Niagara Region

ENVIRONMENTAL IMPACT STUDY GUIDELINES

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SECTION 1 - ENVIRONMENTAL IMPACT STUDY OVERVIEW

Niagara Region promotes healthy, prosperous, and sustainable communities. Achieving this goal requires a balance between multiple community objectives including environmental protection and stewardship, long-term sustainability of the agricultural industry, and achieving the growth targets set out in the Growth Plan for the Greater Golden Horseshoe in the Region's urban areas. These guidelines provide a clear outline of what is expected through the Environmental Impact Study (EIS) process and EIS requirements. These guidelines will facilitate the consistent application of regional and local environmental impact study related policy, which will contribute to a balanced approach to development and conservation across the Region.

These Guidelines are intended to identify EIS requirements under the Greenbelt Plan, Provincial Policy Statement, Regional Official Plan, local Official Plans and By-laws, and to support the objectives of the Niagara Escarpment Plan, and Niagara Peninsula Conservation Authority (NPCA) Policies and Regulations. This document will also facilitate the review of Environmental Impact Studies by Niagara Region, Local Area Municipalities, and the NPCA.

It is the intent of the EIS Guidelines to:

i. Establish a standardized set of study guidelines specific to natural heritage features and key hydrologic features*;
ii. Avoid conflicts between proposed development and natural heritage features and/or key hydrologic features through constraints analysis prior to development layout;
iii. Provide a planning tool that can be used by the applicant to address environmental considerations throughout the development process;
iv. Ensure high quality, consistent studies and reporting methods; and
v. Facilitate and expedite the environmental review process.

*Note: Niagara Region is currently undertaking an exercise to update watercourse mapping. This mapping will identify key hydrologic features. Currently these features are not mapped at a regional scale, but identified on an application by application basis.

These EIS Guidelines are an administrative update to Niagara Region's 2012 Environmental Impact Study Guidelines. These Guidelines are intended to provide an overview of the EIS process and outline requirements for an EIS under local and Regional Policy. Applicants in the Niagara Escarpment Plan Area and NPCA Regulated Area should see these respective agencies and may be subject to additional EIS requirements.

WHAT IS AN ENVIRONMENTAL IMPACT STUDY AND WHAT IS ITS PURPOSE?

Natural heritage conservation is an important planning objective. Our natural heritage – our lakes, rivers, forests, wetlands and our wildlife – play an important role in maintaining the quality of life in our communities. The importance attached to natural heritage is reflected in Provincial, Regional and local planning policy, as well as the Policies and Regulations of other Agencies within the Niagara area.

Under Provincial and Regional plans and policies, no development or site alteration is permitted in certain natural heritage and hydrologic features as indicated in Table 1. Development and site alteration may be permitted in other natural heritage areas, and on adjacent lands to natural heritage and hydrologic features, if it has been demonstrated that it will have no negative impacts on the feature or on its ecological or hydrologic functions. First priority is to be given to avoiding negative environmental impacts. If negative impacts cannot be avoided, then measures to mitigate negative impacts shall be identified and assessed.

The wording of Regional, local and NPCA Policies and Regulations differ somewhat, but under all circumstances when no negative impact must be demonstrated, potential impacts are assessed through the preparation of an EIS. In certain circumstances outlined later in the document, the EIS requirement may be waived. Where an EIS is required, it is to be submitted with the planning or permit application.

An EIS is a tool for objectively assessing the environmental impacts of a proposed development or site alteration. It serves two purposes:

1. The EIS is a **planning tool** to be used by the proponent to design the development proposal or site alteration in such a way as to avoid negative environmental impacts and, where possible, enhance the natural environment and make the natural setting an asset. There is an expectation that the preparation of the constraints analysis portion of the EIS will begin early in the development process, prior to development layout. This ensures that the environmental constraints have been clearly identified and mapped at an early stage so that the development layout can be planned to avoid the constraints on site, maximizing the opportunity to create a development concept that avoids negative environmental impacts and in many cases recognizes the natural setting as an asset.

2. The EIS is a **decision-making tool** which must provide the information needed by the Region, local municipalities and the NPCA in order to determine whether the proposal complies with the applicable plans, policies and regulations.

The EIS must be based on good scientific data and analysis that are technically defensible and that adequately address impacts on environmental features and functions. The EIS process must be integrated into the planning of a proposed project in order to ensure timely consideration of environmental factors and to avoid delays later in the planning and approvals process.

The Regional Official Plan identifies the planning authority as responsible for reviewing and approving EISs. Under current Regional policy, EISs respecting development in within the Settlement Area Boundaries shall be prepared to the satisfaction of the local municipality. EISs respecting development outside of the Settlement Area Boundaries are to be prepared to the satisfaction of Niagara Region.

The planning authority is ultimately responsible for determining if an EIS is required, and deeming an EIS complete. The appropriate planning authority staff should be contacted as early as possible to determine the EIS requirements.

Through Ontario Regulation 155/06 made under the *Conservation Authorities Act*, the Niagara Peninsula Conservation Authority regulates development and activities in or adjacent to river or stream valleys, Great Lakes and large inland lakes shorelines, watercourses, hazardous lands and wetlands. Development taking place on these lands may require a permit from the Conservation Authority to confirm that the control of flooding, erosion, dynamic beaches, pollution or the conservation of land are not affected. Where an EIS is required under NPCA policies and/or regulations, but is not a municipal or Regional requirement, the NPCA will be the approval authority for the EIS and the applicant should contact the NPCA directly for EIS requirements as they may be different than contained herein.

The completed EIS must be submitted to the municipality with the planning application for a development proposal requiring approval under the *Planning Act*. In accordance with the Complete Application Policies set out in Regional and local official plans, the EIS is to be prepared by a qualified professional and submitted in electronic form along with hard copies. It should be understood that approval of the EIS means that the study itself meets acceptable technical standards. It does not ensure approval of the planning or permit application.

These EIS Guidelines have been arranged in such a way that the first section of the EIS, which constitutes the constraints analysis, can be submitted to the planning authority and the NPCA as appropriate for comment prior to the submission of the complete EIS. However, the complete EIS must be submitted at the time of application.

WHEN IS AN EIS REQUIRED?

An EIS is to be submitted where development or site alteration is proposed wholly or partially within, or adjacent to, a natural heritage feature as defined in Provincial, Regional, local policies and regulations. It also is required where development or site alteration is proposed:

1. In the Greenbelt Natural Heritage System; and
2. On lands adjacent to key hydrologic features in the Greenbelt.

Table 1.1 illustrates when an EIS may be required. It should be noted that where requirements differ, the most restrictive provisions apply. Should the policies or regulations change, those changes will replace the requirements set out in Table 1. Some applications may be eligible for waiving EIS

requirements (see Step 1- Section 1.1).

Where a development proposal involves two or more applications, only one EIS will be required. For example, a proposed subdivision requiring a zoning by-law amendment and subdivision approval will require only one EIS to be prepared which addresses all planning requirements. Pre-consultation will be directed at ensuring that the various regulatory and approval requirements are addressed in an integrated and coordinated manner to avoid duplication or conflict.

An EIS will not be required where:

- It is determined by the planning authority, in consultation with the NPCA if appropriate, that the natural heritage or hydrologic feature does not meet the criteria established for designation as significant. This determination may be based on a preliminary review and site visit;

OR

- An *Environmental Assessment* or alternative environmental review is being undertaken or has been completed as part of a comprehensive planning process required under Provincial or Federal Legislation, provided the *Environmental Assessment* or alternative environmental review fulfills all the requirements for site specific, and/or landscape level *Environmental Impact Statements* that would otherwise be required by this Plan;

OR

- The application meets the waving criteria (as outlined on page 9 under *Step 1.1 Initial Screening to Determine if an EIS is Required, or if EIS Requirement can be Waived*).

The following are examples of the types of applications that may require an EIS should the proposed development involve lands in, or adjacent to, a natural heritage feature as identified in the table below:

- Regional Policy Plan Amendments
- Local Official Plan Amendments
- Subdivisions
- Severances and Minor Variances
- Zoning By-law Amendments
- Site plan control
- Municipal site alteration permits
- Development permits
- Master drainage plans
- Trails and interpretive areas within Provincially and Locally Significant Wetlands
- Other significant development proposals.

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Table 1: EIS Requirements

NATURAL HERITAGE FEATURES	Is an EIS required?*	
	Development involves lands within the natural heritage	***Development involves adjacent lands***
Areas identified as Environmental Protection Area (EPA)		
Provincially Significant Wetland (PSW)	Development not permitted – no EIS	EIS required for development within 120 metres
Provincially Significant Life Science Area of Natural and Scientific Interest (ANSI)	Development not permitted – no EIS	EIS required within 50 metres
Significant Habitat of Endangered and Threatened Species	Where habitat requirements are well defined, development not permitted – no EIS. Where habitat requirements not well defined an EIS is required	EIS required for development within 50 metres. Habitat must be defined in consultation with the MNRF
Key natural heritage features within the Greenbelt Natural Heritage System	Development not permitted – no EIS	EIS required for development within 120 metres
Areas identified as Environmental Conservation Area (ECA)		
Significant Woodlands	EIS required; Tree Saving Plan required	EIS required for development within 50 metres
Significant Wildlife Habitat	EIS required	EIS required for development within 50 metres
Significant Habitat of Species of Concern	EIS required	EIS required for development within 50 metres
Critical Fish Habitat (type 1)	EIS required	EIS required for developmentwithin 30 metres
Other Fish Habitat (type 2 and 3)	EIS required	EIS required for development within 15 metres
Significant Valleylands	EIS required	EIS required for development within 50 metres
Other Evaluated Wetland	EIS required	EIS required for development within 50 metres
Other Features in the Greenbelt Plan		
**Key hydrologic feature	Development not permitted – no EIS	EIS required for development within 120 metres

*Note: in certain circumstances EIS requirements may be waived (see page 9, *Step 1.1 Initial Screening to Determine if an EIS is Required, or if the EIS Requirement can be Waived)*

* *Note: Niagara Region is currently undertaking an exercise to update watercourse mapping. This mapping will identify key hydrologic features. Currently these features are not mapped at a regional scale, but are identified on an application by application basis.

WHO PREPARES THE EIS?

The EIS is to be submitted by the applicant and is to be prepared by a qualified professional with relevant environmental expertise. The EIS and the biophysical surveys undertaken in support of the EIS are to be completed by competent, professional experts in fields relevant to the components of the report to which they are contributing. For example, a botanist should complete a flora survey; an aquatic biologist should complete a fisheries survey, a hydrogeologist (P. Geo) must complete the groundwater analysis, etc. The EIS shall identify the individuals involved in preparing the study and their qualifications. The final EIS report must be analyzed, written and signed by a qualified biologist or environmental planner (Regional Policy 7.B.2.1).

The biologist/environmental planner preparing the EIS must work in conjunction with other professionals to integrate the information contained in stormwater management plans, lot grading and drainage plans, geotechnical reports, noise studies, traffic studies, and other plans and studies as required. Where those studies and plans may have implications for the environmental impacts of concern in the EIS, they shall be designed to address those impacts. For example, where roads are to be located in close proximity to significant natural features, the traffic study should be designed to address not only traffic movements, but also impacts on wildlife. Relevant information within these reports regarding natural heritage and hydrologic features, functions, and impacts should be summarized in the EIS, and similarly, these reports should note that they have been reviewed by the EIS consultant and reflect the recommendations of the EIS. For a larger, more significant proposal, such as a golf course, a residential subdivision or a large commercial, industrial or institutional development, an environmental report will be required that integrates the findings and recommendations of the EIS and other studies.

WHAT MUST BE INCLUDED IN AN EIS?

The EIS should focus on the significant natural heritage features and/or hydrologic features and functions for which the area was designated, and any additional natural heritage or hydrological features identified on site. It should identify, describe and delineate these features and their ecological and hydrological functions in order to avoid impacts to them. However, it should also address the site's setting in the broader landscape and its role in, and linkages to, broader natural heritage and hydrologic systems. It should assess any unavoidable impacts of the proposed development, indicating the magnitude and implications of those impacts, recommend mitigation measures to reduce negative impacts, identify opportunities for restoration or enhancement of natural heritage features which may also help offset negative impacts, recommend further study, monitoring, and provide recommendations on proceeding with the proposed development, including conditions to be

attached to any approvals.

The key components of an EIS include:

- A biophysical and/or hydrologic inventory and analysis, including a description and analysis of the aquatic and terrestrial settings, as well as hydrological conditions such as surface and groundwater features and functions;
- A description of the ecological and hydrological functions served and required by the natural heritage features and/or hydrologic features;
- A description of the linkages between and among natural features and areas, surface water features and ground water features both on the site and in the surrounding area;
- A description of the proposed undertaking;
- Identification of constraints and opportunities;
- Mapping;
- Identification and analysis of potential direct, indirect and cumulative impacts from the proposed activities on the ecological and/or hydrological functions identified;
- The development of appropriate development modifications, recommendations, mitigation measures and enhancement opportunities;
- An assessment of the significance of the cumulative net environmental impacts expected over the long term after these measures have been implemented;
- The recommendation and description of monitoring needs and programs; and
- Recommendations regarding possible residual impacts, including recommendations for proceeding with the development as proposed or modified.

SECTION 2 – STEPS INVOLVED IN THE ENVIRONMENTAL IMPACT STUDY PROCESS

The steps required for the preparation of a complete EIS, as set out below, are designed to facilitate a more efficient and streamlined planning and development process, whereby applications can be dealt with in a timely manner. These steps include:

- Step 1: Determining EIS Requirements
  - 1.1 Initial Screening to Determine if an EIS is Required, or if EIS Requirement can be Waived
  - 1.2 Pre-consultation and Scoping
- Step 2: Terms of Reference
- Step 3: Constraints Analysis
  - 3.1 Policy and Legislative Framework
  - 3.2 Literature Review
  - 3.3 Baseline Data Assessment
  - 3.4 Defining the Natural Heritage and Hydrologic Systems
  - 3.5 Existing Conditions
  - 3.6 Assessment of Features and Functions
  - 3.7 Constraints Map
  - 3.8 Constraints Analysis and Recommendations
- Step 4: Ecological Impact Assessment
  - 4.1 Description of the Proposed Development
  - 4.2 Impact Assessment
    - 4.2.1 Direct Environmental Impacts
    - 4.2.2 Indirect Environmental Impacts
    - 4.2.3 Cumulative Environmental Impacts
  - 4.3 Design Changes and Mitigation Measures
  - 4.4 Ecological Restoration or Enhancement Opportunities
  - 4.5 Residual Environmental Impacts
  - 4.6 Monitoring
- Step 5: Recommendations and Conclusion

Step 1: DETERMINING EIS REQUIREMENTS

Pre-consultation is a requirement under the Regional Official Plan and under Local Official Plans as it is strongly in everyone's interest to understand study requirements upfront.

