides development effects and mitigation measures.	Vegetation type not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community ¹	Candidate SWH			Confirmed SWH	Subject Property
	ELC Ecosite Codes ¹	Habitat Description ¹	Detailed Information and Sources ¹	Defining Criteria ¹	Assessment Details
Other Rare Vegetation Communities					
<u>Rationale:</u> Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG ^{cxlviii} . Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M ^{cxlviii} The OMNR/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG ^{cxlviii} . • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures.	Other rare vegetation types not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
<u>Rationale:</u> Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	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 120m ^{cxlix} 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 120m of each individual wetland where waterfowl nesting is known to occur ^{cxlix} . • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m ^{cxlviii} from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST ^{cxlix} Index #25 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
<u>Rationale:</u> Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey <u>Special Concern:</u> Bald Eagle	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. • 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. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas^{ccv} or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area^{cxlviii}. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important^{cxlviii}. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH^{cv}, ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat^{cv}. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant^{ccvii} • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} • SWHMiST^{cxlix} Index #26 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
<u>Rationale:</u> Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	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 >10ha of interior habitat ^{lxxxviii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii} . Interior habitat determined with a 200m buffer ^{cxlviii} . • 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 Cooper's 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. <u>Information Sources</u> • OMNRF • Check the Ontario Breeding Bird Atlas ^{ccv} or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant ^{cxlviii} . • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of habitat is the SWH ^{ccvii} . • Barred Owl – a 200m radius around the nest is the SWH ^{ccvii} . • Broad-winged Hawk and Coopers Hawk – a 100m radius around the nest is the SWH ^{ccvii} . • Sharp-shinned Hawk – a 50m radius around the nest is the SWH ^{ccvii} . • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST ^{cxlix} Index #27 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Turtle Nesting Area					
<u>Rationale:</u> These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) ^{cxlviii} 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. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH ⁱ • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH ^{cxlviii} . • Travel routes from wetland to nesting area are to be considered within the SWH ^{cxlix} . • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST ^{cxlix} Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Seeps and Springs					
<u>Rationale:</u> Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas 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 ^{cxvii, cxlix} . • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species ^{cxix, cxx, cxxi, cxxii, cxiii, cxiv} <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists clubs and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat ^{cxlviii} • SWHMiST ^{cxlix} Index #30 provides development effects and mitigation measures	Subject property entirely anthropogenic. Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
<u>Rationale:</u> These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	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) ^{ccvii} within or adjacent (within 120m) to a woodland (no minimum size) ^{clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx} 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 ^{cxlviii} <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • OMNRF wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) ^{lxxi} or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys ^{cviii} will be required during the spring March-June when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the woodland area plus a 230m radius of woodland area ^{lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi} if a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is the be included in the habitat. • SWHMiST ^{cxlix} Index #14 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
<u>Rationale:</u> These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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 >500m2 (about 25m diameter)^{cvii} 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^{clxxxiv}. - 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. <u>Information Sources</u> - Ontario Herpetofaunal Summary Atlas (or other similar atlases) - Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. - OMNRF Districts and wetland evaluations - Reports and other information available from CAs.	Studies confirm: - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 -individuals (adults or eggs masses)^{lxxi, lxxiii}, or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. - The ELC ecosite wetland area and the shoreline are the SWH. - A combination of observational study and call count surveys^{cviii} will be required during spring March to June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. - If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST^{cxlix} Index #15 provides development effects and mitigation measures.	Suitable wetland habitat not present within the subject property. Not SWH
Woodland Area-Sensitive Bird Breeding Habitat					
<u>Rationale:</u> Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: 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.^{cv, cxoxi, cxxxii, cxxxiii, cxxxiv, cxov, cxovi, cxxxvii, cxxxviii, cxoix, cxi, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cli, clii, cliii, cliv, clv, clvii, clviii, clix} - Interior forest habitats are at least 200m from forest edge habitat. <u>Information Sources</u> - Local bird clubs - Canadian Wildlife Service (CWS) for the location of forest bird monitoring. - Bird studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to greatest value to interior species - Reports and other information available from CAs.	- Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. - Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. - Conduct field investigations in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi} - SWHMiST^{cxlix} Index #34 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
<u>Rationale:</u> Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan <u>Special Concern:</u> Black Tern Yellow Rail	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^{ccxiv}. • 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. <u>Information Sources</u> • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas^{ccv}	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed speciesⁱ. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWHⁱ. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}. • SWHMiST^{cxlix} Index #35 provides development effects and mitigation measures	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Open Country Bird Breeding Habitat					
<u>Rationale:</u> This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow <u>Special Concern:</u> Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha ^{clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix} . 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) ⁱ . 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. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas^{ccv} • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}. • SWHMiST^{cxlix} Index #32 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
<u>Rationale:</u> This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	<u>Indicator spp.:</u> Brown Thrasher Clay-coloured Sparrow <u>Common spp.:</u> Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher <u>Special Concern:</u> Yellow-breasted Chat Golden-winged Warbler	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 ^{clxiv} 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 live-stock pasturing in the last 5 years) ⁱ . Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species ^{clxxiii} . Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas ^{ccv} • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species ⁱ . • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMiST ^{cxlix} Index #33 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH
Wildlife Habitat: Terrestrial Crayfish					
<u>Rationale:</u> Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ^{ccii}	Chimney or Digger Crayfish: (<i>Fallicambarus fodiens</i>) Devil Crawfish or Meadow Crayfish: (<i>Cambarus Diogenes</i>)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources</u> • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites ^{cci} • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH • Surveys should be done April to August during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult ^{cci} • SWHMiST ^{cxlix} Index #36 provides development effects and mitigation measures.	Suitable habitat not present within the subject property. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
<u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is 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 ^{boxviii} . <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website: "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas ^{ccv} • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST ^{cxlix} Index #37 provides development effects and mitigation measures.	Subject property is highly industrialized, habitat is not present for any Special Concern or Provincially Rare plant and animal species. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 6E.