The need for an EIS and the scoping of the requirements for the EIS document are to be determined through pre- consultation with the Region, the local municipality and NPCA staff as appropriate. In some cases, it may be concluded by the planning authority that the requirement for an EIS can be waived, or that the EIS can be scoped (See Sections 1.1 and 1.2 below). Pre-consultation ensures that environmental constraints that may affect a development are identified and understood early in the planning process. Pre-consultation is essential in order to ensure that the EIS provides the information and analysis that is required by the approval authority to make informed decisions on how to preserve our natural heritage and hydrologic systems and their functions, while avoiding

unnecessary study requirements. Pre- consultation also ensures that an EIS is not broader in scope or more detailed than necessary. Pre-consultation establishes timelines for the EIS and helps to ensure that all existing relevant studies and information are made available to the applicant, potentially reducing the need for some primary information gathering. By ensuring that the EIS is defined and executed, requirements for additional fieldwork and addendums for the EIS can be avoided. Early pre-consultation avoids costly delays and design changes later in the planning process. Information inquiries and data requests by telephone or email do not constitute pre-consultation for *Planning Act* applications. It is strongly recommended that the proponent begin pre-consultation as early as possible in developing plans for a new development, well before drawings are prepared.

Pre-consultation is to occur in two stages: first, initial screening; and then formal pre-consultation if it is determined that an EIS is required.

1.1 INITIAL SCREENING TO DETERMINE IF AN EIS IS REQUIRED, OR IF EIS REQUIREMENT CAN BE WAIVED

The initial screening of a proposed development or site alteration by the planning authority, in consultation with other planning agencies, and NPCA staff as appropriate, will determine whether an EIS is required or whether the requirement should be waived.

When is a proposed development eligible for waiving the EIS requirement?

During the initial screening, it shall be determined that a proposed development[1] is eligible for waiving if it meets all of the following conditions:

- Proposed development is located outside of natural heritage and hydrologic features, unless the proposed development is an existing lot of record in a woodland;
- Proposed development is considered small-scale non-agricultural development or small/medium-scale agricultural development (refer to Table 2A and 2B);
- Proposed development will not significantly alter existing surface water flow direction, quantity or quality; and
- Proposed development is not located within an NPCA regulated area.

What are the criteria for waiving the EIS requirement?

If the proposed development is eligible for waiving, the requirement to complete an EIS may be waived if the development meets one or more of the following waiving criteria:

A. The proposed development is outside the waiving zone required for natural heritage features (refer to Table 3 for waiving zones and Appendix A - Examples A1 and A2 for illustrated examples of this criteria).
B. The proposed development is within the waiving zone, separated from natural heritage feature(s) by a road[2] or existing development (refer to Table 3 and Appendix A -Example B).
C. The proposed development is within the waiving zone and is a re-development

wholly contained within an existing footprint, or a re-development with a minor addition[3] to the existing footprint which maintains a >15 m buffer from the natural heritage feature, or is a re-development with a major addition to the existing footprint which extends away from the feature (refer to Table 3 and Appendix A- Example C).

D. The proposed development is within the waiving zone and is a minor addition to an existing structure which maintains a >15 m buffer from the natural heritage feature, or is a major addition to an existing structure which extends away from the feature (refer to Table 3 and Appendix A- Example D).

E. The proposed development area is for a single detached dwelling, amenity area, access, private sewage disposal system, and accessory structure if required within an existing lot of record in a woodland (refer to Appendix A-Example E)[4].

[1] *Development: creation of a new lot, change in land use, or the construction of buildings, structures and amenities.*
[2] *Road: improved and publicly maintained road in an open road allowance, >20 m in width.*
[3] *Minor addition = (1) peripheral in nature (e.g., deck, patio, open porch); or (2) do not exceed 20% of original ground floor area or 300 ft^2, whichever is less.*
[4] *Within the Unique Agricultural Area, single dwellings only are permitted on existing lots of record zoned for such, as of the date the Greenbelt Plan came into force, or where an application for an amendment to a zoning by-law is required as a condition of a severance granted prior to December 14, 2003 but which application did not proceed.*

The following tables (Table 2A and 2B) provide some examples of what can generally be considered small to large scale non-agricultural and agricultural development.

Table 2a: Scale of Development (non-agricultural)

Scale of Development	Examples	
Small-Scale*	· lot of record	· new deck
	· re-development of existing lot	· swimming pool
	· re-development of existing footprint	· residential septic system
	· severance for single family dwelling	· change in driveway culvert
	· new driveway	· exterior modifications to existing structures
Medium-Scale	· medium-scale commercial development	· medium-scale recreational development
	· medium-scale residential development	
Large-Scale	· secondary plan	· large-scale recreational development (*e.g.* , golf course/ski hill)
	· estate development	
	· industrial development	

(* = EIS requirement may be waived)

Table 2b: Scale of Development (agricultural)

Scale of Development	Examples	
Small/Medium-Scale*	· small- medium nursery/horticultural facility	· re-development of existing farm footprint by new agricultural facility
	· re-building a barn on existing footprint	· new driveway, laneway or cement pad
	· extension of existing barn	· exterior modifications to existing structures
	· addition of a new small/medium-scale farm facility (*e.g.* , shed, barn, storage facility, farm workshop)	· small/medium-scale greenhouse installation
	· small-scale winery	
	· farm dwelling	
Large-Scale	· large-scale livestock facility	· large-scale winery facility (*e.g.* , restaurant, touring facility, winery building)
	· abattoir	· large-scale greenhouse installation

(* = EIS requirement may be waived)

Table 3: Waiving Zones

Natural Heritage Feature	Waiving Zone
Provincially Significant Wetland (PSW)	30 m
Other Evaluated Wetland (non-PSW)	30 m
Other Wetland (non-evaluated wetland)	30 m
Provincially Significant Life Science ANSI	30 m
Significant Woodland	30 m
Significant Valleyland	30 m
Significant Wildlife Habitat	30 m
Significant Habitat of Species of Concern	30 m
Significant Portions of Habitat of Threatened and Endangered Species	30 m
Critical Fish Habitat (type 1)	30 m
Other Fish Habitat (type 2 or 3)	15m (30m*)
Significant natural heritage features within the Greenbelt NHS	30 m
Key Hydrologic Feature	30 m

* Note: The Greenbelt Plan currently requires a 30 m vegetation protection zone from Fish Habitat in the Greenbelt Natural Heritage System. Niagara Region is currently working with the Province to reduce this requirement to 15 m or less for type 2 and 3 Fish Habitat. At the time of development of these EIS Guidelines, work on this reduction is ongoing. As such, in order to be consistent with the current Greenbelt Plan requirements, the Waiving Zone for Other Fish Habitat (type 2 or 3) is 30 m in the Greenbelt Natural Heritage System. The Waiving Zone for type 2 and 3 Fish Habitat in the Greenbelt Natural Heritage System will be updated at a later date when an agreement is reached on reduced policy requirements.

What information is required to determine if an EIS requirement can be waived?

In order to determine if the EIS requirement can be waived, the proponent will be required to provide the planning authority with:

1) A written description of the nature and scale of the proposed development; and

2) A map drawn to scale showing:

   a. The location and extent of the proposed development including any buildings;
   b. Storage areas;
   c. Roads and parking areas;
   d. Amenity areas;
   e. Wells and septic systems; and
   f. Stormwater management facilities.

If the proposed development is eligible and meets the waiving criteria, the planning authority in consultation with the NPCA as appropriate, shall waive the requirement for an EIS. If the requirement for an EIS is waived, other requirements may be identified, such as:

- mitigation measures;
- Best Management Practices (BMP) in the detailed site design;
- permits related to NPCA Regulated Area (to be determined by the NPCA);
- Species-at-Risk inventory*;
- tree survey; or
- building permit.

It may be necessary to complete a site visit with the applicant, local municipality and/or Niagara Region and/or NPCA as appropriate prior to determining whether or not the EIS requirement can be waived.

*If there is a possibility of species-at-risk on the site in question, municipalities should contact the Niagara Region and/or MNRF before waiving EIS requirements.

Appendix A contains illustrated examples of when an EIS may be waived. A sample checklist to determine if EIS requirements may be waived is included in Appendix B.

The planning authority's decision on whether an EIS will be required will be documented and communicated to the applicant or his/her agent, setting out the rationale for the decision. Where the requirement for an EIS is waived, this decision may be conditional on the proposed development incorporating specific provisions to avoid or minimize environmental impacts, such as a stormwater management plan or building setbacks. Should the development proposal subsequently be modified significantly, the planning authority may reconsider whether an EIS is required.

If it is concluded that an EIS will be required, further pre-consultation will be undertaken to establish guidelines and terms of reference for the study as outlined in the following section.

1.2 PRE-CONSULTATION AND SCOPING

Formal pre-consultation will include Niagara Region, local municipal staff, and NPCA as appropriate and may also include the Ministry of Natural Resources (MNR) and the Niagara Escarpment Commission (NEC) as required. Inquiries and data requests by telephone or email do not constitute pre-consultation for *Planning Act* applications. As a general guide, the planning authority, other planning agencies, and NPCA as appropriate will require at least one week advance notice of a pre-consultation meeting for a major project (e.g. plans of subdivision, major industrial, commercial, institutional, recreational, etc.) and at least 2 to 3 days advance notice of a pre-consultation meeting for a minor project (e.g. severances, single residential dwelling, additions, replacements, etc.) to gather and prepare information requirements.

The qualified consultant who is hired by the applicant to prepare the EIS should be retained prior to the formal pre- consultation meeting, should be familiar with the site and should participate in the pre-consultation meeting. Agency and environmental consulting staff should be familiar with the site by conducting a site visit prior to the pre-consultation meeting.

During the pre-consultation meeting, applicants will be provided a pre-consultation checklist and mapping containing information regarding the natural heritage features and ecological functions; surface and ground water features and functions, and linkages known to occur on the site and in the surrounding area; available sources of information and studies; and appropriate contacts. The planning authority, the applicant, and NPCA staff as appropriate will scope out the terms of reference for the EIS. Planning staff will review current legislative and policy requirements with the applicant, advise of the planning and/or regulation context, and discuss existing information, known ecological sensitivities, the level of study required and available data and sources.

The issues that need to be addressed, the extent of the study area and the level of study required to adequately assess impacts may vary greatly from one development to another and from one site to another. Scoping of the EIS allows the environmental consultants to focus on significant issues, thus making efficient use of time and resources. The planning authority, in consultation with the NPCA as appropriate, will adjust the scope and/or context of the EIS required for a proposed development after considering:

- Pertinent legislative, regulatory and policy requirements;
- Existing information and relevant previous studies and plans;
- The scale and nature of the development proposal;
- The significance and character of the natural heritage features and key hydrological features;
- Potential linkages among surface water features, ground water features, hydrologic functions and natural heritage features and ecological functions;
- The specific attributes and rationale for the type of natural heritage designation;
- The setting and the site's relationship to the surrounding landscape;
- The availability of previous plans and technical studies providing planning guidelines or technical information needed to assess the proposal (e.g., watershed studies, secondary plans, inventories and other planning studies);
- The need for site specific natural heritage and hydrological information; and
- Linkages with other studies to be submitted with the application (e.g., stormwater management, noise, etc.)

In scoping the EIS, the planning authority and the applicant's environmental consultant, will determine:

- The natural heritage features and/or key hydrological features and adjacent lands to be included in the study;
- The broader landscape context and linkages to be considered;
- The depth of study/content required;
- The extent and timing of the biophysical and hydrologic inventory;
- Specific boundaries, methods and protocols required; and

- Any specific features and/or functions that must be studied in additional detail.

Even with scoping of an EIS there are certain minimum requirements that need to be completed within an agreed study area. The minimum requirements would include the following natural heritage information for the study area:

- General site description, including soils, topography and physiography.
- Ecological Land Classification (ELC) "Vegetation Type" mapping and vegetation community descriptions.
- Floral species lists for ELC communities present.
- Watercourse mapping and characterization (e.g., warm/cold, intermittent/permanent, no/indirect/direct fish habitat).
- Identification of local and regional ecological linkages.
- Existing designations (e.g., Environmental Conservation Area, Environmental Protection Area, Provincially Significant Wetland, Life Science Area of Natural and Scientific Interest).

Appendix C provides illustrated examples of when EIS requirements may be scoped. Appendix D provides some guidance on what type of studies may be required to assess the environmental impact of certain natural heritage features. Appendix E provides some guidance on how to conduct studies that may be required as a component of an EIS and, where appropriate, how these studies may be scoped.

Should the development proposal be of a type that is not covered by complete application/pre-consultation policies, the importance of a meeting with the planning authority and the NPCA as appropriate to discuss requirements of the EIS is strongly stressed. Information enquiries by telephone or email may be appropriate for information gathering purposes for applications not covered by a complete application/pre-consultation policy, however, scoping of the EIS should be undertaken through a meeting between the planning authority, consulting staff, and NPCA as appropriate to ensure the depth of review matches the development proposal. Information and meeting requests should be submitted to the planning authority who will forward the request to the other appropriate staff.

Step 2: TERMS OF REFERENCE

Based on the pre-consultation meeting and scoping, the proponent or their consultant will prepare a Draft Terms of Reference which is to be submitted to the planning authority for review. The planning authority will circulate to the other agencies as appropriate. The planning authority who the EIS will be submitted to is responsible for approving the Terms of Reference. Upon approval of the Terms of Reference, the proponent can proceed with the preparation of the EIS.

Step 3: CONSTRAINTS ANALYSIS

After pre-consultation has taken place, the EIS consultant may begin preparation of the constraints analysis. The constraints analysis should be prepared prior to identifying a development layout, in order to identify existing conditions and natural heritage features, policies and regulations which apply, to conduct biophysical inventories, and identify and assess ecological and hydrological features and functions on site in order to produce a constraints map and a constraints report, which will focus the development layout to areas of no or little constraint. The constraints analysis is prepared as a first step towards the completion of an EIS, and is included within the EIS at the time of formal application. A constraints analysis alone does not fulfill complete application requirements.

It is expected that the development layout will be formulated prior to the Impact Analysis portion of the EIS and will reflect the conclusions and recommendations of the constraints analysis. The Regional Official Plan indicates that first priority is to be given to avoiding negative environmental impacts. The constraints analysis plays a key role in addressing this requirement. If negative impacts cannot be avoided, then mitigation measures shall be required.

At the request of the proponent or environmental consultant, the planning authority is willing to review and provide comments on the constraints analysis prior to proceeding with development layout and Impact Analysis.

The details of what information is to be included within the constraints analysis shall be determined at the time of pre- consultation, but in general, will consist of information contained within the following subsections.

3.1 POLICY AND LEGISLATIVE FRAMEWORK

This section shall include a discussion of what policies and regulations apply to the proposed development and what implications the policies and regulations have for planning development, including:

- Provincial Policy Statement
- Greenbelt Plan
- Niagara Escarpment Plan
- Regional Policies
- Municipal policies and by-laws – Official Plans, Zoning By-laws and Neighborhood/Secondary plans
- NPCA Policies and Regulations
- Federal Fisheries Act
- Provincial Endangered Species Act (2007)
- Federal Migratory Birds Convention Act

3.2 LITERATURE REVIEW

A collection and discussion of existing information, environmental plans and restoration/enhancement opportunities identified on/near the site shall be included. This information can be found within the

recommendations, guidelines and targets established in watershed and subwatershed plans, environmental management and master drainage plans, environmental studies, prior/adjacent development proposals/studies, and other relevant documents.

3.3 BASELINE DATA ASSESSMENT

An assessment of existing mapping and information and identification of data gaps (GIS mapping, biophysical inventories, etc.) that should be filled through field work shall be included.

3.4 DEFINING THE NATURAL HERITAGE AND HYDROLOGIC SYSTEMS

The EIS will assess all applicable natural heritage features, surface and groundwater features and functions, natural hazard lands, and other environmental policy areas identified in relevant planning documents, watershed or subwatershed plans, Natural Areas Inventories, groundwater studies or through field work completed as part of the EIS. This assessment will be carried out in accordance with the approved Terms of Reference. The natural heritage features and key hydrological features to be assessed may include, but are not limited to:

- Wetlands;
- Woodlands;
- Wildlife habitat;
- Fish and aquatic habitat;
- Valleylands;
- Savannahs and tallgrass prairies;
- Alvars;
- Areas of Natural and Scientific Interest (ANSI);
- Individuals and/or habitats of Species at Risk (Endangered, Threatened and Special Concern) and Globally, Nationally, Provincially or Locally rare species);
- Corridors and linkages between and among natural heritage and hydrologic features;
- Greenbelt Plan Natural Heritage System;
- Groundwater recharge and discharge areas;
- Seepage areas and springs;
- Permanent and intermittent streams; and
- Lakes and their littoral zones.

3.5 EXISTING CONDITIONS

The constraints analysis shall contain a full description of the existing environment on site, and within adjacent lands, and as it relates to the broader landscape, which may include, but is not limited to:

- Delineation of the study site and adjacent lands;
- Physical setting of the site;
- Topography and landforms;
- Surficial and bedrock geology;
- Soil types by texture and drainage characteristics;

- Present and past uses of the site and adjacent lands;
- Significant natural heritage features on site, within adjacent lands and in the surrounding area;
- Surface and groundwater features on site, within adjacent lands and in the surrounding area, including areas of high water table, water quantity and quality;
- Areas of groundwater recharge and discharge;
- Identification of existing catchment areas, drainage patterns, watercourses and drainage basin boundaries;
- Characterization of existing flows (quantity and quality) into and out of the natural features, including rivers, creeks, lakes, ponds, springs, seeps and headwater features;
- Identification of slough mosaics; and
- Identification and analysis of potential natural corridors and linkages – identify linkages among significant natural heritage features and ecological functions, of significant surface and groundwater features and functions, as well as wildlife corridors and migration routes.

Completion of a biophysical inventory may be necessary in order to accurately and adequately describe vegetation communities, wildlife presence and fisheries and/or fish habitat both on site, as well as, the adjacent lands that may be affected by the proposal (to the extent possible). Field work, which may be required to take place over several seasons, should include the following, where applicable, under the approved Terms of Reference:

- Detailed description of field work undertaken (methods, timing, etc);
- Identification, description, mapping and evaluation of vegetation communities. Vegetation communities are to be classified to community series according to the Ecological Land Classification (ELC) system;
- Wetland boundary identification/modification or evaluation according to the Ontario Wetland Evaluation System (OWES);
- Location of wildlife species (birds, reptiles, amphibians, mammals, butterflies, etc.) and evidence and quality of wildlife habitat (migration routes, deer yards, snake hibernacula, etc.). This is to include the identification and mapping of Significant Wildlife Habitat;
- Fluvial geomorphological characterization, water quality and fish and other aquatic species habitat assessment where a watercourse is proposed to be altered;
- Identification of Species at Risk (Endangered, Threatened and Special Concern) and Globally, Provincially and/or Locally rare species (including those ranked as S1to S3). For any species identified, a detailed map of their location(s), analysis of their habitat requirements and a description and mapping of the appropriate habitat on site must be completed. All Species at Risk found through the course of the field investigations must be detailed and documented in the EIS or a separate Species at Risk addendum, should the location of the species be sensitive in nature, and all Species at Rrisk occurrences must be documented and sent to the Natural Heritage Information Centre (NHIC) according to their data standards; and
- In some cases, the boundaries of significant natural heritage have not been defined in sufficient detail in existing studies, may be out of date/inaccurate due to changes in the environment, or may not have been identified. Where this is the case, the EIS should identify modifications to the boundaries of the natural heritage areas that the proposed development

is located in or adjacent to. In the case of Provincially Significant Wetlands and Life Science Areas of Natural and Scientific Interest (ANSIs), these boundary changes require the approval of the Ministry of Natural Resources. For unevaluated wetlands, an OWES evaluation may need to be completed and approved by the Ministry of Natural Resources.

Appendix E provides some guidance on how to conduct the studies outlined above and, where appropriate, how these studies may be scoped.

In addition the following natural hazards should be identified and addressed as constraints:

- Hazard lands;
- Floodplains;
- Flood and erosion hazards of streams and valleylands; and
- Flood and erosion hazards of shorelines and dynamic beaches.

The EIS also shall identify:

1. Natural heritage or hydrologic features, or portions of such features, that have been designated as significant by the Province, the Region or the local municipality but that the EIS has concluded do not meet the applicable Provincial, Regional or local criteria for designation as significant; and

2. Natural heritage or hydrologic features or functions that have not been adequately evaluated or mapped.

3.6 ASSESSMENT OF FEATURES AND FUNCTIONS

This section of the EIS is to provide the identification and characterization of all natural heritage and hydrologic features, and a comprehensive list and discussion of the ecological and hydrologic functions and linkages associated with each, including those of adjacent lands. This section should include an assessment of the size, quality, abundance, significance, and sensitivity of the natural heritage and hydrologic features and functions identified on site and within adjacent lands.

Ecological functions are the natural processes, products or services that species and non-living environments provide or perform within or between ecosystems and landscapes. They include, but are not limited to:

- Habitat – provision of food, shelter, reproduction, refuge from predators and movement for aquatic and terrestrial species (fish, birds, mammals, reptiles, amphibians, insects, etc.);
- Connections and linkages – habitat contiguity, dispersal patterns, etc;
- Hydrological functions – water storage, flood reduction, ground water recharge and discharge, baseflow, sediment trapping, shoreline stabilization, etc;
- Nutrient and energy cycling;
- Succession and disturbance; and

- Reproduction and dispersal.

Hydrologic functions are the functions of the hydrological cycle. They include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water's interaction with the environment including its relation to living things.

3.7 CONSTRAINTS MAP

The constraints map should identify all natural heritage and hydrologic features, corridors and linkages, established minimum buffer requirements and regulated areas (e.g., floodplains, wetlands).

3.8 CONSTRAINTS ANALYSIS AND RECOMMENDATIONS

The recommendations of the constraints analysis must include a discussion of the constraints map and identify whether there are differing levels of constraint.

For example it might identify:

- Areas where no development is permitted under existing plans, policies or regulations;
- Areas where development is not recommended to take place based on the constraints analysis;
- Areas where development may be permitted subject to the findings of the remainder of the Environmental Impact Study; and
- Areas where development may take place without further review through the EIS. The constraints analysis should recommend whether such development should be subject to conditions.

The constraints analysis should identify the minimum buffer sizes required by the policies and regulations of the various agencies and provide a scientific assessment of whether further buffering is needed beyond the minimum requirements. Please note that buffer recommendations may vary depending on the nature of the development proposed and the conclusions of the EIS. For those features which do not have established minimums, the constraints analysis should provide scientifically based recommendations as to the buffers required to comply with the applicable policies and regulations. These buffers may be enlarged or reduced when the impact study is completed if it is determined that changes are warranted.

As indicated earlier, the intention of the constraints analysis is that it will be prepared early in the development process, when the development concept and design are being formulated. This ensures that there is maximum opportunity to create a development concept that avoids negative environmental impacts. Therefore, no mapping or discussion of the proposed development should be included in this section of the EIS.

Step 4: ECOLOGICAL IMPACT ASSESSMENT

This step in the EIS process is to provide a description of the proposed development, present a comprehensive review and evaluation of environmental impacts, indicate how environmental considerations were taken into account in designing the proposed development, demonstrate how it has been designed to avoid or minimize negative impacts on the natural environment, suggest mitigation measures that will reduce or eliminate negative impacts, identify any expected residual negative impacts, detail enhancement or restoration opportunities, and assess whether it complies with Regional and local policies, plans and regulations, and make recommendations for monitoring.

4.1 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The EIS is to provide a description of the nature, scale and purpose of the proposed development and the proposed land uses. It should describe the following in relation to the natural heritage and hydrologic features on, and adjacent to, the site: the precise location and boundaries of proposed lots; the locations of buildings and other structures, amenity areas; roads and other parking areas; other transportation facilities (e.g., transit; trails and bikeways and storage areas); servicing; stormwater management and drainage; and proposed water takings. The description must include any associated site alteration works which may have environmental impact, such as work on stream banks, watercourse alteration, additional tree and vegetation removal, earth moving and grade changes, etc.

The description must address all phases of the proposed development (i.e., site preparation; construction; and completion, occupation and operation of the proposed use). It must include a detailed site plan, drawn to scale, showing the locations of the above features. The site plan should be overlaid on the constraints map.

The description of the proposed development must include proposed timing of construction, and the current and proposed land use designations and zoning.

4.2 IMPACT ASSESSMENT

The purpose of the impact assessment is to identify all potential impacts of the proposed development on the natural heritage and hydrologic features and their functions.

The impact assessment must take into consideration not only the boundaries of the development and the development type, but it must be integrated with site grading and drainage plans, stormwater engineering, geotechnical studies, or any other plans and studies required for the development. It should focus on the natural heritage and hydrologic features and the ecological and hydrological functions which they provide, as well as the linkages among them. The EIS must describe and evaluate the environmental impacts that the proposed development might reasonably be expected to have:

1. During site preparation and construction; and
2. Following completion, during occupation and operation of the proposed use
   - Over the short term (5 years); and
   - Over the long term (10+ years).

The impact assessment is to provide an assessment of the magnitude and significance of the impacts and their implications for these key features and functions and the linkages between and among them. It must set out the scientific basis for this assessment. The impact assessment should identify and address impacts not only on features and functions on site, but also on natural heritage and hydrologic systems in the broader landscape.

The main steps in the Impact Assessment are outlined below.

4.2.1 DIRECT ENVIRONMENTAL IMPACTS

All direct impacts to natural heritage and hydrologic features and functions must be identified and described in detail. Direct impacts could include removal of all or a portion of a natural heritage feature, or altering it to the extent that the ecological or hydrological function(s) identified is impacted.

Examples of potential environmental impacts can include, but are not limited to:

- Encroachment or elimination of habitat;
- Fragmentation or reduction in size of an element of the natural heritage system;
- Reduction or removal of corridors or linkages;
- Alteration of natural topography;
- Increased potential for human or domestic animal intrusion into relatively inaccessible areas;
- Alteration of the quantity, quality, timing, or direction of flow, of surface or groundwater and resulting impacts on hydrology and natural heritage;
- Changes in the water table or soil moisture;
- Alteration of stream forms or shorelines;
- Alteration of the structure, functions, or ecological interrelationships of a natural habitat that sustain representative community associations or species populations;
- Reductions in the populations or reproductive capacity of significant species;
- Disruption or alteration of ecological relationships among significant or representative native species, or their habitat, reductions in the populations, diversity, health or reproductive capacity of species;
- Mortality or removal of the predominant vegetation, which provides structure to an element of the natural heritage system;
- Erosion or compaction of soils or deposition of sediment;
- Slope failure;
- Increased potential for the introduction of non-native species;
- Impacts of occupancy (i.e. increased disturbance and indirect impact from increased access, pets, lighting, garden escapes, etc.);

- Harmful alteration, disruption or destruction of fish habitat pursuant to the *Canada Fisheries Act*;
- Disruption of communication and other life processes due to increased noise levels; and
- Reduction in air quality.

4.2.2 INDIRECT ENVIRONMENTAL IMPACTS

All reasonably expected indirect impacts to natural heritage and hydrologic features must be identified and described in detail. Indirect impacts could include changes to drainage or water quality which will likely affect a natural heritage feature or its function(s). An example would be increased sediment transport downstream due to increased erosion or changes to drainage patterns which would alter the moisture conditions in a Significant Woodland or Wetland.

4.2.3 CUMULATIVE ENVIRONMENTAL IMPACTS

All reasonably expected cumulative impacts to natural heritage and hydrologic features and functions must be identified and described in detail. Cumulative impacts refer to the combined or incremental effects of individual actions or impacts. An example would be the cumulative impact on breeding birds of increased noise, increased predation by domestic pets and increased human intrusion due to residential development on land adjacent to a woodland. The cumulative effect of these individual impacts may be greater than the sum of the individual impacts. Cumulative impacts may result from the combination of different types of impacts (as in the preceding example), from the incremental effects of a series of impacts over time, or from the combined effects of neighbouring developments. This means that impacts have to be assessed in the context of other existing and planned development in the area and that consideration must be given to how different types of impacts may combine and interact. The assessment should address the potential for future demand on natural heritage and hydrologic features and functions, including an analysis of effects on adjacent areas. This should include a discussion of how the proposed development fits into the surrounding area and the impacts of future development planned for the surrounding area as indicated by Official Plans and Zoning By-laws.