	Wildlife Species ¹	Candidate SWH		Confirmed SWH	Subject Property
		ELC Ecosite Codes ¹	Habitat Criteria and Information Sources ¹	Defining Criteria ¹	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat ^{cbxxiv, cbxxv, cbxxvi, cbxxvii, cbxxviii, cbxxix, cbxxx, cbxxxi} . Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule ⁱ . <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • Field Naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant ^{cxlix} . • Corridors should have at least 15m of vegetation on both sides of waterway ^{cxlix} or be up to 200m wide ^{cxlix} of woodland habitat and with gaps <20m ^{cxlix} . • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat ^{cxlix} . • SWHMiST ^{cxlix} Index #40 provides development effects and mitigation measures.	Amphibian Breeding Habitat (Wetland) not present within the subject property. Therefore, amphibian movement corridors are not applicable. Not SWH
Wildlife Habitat: Deer Movement Corridors					
Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule ⁱ . • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion ^{cbxxxi, cbxxxiii, cxlix, cxciiv} . • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> • MNRF District Office • Natural Heritage Information Center (NHIC) • Reports and other information available from CAs • Field Naturalist Clubs	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering yard should be unbroken by roads and residential areas. • Corridors should be at least 200m wide ^{cxlix} with gaps <20m ^{cxlix} and if following riparian area with at least 15m of vegetation on both sides of waterway ^{cxlix} . Shorter corridors are more significant than longer corridors ^{cxlix} . • SWHMiST ^{cxlix} Index #39 provides development effects and mitigation measures.	Deer Wintering Habitat not present within the subject property. Therefore, deer movement corridors are not applicable. Not SWH

¹MNRF 2015

APPENDIX IV

Vascular Flora Species List

Plant Species Reported from the Study Area - Kraus Flooring Scoped EIS (Project #2396A)

[illegible]

Plant Species Reported from the Study Area - Kraus Flooring Scoped EIS (Project #2396A)

Scientific Name	Common Name	CC	CW	Weed	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Waterloo Region	NHIC Data*	NRSI Observed	MEFM1	FOD	
Plantaginaceae	Plantain Family														
Plantago major	Common Plantain	0	3	-1	SE5							X	X		
Rhamnaceae	Buckthorn Family														
Rhamnus cathartica	Common Buckthorn	0	0	-3	SE5							X	X		
Rosaceae	Rose Family														
Prunus serotina	Black Cherry	3	3		S5							X		X	
Rubus idaeus	Common Red Raspberry	2	3	0	S5							X	X	X	
Rubiaceae	Madder Family														
Galium mollugo	Smooth Bedstraw	0	5	-2	SE5							X	X		
Scrophulariaceae	Figwort Family														
Verbascum thapsus	Common Mullein	0	5	-2	SE5							X	X		
Tiliaceae	Linden Family														
Tilia americana	American Basswood	4	3		S5							X	X	X	
Ulmaceae	Elm Family														
Ulmus pumila	Siberian Elm	0	3	-1	SE3							X	X		
Urticaceae	Nettle Family														
Urtica dioica	Stinging Nettle	2	0	0	S5							X	X		
Vitaceae	Grape Family														
Vitis riparia	Riverbank Grape	0	0		S5							X	X		
Araceae	Arum Family														
Arisaema triphyllum	Jack-in-the-pulpit	5	-3		S5							X		X	
Liliaceae	Lily Family														
Trillium grandiflorum	White Trillium	5	3		S5							X		X	
Poaceae	Grass Family														
Bromus inermis	Smooth Brome	0	5	-3	SE5							X	X		
Phalaris arundinacea	Reed Canary Grass	0	-3		S5							X	X		
Phleum pratense	Common Timothy	0	3	-1	SE5							X	X		
Phragmites australis	Common Reed	0	-3		S4?							X	X		
Typhaceae	Cattail Family														
Typha angustifolia	Narrow-leaved Cattail	0	-5		SE5							X	X		
Total												0	47	38	13

*NHIC Atlas Squares: Square #

References

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic quality assessment for southern Ontario. OMNR, Natural Heritage Information Centre, Peterborough. 68 pp.

Ministry of Natural Resources and Forestry (MNR). 2020a. Natural Heritage Information Centre (NHIC): Species List for Ontario. Published: 2014-07-17. All Species List Updated: 2020-01-17. Available: <https://www.ontario.ca/page/get-natural-heritage-information>

Government of Canada. 2019. Species at Risk Public Registry: Species Search. Updated: 2019-12-06. Available: <https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10>

Richardson, W. and V. Martin. 1999. Regional Municipality of Waterloo. Revisions to Waterloo Region’s Significant Species List: Native Vascular Plant Component.

Ministry of Natural Resources and Forestry (MNR). 2020b. Natural Heritage Information Centre (NHIC): Make a Natural Heritage Area Map Application. Published: 2014-07-17. Updated 2020-01-06. Available: <https://www.ontario.ca/page/make-natural-heritage-area-map>