4.3 DESIGN CHANGES AND MITIGATION MEASURES

Where negative environmental impacts are identified, the EIS should identify means to eliminate or reduce those impacts. First priority should be given to avoiding negative environmental impacts by making modifications to the proposed development. If negative impacts cannot be completely avoided through design changes, then mitigation measures should be identified which will eliminate or reduce negative environmental impacts. The recommended design changes and mitigation measures should be described in detail and illustrated on a map showing the natural heritage and hydrologic features and constraints. Where it is recommended that an additional study or plan, such as a Landscape Plan, should be required as a condition of approval to implement a mitigation measure, the EIS is to provide clear guidelines and direction for that plan or study.

4.4 ECOLOGICAL RESTORATION OR ENHANCEMENT OPPORTUNITIES

Should the site provide opportunities for restoration or enhancement of natural heritage or hydrologic features or their functions that can be achieved through the development process, these opportunities should be proposed, described in detail, and any requirements for detailed plans included within the mitigation measures section of the document. In some cases, such as within specialty crop areas, ecological enhancement or restoration may impact agricultural land use (for example, by increasing pest pressure). In these instances, the impact of restoration or enhancement on surrounding agricultural cultivation shall be taken into consideration when identifying opportunities for restoration or enhancement.

4.5 RESIDUAL ENVIRONMENTAL IMPACTS

The EIS shall identify and provide a detailed scientific analysis and assessment of all residual environmental impacts that are reasonably expected to remain after the avoidance and mitigation measures have been implemented. This assessment is to provide conclusions as to the magnitude and significance of the residual impacts. Wherever possible, the assessment should include quantitative measures.

4.6 MONITORING

Any monitoring programs proposed should be specific to the proposed development and mitigation measures and to the predicted impacts. The EIS should outline in detail any monitoring that should take place before or after the proposed development is implemented, including the monitoring schedule, specific targets or threshold levels to be met, measures to correct targets that are not met, and who should be responsible for completing all aspects of the monitoring program.

An example of post-development monitoring for tree planting could include the following:

- When will the planting be assessed?
- Who will assess it?
- When will monitoring take place?
- What targets for live material must be met?
- How are the monitoring results to be reported and to whom?
- If they are not met, how much replanting is required?
- Who will be responsible for replanting?

Step 5: RECOMMENDATIONS AND CONCLUSION

In this section, the EIS is to review the environmental residual impacts of the proposed development and indicate whether it complies with applicable plans, policies and regulations. Any inconsistencies between the impacts of the proposed project and the requirements of applicable plans, policies and regulations are to be identified. This review also is to indicate how relevant recommendations, targets and guidelines set out in subwatershed plans and other pertinent guidance documents have been addressed.

The EIS should conclude with recommendations respecting:

- Whether the proposal should proceed as planned; or
- Whether the proposal should proceed subject to conditions.

The EIS is to indicate the rationale for these recommendations based on the results of the impact assessment. If the EIS concludes that the proposal should proceed subject to conditions, it is to recommend the specific conditions that should be required (e.g., design modifications, mitigation measures, additional plans or studies, compensation measures, environmental restoration or enhancement, or monitoring requirements).

The EIS should detail its coordination with other studies such as hydrogeological studies, stormwater plans, grading and drainage plans and detailed engineering plans. It is to provide direction where recommended conditions are to be addressed through further detailed work on these topics, such as more detailed stormwater management or erosion and sediment control plans or where additional studies are recommended such as Tree Preservation Plans, Landscape Plans, Planting Plans, or other detailed plans specific to the proposed development. It should set out guidelines and performance targets to be met by such plans.

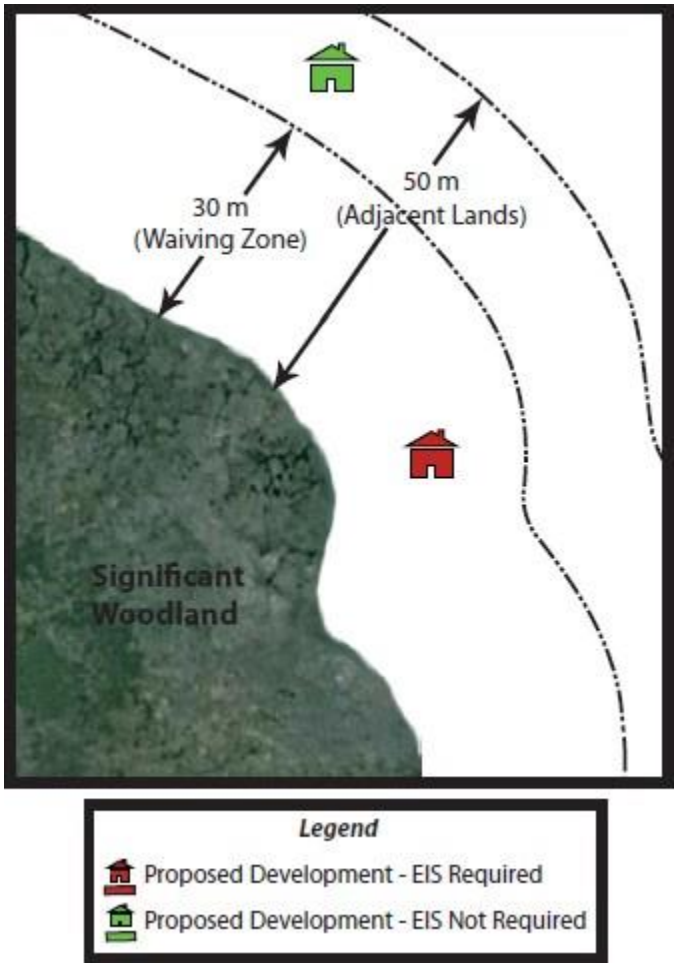
The timing for review of EIS submissions made under the *Planning Act* will generally be consistent with the time frame prescribed under that Act for that type of development, or by the municipality, but may also be dependent upon:

- The completeness of the study;
- The need for revisions or additional information;
- The need for consultation with the MNR or other experts; and
- The current workload of review staff.

The satisfactory completion of an EIS does not assure the approval of a development proposal. Modification of development proposals may be required. Accepting, modifying or rejecting development proposals in and adjacent to natural heritage and hydrologic features will take place after the EIS is deemed complete by the planning authority.

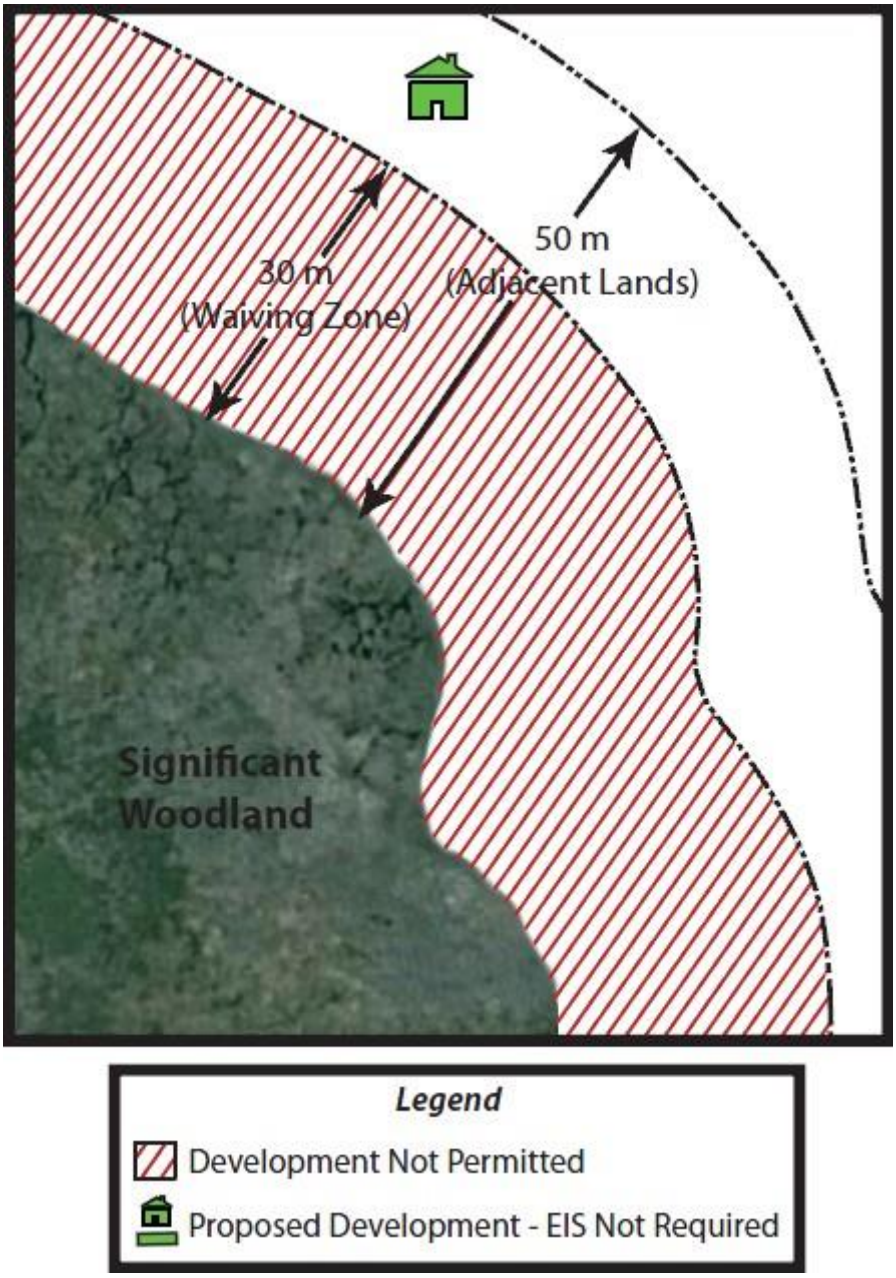
Appendix A: Illustrated Examples of Waiving Scenarios

Example A-1: The proposed development is located outside of the Greenbelt and is outside the waiving zone required for natural heritage features



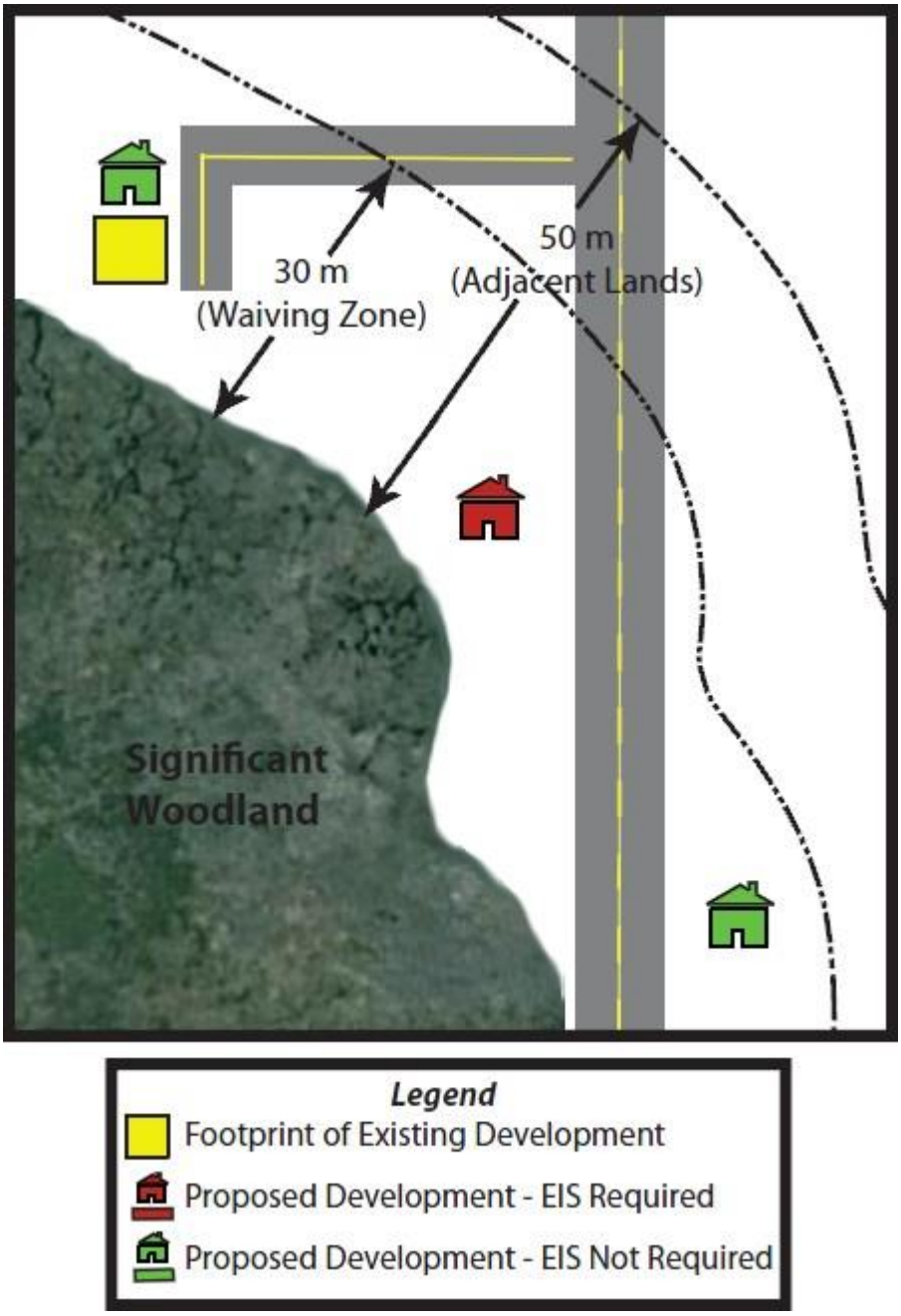
Waiving Criteria A: The proposed development is outside the waiving zone required for natural heritage features.

Example A-2: The proposed development is located inside the Greenbelt and is outside the waiving zone required for natural heritage features



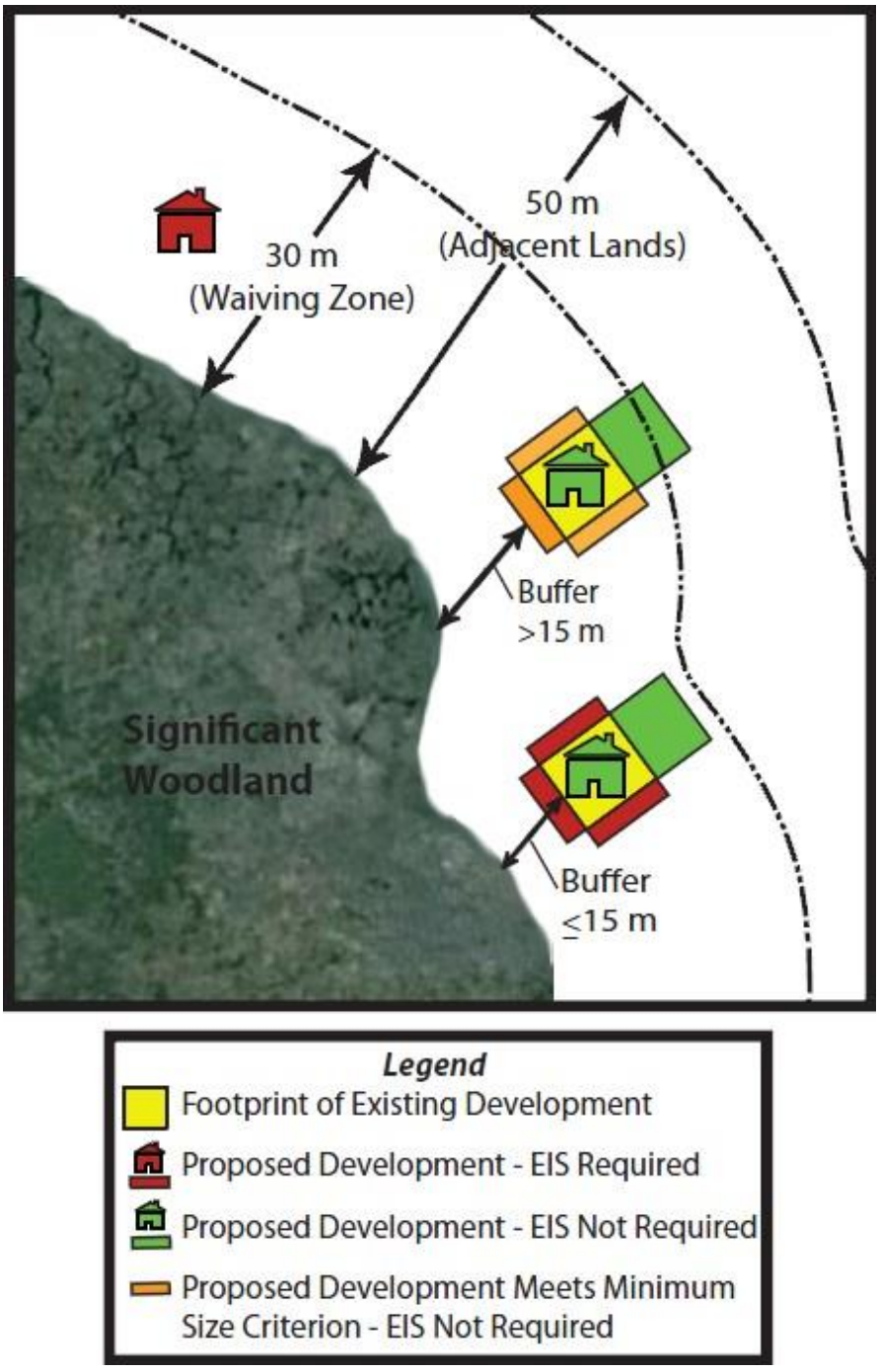
Waiving Criteria A: The proposed development is outside the waiving zone required for natural heritage features.

Example B: The development is within the waiving zone separated from the natural heritage feature by an existing development



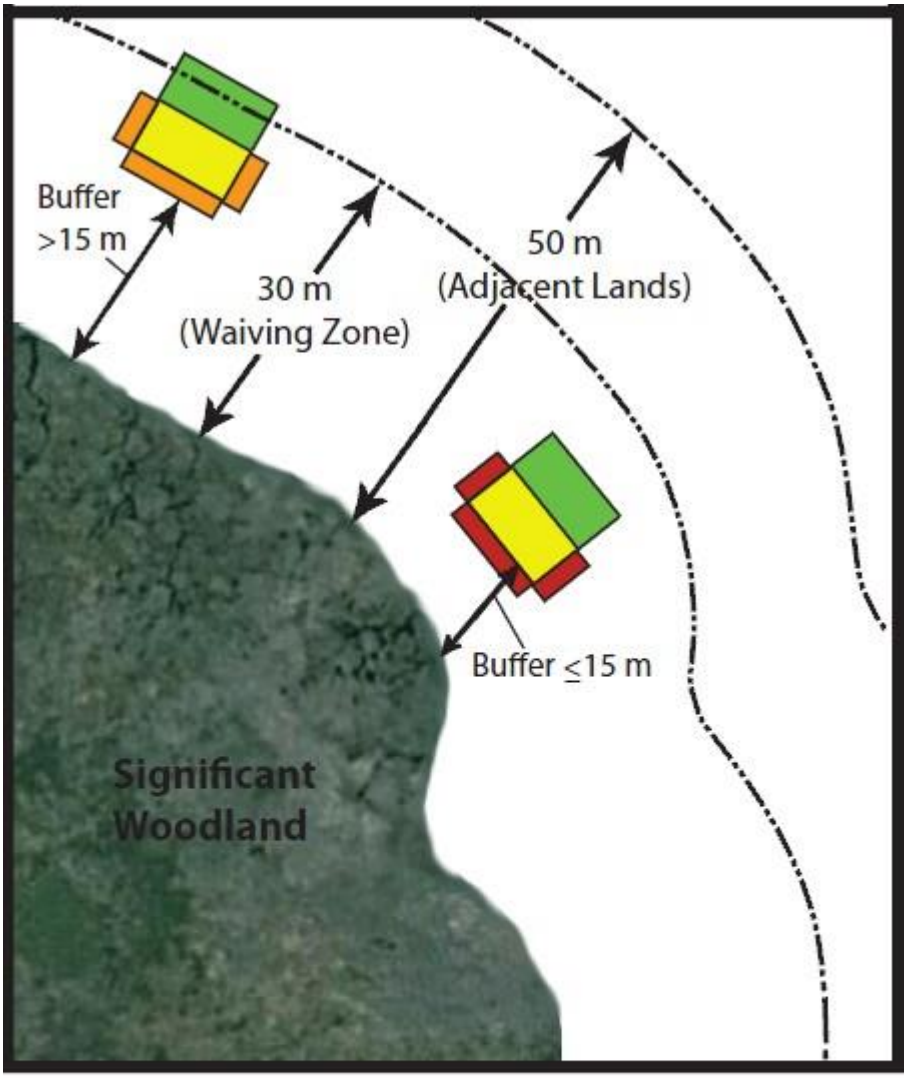
Waiving Criteria B: The proposed development is within the waiving zone, separated from natural heritage feature(s) by a road or existing development.

Example C: The development is within the waiving zone on the existing development footprint (showing major or minor additions)



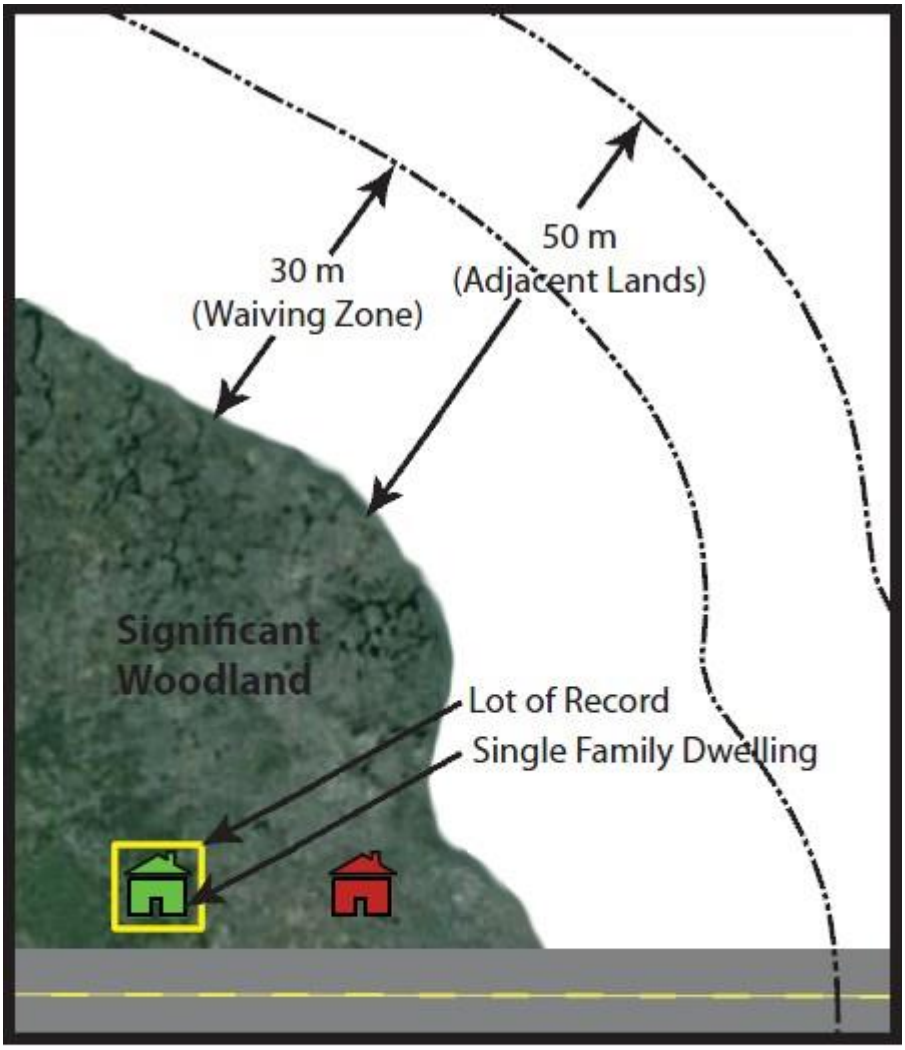
Waiving Criteria C: The proposed development is within the waiving zone and is a re-development wholly contained within an existing footprint, or a re-development with a minor addition to the existing footprint which maintains a >15 m buffer from the natural heritage feature, or is a re-development with a major addition to the existing footprint which extends away from the feature.

Example D: Major and minor additions within the waiving zone



Waiving Criteria D:
The proposed development is within the waiving zone and is a minor addition to an existing structure which maintains a >15 m buffer from the natural heritage feature, or is a major addition to an existing structure which extends away from the feature.

Example E: Lot of record in a woodland



Waiving Criteria E:
The proposed development area is for a single detached dwelling, amenity area, access, private sewage disposal system, and accessory structure if required within an existing lot of record in a woodland.

Appendix B: Checklist for Waiving EIS Requirements

Yes	No	
☐	☐	The proposed development is located outside of natural heritage and hydrologic features, unless proposed development is an existing lot of record in a woodland.
☐	☐	The proposed development is considered small-scale non-agricultural development or small/medium-scale agricultural development.
☐	☐	The proposed development will not significantly alter existing surface water flow direction, quantity or quality.
☐	☐	The proposed development is not located within an NPCA regulated area.

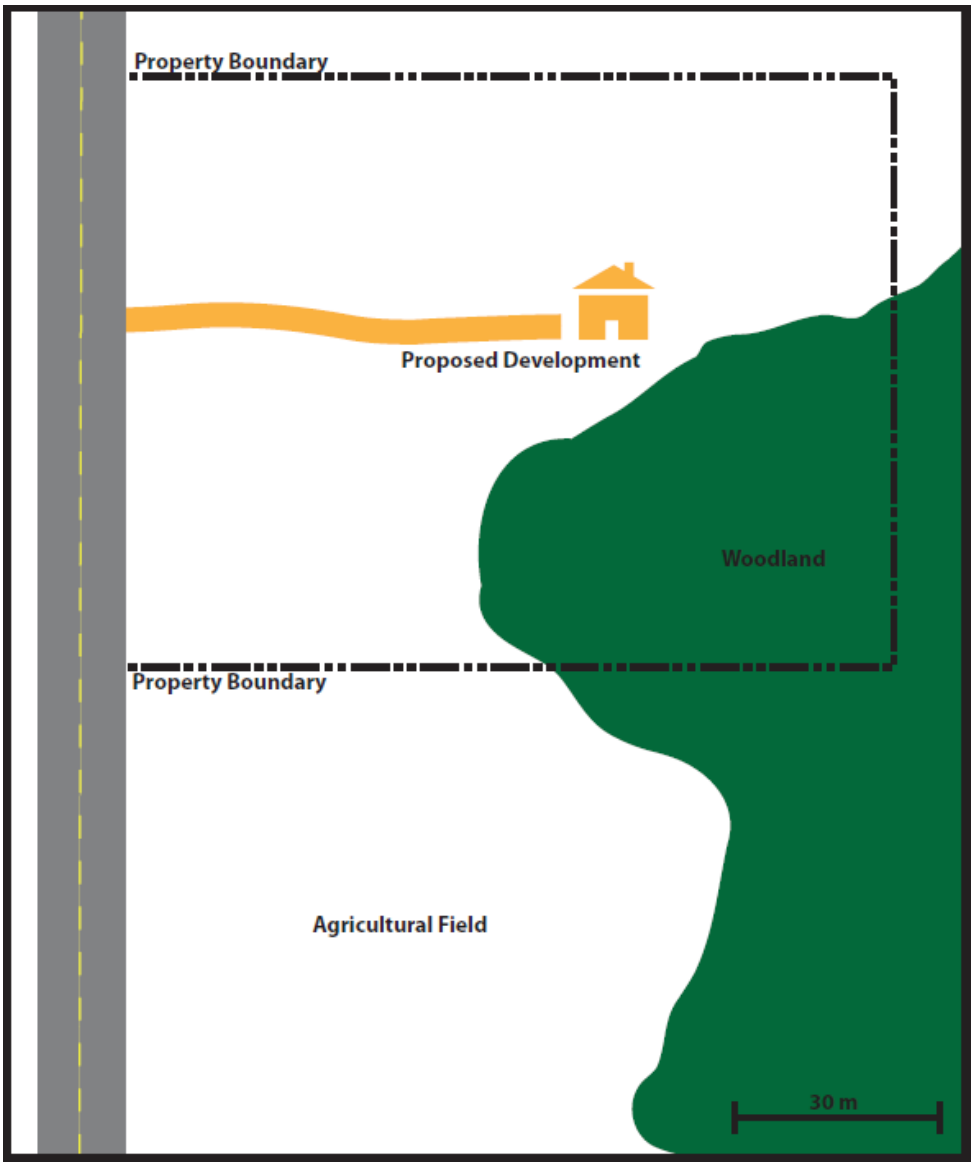
If you have checked "no" for one or more of the above, the proposed development is not eligible for waiving. If you have checked "yes" for all of the above, the proposed development is eligible for waiving. Proceed to the section below.

Yes	No	
☐	☐	The proposed development is outside the waiving zone required for natural heritage features.
☐	☐	The proposed development is within the waiving zone, separated from natural heritage feature(s) by a road or existing development.
☐	☐	The proposed development is within the waiving zone and is a re-development wholly contained within an existing footprint, or a re-development with a minor addition to the existing footprint which maintains a >15 m buffer from the natural heritage feature, or is a re-development with a major addition to the existing footprint which extends away from the feature.
☐	☐	The proposed development is within the waiving zone and is a minor addition to an existing structure which maintains a >15 m buffer from the natural heritage feature, or is a major addition to an existing structure which extends away from the feature.
☐	☐	The proposed development area is for a single detached dwelling, amenity area, access, private sewage disposal system, and accessory structure if required within an existing lot of record in a woodland

If you have checked “yes” for one of the above, the requirement to complete an EIS may be waived.

Appendix C: Illustrated Examples of Scoping Scenarios

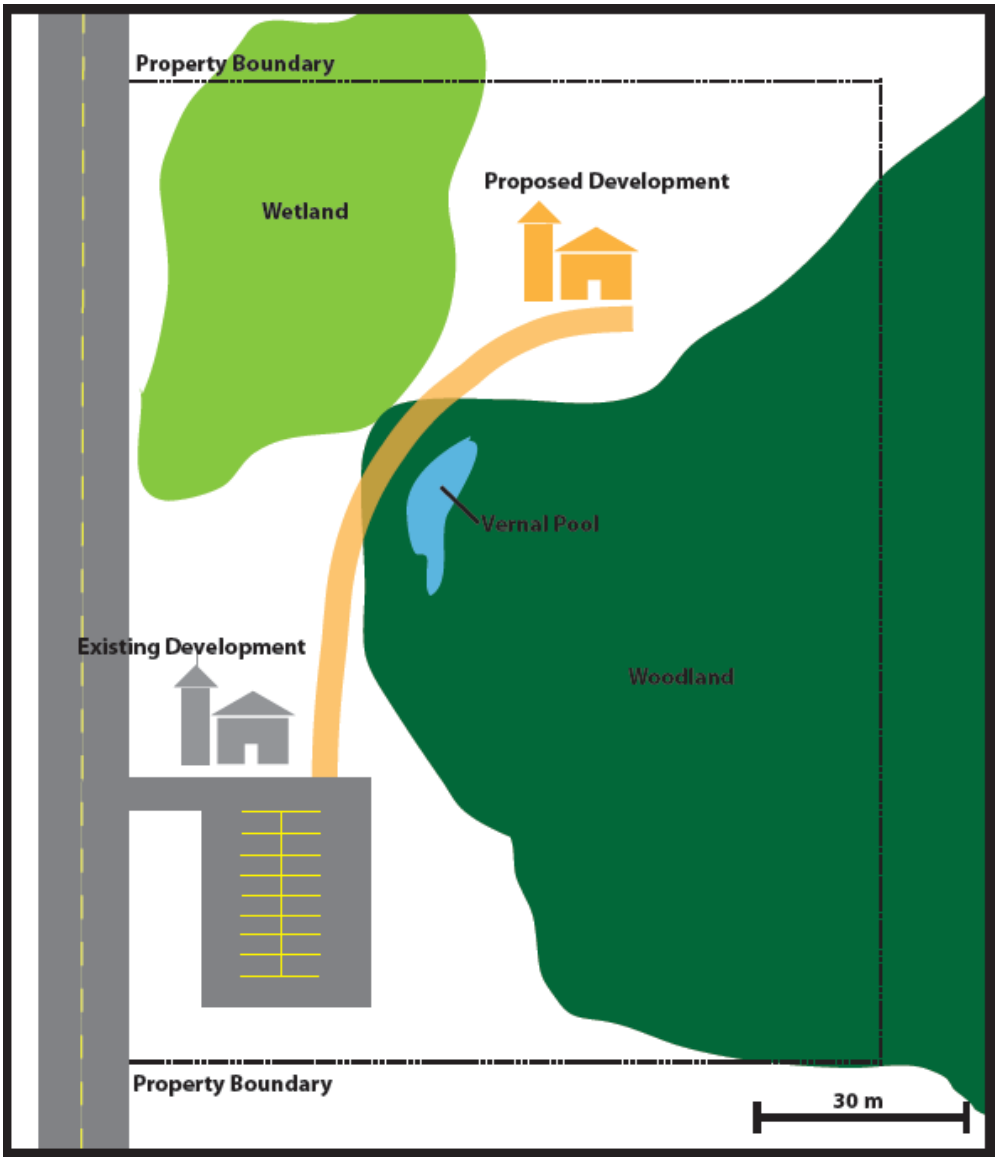
Example A: Scoping for a small-scale (non-agricultural) development



Complete minimum EIS requirements and:

- make use of existing data available for ELC, flora and breeding birds recently completed for woodland
- significant species survey

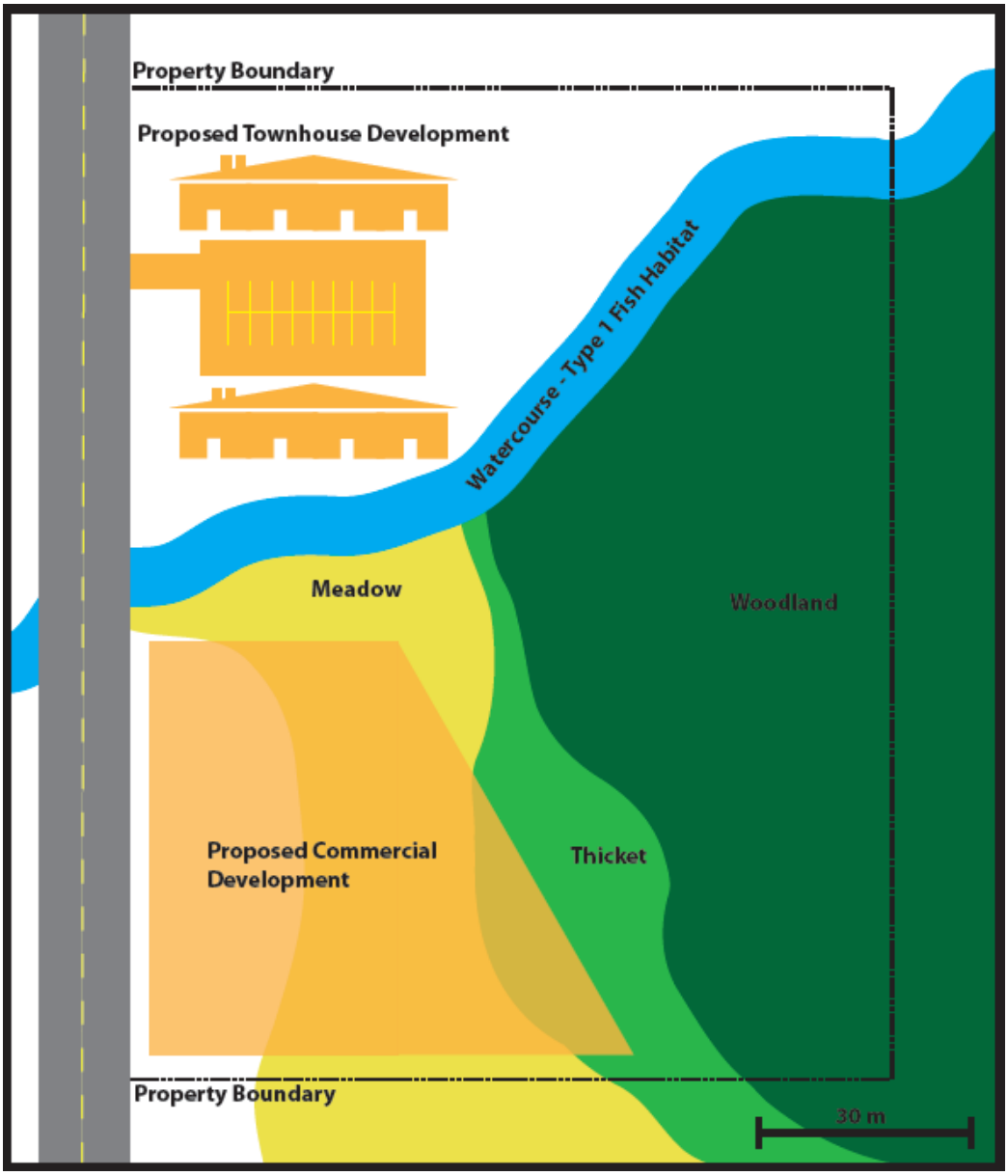
Example B: Scoping for a small/medium-scale (agricultural) development



Complete minimum EIS requirements and:

- breeding bird survey
- amphibian survey
- significant species survey

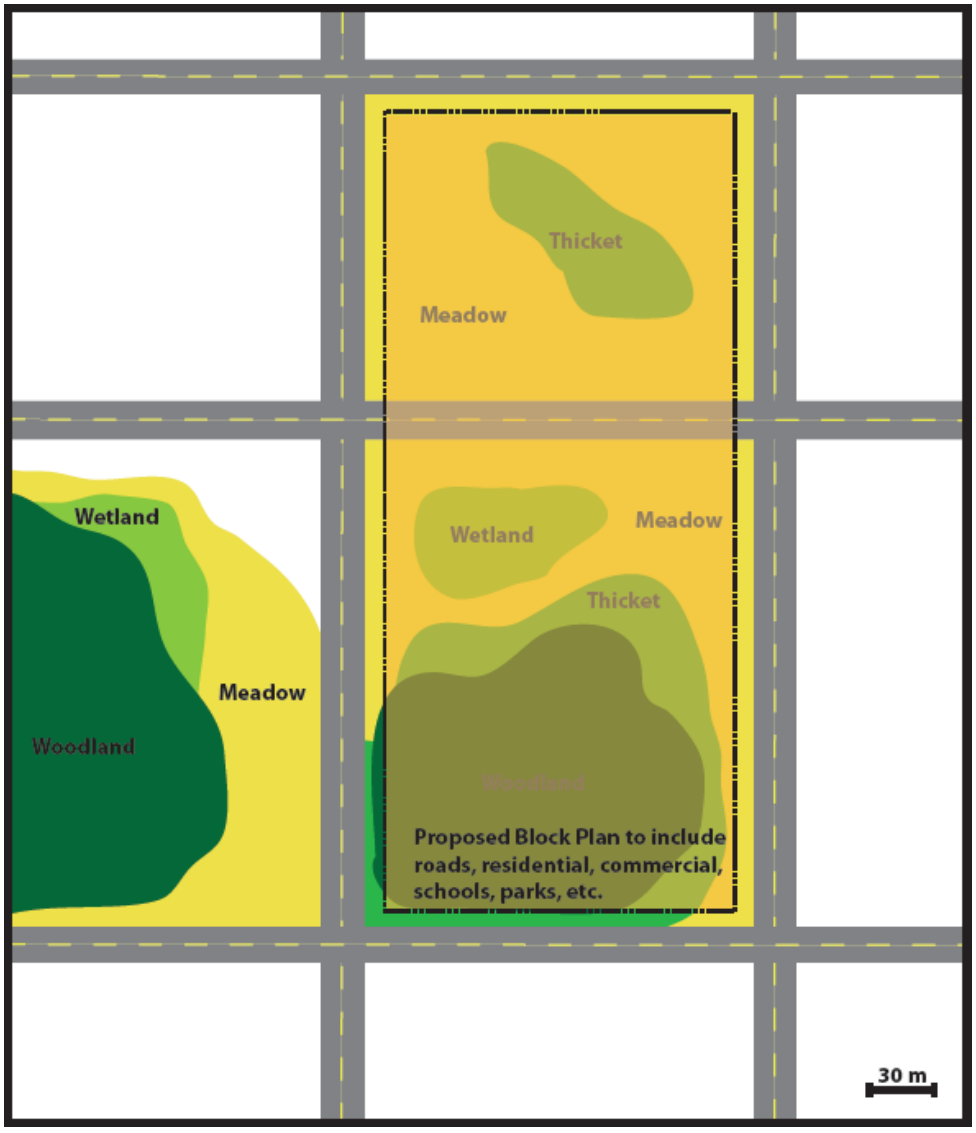
Example C: Scoping for a medium-scale (non-agricultural) development



Complete minimum EIS requirements and:

- breeding bird survey
- fish habitat assessment
- significant species survey
- geomorphology

Example D: Scoping for a large-scale (non-agricultural) development



Complete minimum EIS requirements and:

- wetland evaluation and wetland complexing if not completed or for new wetlands identified
- boundary staking of wetlands, woodlands, and other natural heritage features present
- breeding bird survey
- amphibian survey
- significant species survey
- significant wildlife habitat
- hydrology (regarding wetlands)
- hydrogeology (regarding wetlands, infiltration, servicing and construction)

Appendix D: Examples of Study Requirements for Various Natural Heritage Features for Various Scales of Development

Potential Studies Required for EIS completed for Small-Scale (non-agricultural) and Small/Medium-Scale (agricultural) development.

HABITAT TYPE	TYPE OF SURVEY								
	Ecological Land Classification	Flora	Wetland Evaluation	Boundary Staking	Birds	Amphibians	Fish	Significant Species	Significant Wildlife Habitat
Wetland	yes	yes	maybe	maybe	maybe	maybe	yes	maybe	maybe
Woodland	yes	yes		maybe	maybe	maybe		maybe	maybe
Thicket/Meadow	yes	yes			maybe			maybe	maybe
Waterbody/Water course	yes						yes	maybe	maybe

Potential Studies Required for EIS completed for Medium/Large-Scale (non-agricultural) and Large-Scale (agricultural) development.

HABITAT TYPE	TYPE OF SURVEY													
	Ecological Land Classification	Flora	Wetland Evaluation	Boundary Staking	Birds	Amphibians	Fish	Significant Species	Significant Wildlife Habitat	Geomorphology	Hazards	Hydrology	Hydrogeology	Other Specialized Wildlife Surveys
Wetland	yes	yes	maybe	maybe	maybe	maybe	yes	maybe	maybe		yes	yes	yes	maybe
Woodland	yes	yes		maybe	maybe	maybe		maybe	maybe					maybe
Thicket/Meadow	yes	yes			maybe			maybe	maybe					maybe
Waterbody/Watercourse	yes						yes	maybe	maybe	yes	yes	yes	yes	maybe

Appendix E: Guidance on How to Complete and Scope Studies that may be Required as a Component of an EIS

Details for Small-Scale (non-agricultural) and Small/Medium-Scale (agricultural) Scoping

The following section provides a brief description for each of the potential surveys that may be required to complete an EIS for small-scale (non-agricultural) and small/medium-scale (agricultural) developments.
During pre-consultation, additional scoping may be discussed regarding the timing of surveys, the level of detail required, potential data sources, inventory protocols and reference manuals that may be available.

1. Ecological Land Classification

Ecological Land Classification (ELC) is a tool developed by the Ontario Ministry of Natural Resources (OMNR) to provide consistent description, identification, classification and mapping of ecological land units in Southern Ontario. A field manual (Lee *et al*. 1999) is available which includes check sheets to assist in completing field sampling protocols for soils, plants, animals, plant community structure and disturbance. ELC should identify each “Vegetation Type” present based on tables provided in the field manual.

2. Flora

An inventory of plants is completed as part of ELC. Plant species identified should be organized to provide a list of plants for each ELC Vegetation Type present. Prior to undertaking field work, the OMNR’s Natural Heritage Information Centre (NHIC) website should be consulted to determine if there are any records of significant plant species from the study area. This will ensure field work includes targeted surveys that confirm the presence or absence of these species. When significant species are found, Global Positioning System (GPS) points should be recorded or locations should be mapped on an aerial photograph. Scoping will determine which floral inventories are required, including, spring ephemerals (April-June), early summer peak season flora (June-August) and late summer flora (August-September).

3. Wetland Evaluation

Wetland evaluations should be completed following the Ontario Wetland Evaluation System (OWES) for Southern Ontario (OMNR 2002) by an ecologist who has been trained and certified to complete wetland evaluations by the OMNR. In some cases existing wetland information may be sufficiently recent and detailed for use in an EIS, in other cases it may be important to stake and verify the limit of wetland boundaries in the field with NPCA staff.

4. Boundary Staking

Identifying the boundary of natural heritage features and functions is an important task for

an EIS that assists in planning which areas will be protected and where the limit of development will be located. The location of boundaries staked in the field may be examined with staff from the planning authority and boundaries may be professionally surveyed in the field for inclusion on drawings showing the location of the proposed development.

5. Birds

Birds are surveyed because they are good indicators of healthy ecosystems. Breeding bird surveys (BBS) confirm which habitats provide important rearing and foraging habitats essential to sustaining bird populations. BBS must follow accepted field protocols to ensure accurate information is collected at the right time of year to confirm the presence or absence of breeding birds. The most important bird sampling is undertaken during the breeding bird season (mid-May to mid-July); however, specialized surveys may be conducted at other times of the year.

6. Amphibians

Amphibians are surveyed because they are sensitive to changes in aquatic environments that support healthy populations of frogs, salamanders and other organisms dependent on aquatic ecosystems.

Amphibian surveys should follow accepted Marsh Monitoring protocols to ensure accurate information is collected at the right time of year to confirm their presence or absence and evidence of breeding habitats. Amphibian surveys are generally conducted in open water habitats found in wetlands and ephemeral spring (vernal) ponds found in woodlands. Amphibian surveys must be carefully timed to capture the most reliable information, with salamander surveys conducted at night in the spring just as ice melts around the edges of ponds and the first spring rains occur. Frogs are also surveyed at night with three surveys to record information on early, mid and late spring breeding species.

7. Fish

Fish can be negatively impacted by changes in the amount and quality of water in streams and lakes. Fish surveys may involve the description fish habitat present or more detailed surveys of the fish species present through specialized survey techniques involving spawning surveys, electrofishing, and netting. A permit to conduct specialized surveys is required from MNRF.

8. Significant Species

Some plant and animal populations are declining in Southern Ontario and efforts to protect these species and the habitats required for their survival have led federal, provincial, regional and local programs that identify significant species (see resources below). Information about the presence of a significant species and/or the habitat that may sustain significant species is used to undertake targeted surveys intended to confirm the presence or absence of the species in question. This information will assist in developing management strategies intended to ensure the long-term protection of

significant species.

9. Significant Wildlife Habitat

Significant wildlife habitat is determined by MNR's Significant Wildlife Habitat Technical Guide, which provides detailed technical information on the identification, description and prioritization of significant wildlife habitat. The key wildlife habitats of concern are:

- Habitats of seasonal concentrations of animals;
- Rare vegetation communities or specialized habitat for wildlife;
- Habitat of species of conservation concern; and
- Animal movement corridors.

Details for Medium/Large-Scale (non-agricultural) and Large-Scale (agricultural) Scoping

The following sections provide detailed descriptions of potential surveys that may be required to complete an EIS. Survey descriptions, timing of surveys, how surveys could be scoped, and resources for data sources, inventory protocols and reference manuals are outlined. Preferred field inventory methods are listed, including the appropriate hours during the day or night to conduct field work. This information provides important direction and detailed methods for field data collection and data analysis necessary for the completion of an EIS. Data collection requirements and protocols may be updated from time to time, and references provided below may not represent the most recent versions/editions and new information not included in the list below may need to be consulted.

1. Ecological Land Classification

Description of survey

Ecological Land Classification (ELC) is a tool developed by the Ontario Ministry of Natural Resources (OMNR) to provide consistent description, identification, classification and mapping of ecological land units in Southern Ontario. A field manual (Lee *et al.* 1999) is available which includes check sheets to assist in completing field sampling protocols for soils, plants, animals, plant community structure and disturbance. ELC should identify each "Vegetation Type" present based on tables provided in the field manual.

Biophysical information is collected on a per polygon basis to provide descriptions of the vegetation and wildlife. ELC includes the following components:

- Polygon description including system, site, substrate, topographic feature, history, cover, plant form and community;
- Floral survey of species found in each layer of the vegetation community (*i.e.*, canopy, sub-canopy, understorey, and ground layer) and abundance codes (*i.e.*, rare, occasional, abundant, dominant);

- In forested communities, tree tally and stand composition;
- Soil assessment and classification of soil type and moisture regime;
- Community description and classification of vegetation type;
- Community profile diagram;
- Incidental wildlife observations, including potential wildlife habitat, wildlife species list, evidence codes (*e.g.*, TK = tracks; SC = scat), and abundance; and
- Management/Disturbance assessment and evaluation (*e.g.*, tracks and trails, alien species).

Timing of surveys

Information for ELC can be completed in one or several visits, depending on the level of detail required and the types of habitats present in the study area. Ideally, each site would be visited at three separate times to inventory species during different seasons and blooming periods. The three visits would be completed in the spring, early summer and later summer. The timing windows for floral surveys in southern Ontario are:

- Spring ephemerals – *April-June*
- Early summer for peak season flora – *June-August*
- Late summer for late flowering flora, particularly wetland, alvar and prairie flora – *August-September*[5]

While floral surveys are completed, other information for ELC can be collected simultaneously.

[5] Spring inventory for these rare communities is also important.

How surveys could be scoped

Surveys to complete ELC can be scoped in the following ways:

- Number of visits to the site to collect floral and other information (i.e., one - three);
- Level of detail and time spent searching for floral species within each vegetation community (*e.g.*, were sedges and grasses included in the floral survey?);
- Extent to which small vegetation communities are separated and described individually (*e.g.*, small shallow marsh inclusion within a larger meadow marsh);
- Extent to which ELC is completed (*e.g.*, it may be determined that it is not necessary to complete the Management/Disturbance assessment); or
- The timing of field work outside the recommended timing windows for floral surveys (*e.g.*, it may be determined that field work completed in October is adequate).

Resources

- Ecological Land Classification System for Southern Ontario, Ministry of Natural Resources (Lee et al.
- 1999)
- Ontario Institute of Pedology 1985 Field Manual to Describing Soils, Third Edition

2. Flora

Description of Survey

An inventory of plants is completed as part of ELC. Plant species identified should be organized to provide a list of plants for each ELC Vegetation Type present. Relative abundances of each floral species should be recorded for each vegetation community layer. Prior to undertaking field work, the OMNR's Natural Heritage Information Centre (NHIC) website should be consulted to determine if there are any records of significant plant species from the study area using the "biodiversity explorer".

When significant species are found in the field, Global Positioning System (GPS) points should be recorded for the locations of SAR, Provincially and/or Regionally Significant floral species. In instances where GPS readings are not accurate (*e.g.*, under a closed canopy within a forest), approximate locations of rare species should be mapped on an aerial photograph. The abundance and distribution of each significant floral species should be recorded (*e.g.*, whether the species is widespread and scattered, or localized to one or two clumps). Floral surveys should be conducted to ensure the locations of flora are accurate and fully documented.

Small collections of floral species may be collected if a species is difficult to identify (*e.g.*, grasses and sedges). However, species considered SAR or potential SAR should not be

collected, and should instead be photographed for later identification and/or verification.

Timing of Surveys

Ideally, floral surveys are completed over three seasons, to capture species that flower at different times of the year when they are the most conspicuous and most easily identified. Repeated field visits also allow confirmation of unidentified species at earlier stages. The timing windows for floral surveys in southern Ontario are:

- Spring ephemerals – April-June
- Early summer for peak season flora – June-August
- Late summer for late flowering flora, particularly wetland, alvar and prairie flora – August-September[6]

How surveys could be scoped

Floral inventories can be scoped in the following ways:

- Number of visits to the site (i.e., one - three);
- Level of detail and time spent searching for floral species (e.g., were sedges and grasses included in the floral survey?);
- Specific searches for rare floral species reported by the NHIC or other reputable source in specific habitat types; or
- The timing of fieldwork outside the recommended timing windows for floral surveys (e.g., it may be determined that field work completed in October is adequate).

Resources

- NHIC Biodiversity Explorer and Rarity Rankings (http://nhic.mnr.gov.on.ca/)
- Flora Ontario (http://www.uoguelph.ca/foibis)
- Distribution and Status of the Vascular Plants of Central Region (Riley 1989)
- Natural Areas Inventory 2006-2009 (NPCA 2010)[7] (http://www.npca.ca/watershed-management/natural-areas-inventory/)

[6] Spring inventory for these rare communities is also important.

[7] NPCA's Natural Areas Inventory is also useful reference for birds, reptiles & amphibians, butterflies & moths, dragonflies & damselflies, lichens, soils, hydrology, geology, and rare vegetation types.

3. Wetland Evaluation

Description of Survey

Wetland evaluations should be completed following the Ontario Wetland Evaluation System (OWES) for Southern Ontario (OMNR 2002) by an ecologist who has been trained and certified to complete wetland evaluations by the OMNR. In some cases existing wetland information may be sufficiently recent and detailed for use in an EIS, in other cases it may be important to stake and verify the limit of wetland boundaries in the field with NPCA staff. The staking of feature boundaries is covered in *Boundary Staking* below.

Timing of Surveys

The timing and frequency of wetland evaluation visits should be determined based upon the season, type, size and complexity of the wetland and the amount of information that is already available (OWES manual p. 9; OMNR 1993). Ideally, wetland evaluations would involve several field visits during the growing season to capture the full range of flora species that occur there. In general, open wetland communities (*e.g.*, non- treed communities) should be surveyed later in the year, as these communities tend to be most conspicuous later in the growing season. Optimal periods for wetland community classification, and sampling birds, fish, reptiles, amphibians and insects should be considered, as all of these components feed into the wetland evaluation.

How surveys could be scoped

In general, wetland evaluations are completed by following the OWES manual under the direction of the OMNR. Scoping of wetland evaluations generally does not occur; however, if a wetland may be complexed with an existing wetland complex following OMNR criteria for wetland complexing, a full blown wetland evaluation may not be required.

If a wetland evaluation is required as part of the EIS, consultation with the NPCA and MNRF must occur.

Resources

- Ontario Wetland Evaluation System for Southern Ontario (OMNR 2002) (http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STDPROD_068974.html)

4. Boundary Staking

Description of Survey

Identifying the boundary of natural heritage features and functions is an important task for

an EIS that assists in planning which areas will be protected and where the limit of development will be located. The location of boundaries staked in the field may be examined with staff from the municipality and/or NPCA. Feature boundaries can be staked in the field using wooden stakes and/or flagging tape and boundaries may be professionally surveyed in the field for inclusion on drawings showing the location of the proposed development.

- For woodland boundaries, the drip line (*i.e.*, the area defined by the outermost circumference of a tree canopy where water drips from and onto the ground) of the outermost trees which form the woodland edge should be staked.

- For wetland boundaries, the "50% rule" recommended by the OMNR's OWES should be used. The "50% rule" refers to 50% upland species and 50% wetland species. Wetland boundaries should be drawn where the vegetation consists of 50% wetland and 50% upland species. The "50% rule" refers to the physical area covered by vegetation, not the number of wetland species versus the number of upland species. The OWES manual should be referred to for further detail on wetland boundaries. Soil analysis can also assist in determining wetland boundaries in cases where vegetation is inconclusive or does not provide a clear picture.

- Top-of-bank or hazard staking should be undertaken in consultation with NPCA.

Timing of Surveys

Woodland boundaries can be staked at any time throughout the year, regardless of whether or not the tree has leaves, as the drip line can be extrapolated from the circumference of the outermost branches.

Wetland boundaries must be staked during the summer or fall months when vegetation is at its peak in order to adequately assess the "50% rule". Top-of-bank or hazard boundaries can be staked at any time throughout the year.

How surveys could be scoped

Boundary staking can be scoped in the following ways:

- The level of accuracy required in the surveyed location of the boundary (*e.g.*, it may be required that a certified Ontario Land Surveyor complete the survey, or it may be adequate that the boundary be marked using a handheld GPS unit accurate to 4-5 m).
- The level of consultation and verification may also be scoped depending on the development application and sensitivity of the feature. Field visits with the Agencies may or may not be required.
- In all cases, feature boundaries must be staked in the field, not by way of aerial photo interpretation.

Resources

- Wetland boundaries should be identified following the guidelines in the OWES manual (OMNR 2002). (http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STDPROD_068974.html)
- Detailed surveying of boundaries may be undertaken by trained surveyors using specialized equipment.

5. Birds

Description of Survey

Birds are surveyed because they are good indicators of healthy ecosystems. Breeding bird surveys (BBS) confirm which habitats provide important rearing and foraging habitats essential to sustaining bird populations. BBS must follow accepted field protocols to ensure accurate information is collected at the correct time of the year to confirm the presence or absence of breeding birds. BBS are generally conducted in large blocks of similar habitat as identified by ELC. BBS are completed during the breeding bird season (mid-May to mid-July), while some specialized surveys for birds may be conducted at different times during the year:

- Breeding bird surveys should be conducted between 0500 and 1000, in fair weather with little wind, as recommended by the Canadian Wildlife Service protocols for Forest Bird Monitoring. Surveys should focus on obtaining evidence for breeding (*e.g.*, singing male, anxiety behaviour) and determining the approximate number of territories in each habitat. Two visits are required to increase certainty of breeding and to detect both early and late breeding bird species between May 24 and July 10 (the time period for breeding birds in southern Ontario). Surveys can be completed using area searches or point counts.

- Marsh Bird Surveys should be conducted between 0500 and 1000, in fair weather with little wind, following protocols in the Bird Studies Canada Marsh Monitoring Program, using callback tapes. Call back tapes are used to elicit call responses through the use of a call broadcast tape/CD. The Marsh Monitoring Program is designed to collect information about the presence and abundance of bird (and amphibian species) in Great Lakes coastal and inland marshes. Two visits are required to increase certainty of breeding and to detect both early and late breeding bird species between May 24 and July 10 (the time period for breeding birds in Southern Ontario).

Timing of Surveys

The time period for breeding birds in southern Ontario is May 24 to July 10 (Canadian

Wildlife Service, Ontario Forest Bird Monitoring Protocol 2011). Canadian Wildlife Service guidelines split breeding bird surveys into two periods for the purposes of estimating abundance, as well as collecting breeding evidence: earlier (May 24 to June 17) and later (June 13 to July 10). Surveys should be completed in the early morning when bird activity is the highest.

How surveys could be scoped

Bird surveys can be scoped in the following ways:

- Area searches or point counts
- Length of time to spend at each point count
- Number of point counts
- Duration and frequency of call back tapes

Resources

- Ontario Breeding Bird Atlas protocols and conventions (Cadman et al. 2007 and on-line summaries at http://www.birdsontario.org/atlas/index.jsp)
- Breeding Bird Surveys following Environment Canada Canadian Wildlife Service protocols (http://www.ec.gc.ca/reom-mbs/default.asp?lang=En&n=416B57CA-1)
- Marsh Monitoring Program Bird Survey protocols (http://www.bsc-eoc.org/volunteer/glmmp/index.jsp?targetpg=glmmpbird&lang=EN)
- *Migratory Birds Convention Act* (1994) (http://www.ec.gc.ca/nature/default.asp?lang=En&n=7CEBB77D-1)
- Ontario Breeding Bird Atlas (http://www.birdsontario.org/atlas/index.jsp)
- Forest Bird Monitoring Program (http://www.ec.gc.ca/nature/default.asp?lang=En&n=132ADBFC-1&parent=FB6CB721-BC76-4426-9C9F-A365DBD3F9AB)

6. Amphibians

Description of Survey

Amphibians are surveyed because they are sensitive to changes in aquatic environments that support healthy populations of frogs, salamanders and other organisms dependent on aquatic ecosystems.

Amphibian surveys should follow accepted Marsh Monitoring protocols to ensure accurate information is collected at the correct time of year to confirm their presence or absence and evidence of breeding habitats. Amphibian surveys are generally conducted

in open water habitats found in wetlands and ephemeral (vernal) ponds found in woodlands in spring. Amphibian surveys must be carefully timed to capture the most reliable information, with salamander surveys conducted at night in the spring just as ice melts around the edges of ponds and the first spring rains occur. Frogs are also surveyed at night with three surveys to record information on early, mid and late breeding species.

Visual searches can be completed by scanning vernal pools with flashlights for evidence of salamanders (*e.g.*, salamanders themselves, egg masses or spermatophores), a dip net can be used to sample the vernal pool, and/or pitfall traps and drift netting can be installed and monitored over a period of time to detect the presence of vernal pool-breeding salamanders. The species should be recorded along with abundances. Wooden cover boards may also be used and can assist with detecting non-vernal pool breeding salamander species, such as the Eastern Red-backed Salamander through regular monitoring. OMNR must be contacted to obtain a permit for amphibian surveys involving egg collection, tail snip, toe clip or trapping using minnow traps.

To conduct amphibian (frog and toad) surveys, follow the Amphibian Survey protocol from the Marsh Monitoring Program:

- Establish monitoring stations at least 500 meters apart in order to minimize the possibility that calls or choruses are double-counted between adjacent survey stations. Amphibian survey stations can be placed back-to-back because the amphibian survey protocol is entirely passive.
- Conduct surveys using an unlimited distance semi-circular sampling area. However, in order to associate calls heard within the defined 100 meter (110 yard) area surveyed with habitat composition within these same areas, surveyors are asked to ascertain and record whether calls were heard outside the 100 meter (110 yard) radius or within this radius.
- Complete a 3-minute survey at each station. Call level codes should be assigned to all calling frog and toad species.

Timing of Surveys

To conduct amphibian (salamander) surveys in areas where suitable habitat is present, complete fieldwork in the early spring during ice melt, in the evening on the first warm rain (March or early April) when temperatures are warming. Salamanders migrate to their breeding ponds during this time. Amphibian (salamander) surveys should be completed in March or early April depending on weather conditions, during the evening of the first warm rain. Amphibian surveys involving egg collection and/or tail snip or toe clip and/or minor trapping should only be conducted if directed by and with permit where required from the OMNR.

If suitable habitat is present, amphibian (frog and toad) surveys should be completed

three times between April and July 5th, with at least 15 days between each survey. Surveys should begin one half-hour after sunset and end by midnight during evenings with little wind and minimum night air temperatures of 5^0C, 10^0C and 17^0C for each of the three respective survey periods. These temperature requirements are in place because amphibian calling intensity is strongly associated with season, time of day, and weather conditions.

How surveys could be scoped

Amphibian (salamander) surveys can be scoped in the following ways:

- Sampling method used (*e.g.*, visual searches, dip netting or pitfall traps and drift fencing)
- Number of surveys completed
- Installation of cover boards: number of boards and frequency of monitoring

Amphibian (frog and toad) surveys can be scoped in the following ways:

- Area searches or point counts
- Number of monitoring stations
- Distance between monitoring stations
- Number of surveys completed at each monitoring station

Resources

- Marsh Monitoring Program Amphibian Survey protocols (http://www.bsc-eoc.org/volunteer/glmmp/index.jsp?targetpg=glmmpfrog&lang=EN)
- Ontario Herpetofaunal Summary at the NHIC website (http://nhic.mnr.gov.on.ca/MNR/nhic/herps/ohs.html)
- Environment Canada Monitoring Protocol for Plethodontid Salamanders (http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=7F4E3C01-BAB1-48EB-823D- D914FC8F5A18)

7. Fish

Description of Survey

Fish can be negatively impacted by changes in the amount and quality of water in streams and lakes. Fish surveys may involve the description of fish habitat present or more detailed surveys of the fish species present through specialized survey techniques involving spawning surveys, electrofishing, and netting. A permit to conduct specialized surveys is required from the MNRF. Fish Management Plans prepared by MNRF, NPCA, *etc*. should be referenced prior to completed fish and/or fish habitat assessments. Assessments of fish habitat may follow the Ontario Stream Assessment Protocol.

Timing of Surveys

Electrofishing should be completed between late April and June. Spawning surveys should be completed in December. Fish habitat assessments should be completed during snow/ice free conditions.

How surveys could be scoped

Surveys can be scoped based on the survey methods required, number of surveys required, and the level of detail required in reporting (*e.g.*, fish habitat described in general terms or on a reach by reach basis).

Resources

- Ontario Fisheries Inventory and Assessment Protocols (http://www.mnr.gov.on.ca/en/Business/LetsFish/2ColumnSubPage/STEL02_198013.html)
- Ontario Fisheries Planning available from MNRF (http://www.mnr.gov.on.ca/en/Business/LetsFish/2ColumnSubPage/251350.html)
- *Fisheries Act of Canada* (http://laws-lois.justice.gc.ca/eng/acts/F-14/index.html)

8. Significant Species

Description of Survey

Some plant and animal populations are declining in Southern Ontario and efforts to protect these species, and the habitats required for their survival, have led federal, provincial, regional and local programs that identify significant species (see resources below). Information about the presence of a significant species and/or the habitat that may sustain significant species is used to undertake targeted surveys intended to confirm the presence or absence of the species in question. This information will assist in developing management strategies intended to ensure the long-term protection of significant species.

Specific surveys for significant species may be required if a potential habitat exists on the site, or if it is expected that a significant species may occur on the site based on historic records. Examples of specific surveys for significant species include:

- Nocturnal bird surveys: to detect Common Nighthawk and/or Whip-poor-will (both Threatened species).
- Owl surveys: to detect Barn Owl (Endangered) and/or Short-eared Owl (Special Concern)
- Significant Flora Surveys: vegetation surveys tailored to specific

searches for significant flora and vegetation communities. This type of survey can be done in combination with regular flora surveys, or on its own. Surveys may include searches for SAR (including Endangered, Threatened, and Special Concern species). Floral SAR found in Niagara Region are numerous and include but are not limited to Eastern Flowering Dogwood (Cornus florida) (Endangered), American Chestnut (Castanea dentata) (Endangered), and Butternut (Juglans cinerea) (Endangered). Significant Flora Surveys can also assist in detecting provincially rare vegetation types, such as Pin Oak Mineral Deciduous Swamp Type (S2S3), and could also include searches for locally, regionally, and provincially rare flora species and species of conservation concern.

- If Butternut is found during a Significant Flora Survey, the MNR protocol for Butternut Health Assessment should be followed and completed by a certified Butternut Health Assessor.
- Monarch butterfly surveys: to detect Monarch and identify significant patches of Monarch habitat.

Timing of Surveys

- Nocturnal bird surveys should be completed during the breeding bird season (May 24 to July 10) after sunset and before dawn, with the moon ¼ full. These species are most active and call most frequently at night, and are thus most detectable during this period.

- Owl surveys should be completed after dark during the months of January and February.

- Floral SAR Surveys should be timed to correspond with the period when the species is most conspicuous, when the species is flowering.

- Regulations for Endangered Species may require sampling over a period of more than one year to accurately determine species presence and abundance (see for example the Jefferson Salamander Recovery Strategy 2010).

How surveys could be scoped

- Surveys for significant species should be scoped by consulting with the NPCA and OMNR, and will be tailored to specific survey requirements of each species.

Resources

- *Federal Species at Risk Act* (SARA) 2002 (http://www.ec.gc.ca/alef-ewe/default.asp?lang=en&n=ED2FFC37-1)
- *Ontario Endangered Species Act* (ESA) 2007 (http://www.mnr.gov.on.ca/en/Business/Species/index.html)
- Status of Vascular Plants in Niagara Region (http://www.npca.ca/wp-content/uploads/9.0-Checklist-of- Vascular-Plants-of-Niagara.pdf)
- *Federal Species at Risk Act* mapping available at (http://conservationontario.ca/projects/DFO/find/southwestern.html)
- Conservation Priorities for Birds of Southern Ontario (http://www.bsc-eoc.org/conservation/municipal/report/cpmain.pdf)
- Habitat for Provincially Endangered, Threatened and Special Concern
- Species of Conservation Concern (http://nhic.mnr.gov.on.ca/)
- Ontario Species Recovery Strategies (e.g., Jefferson Salamander Recovery Strategy February 2010) http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01_131228.html
- Butternut Health Assessment protocols to be completed by a certified Butternut Health Assessor (http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/stdpr od_085841.pdf)
- COSEWIC (Committee on the Status of Endangered Wildlife in Canada) website (http://www.cosewic.gc.ca/index/htm) to determine the national status of species
- Commission for Environmental Cooperation (CEC) Species of Conservation Concern Monarch Butterfly in North America (http://www.cec.org/Page.asp?PageID=1225&SiteNodeID=599)
- OMNR website to determine the provincial status of species (http://www.ontarioparks.com/saro- list.pdf)

9. Significant Wildlife Habitat

Description of Survey

Significant wildlife habitat is determined by OMNR's Significant Wildlife Habitat Technical Guide which provides detailed technical information on the identification, description and prioritization of significant wildlife habitat. The key wildlife habitats of concern are:

- Habitats of seasonal concentrations of animals;
- Rare vegetation communities or specialized habitat for wildlife;
- Habitat of species of conservation concern; and
- Animal movement corridors.

Specific surveys for Significant Wildlife Habitat, as defined by the MNRF in the Significant Wildlife Habitat Technical Guide (2000), may be required if certain habitats and/or species are present. Examples of specific types of Significant Wildlife Habitat include: amphibian concentration areas, bullfrog habitat, bat maternal roosts, and raptor winter feeding and roosting habitat. Specific protocols for surveying potential Significant Wildlife Habitat are generally determined through consultation with MNRF, and can involve a variety of different survey techniques and analysis.

Timing of Surveys

Timing of surveys will be dependent upon the type of Significant Wildlife Habitat being surveyed. Some surveys will require visits at different times during the year. For example, surveys for bat maternal roosts often involve two visits: (1) a visit to determine the density of snags and cavities within a particular woodland; and (2) a visit to determine if bats are present in the area using bat detection equipment. Timing and frequency of surveys will be determined in consultation with MNRF staff.

How surveys could be scoped

Surveys can be scoped in a variety of different ways, including the frequency of surveys, the number of survey locations, and the level of detail required during the surveys (*e.g.*, presence/absence or abundance).

Resources

- Significant Wildlife Habitat Technical Guide (OMNR 2000) (http://www.mnr.gov.on.ca/en/Business/FW/Publication/MNR_E001285P.html)

10. Geomorphology

Description of Survey

Geomorphology is the study of erosion resulting from the action of wind and water. These are specialized studies conducted by experts with experience in the identification of fluvial, coastal or karst (limestone) geomorphic features and functions. Watercourses, for example, erode and deposit material creating a valley with floodplains, terraces and valley slopes that evolve over time to form a river corridor. The space in which natural channel processes occur is commonly referred to as the “meander belt”. Meandering is a particularly interesting characteristic of rivers which results in the formation of a diversity

of habitats in river systems.

Surveys related to geomorphology relate to gaining an understanding of landforms and the processes that shape them. Surveys often relate to understanding physical processes, such as erosion, and the forces that influence them, such as the flow of water. Examples of potential surveys include: surveying the stable top of bank of a valleyland feature, modelling and/or surveying the meander belt of a watercourse, or surveys of coastal erosion zones. Surveys can require data collection on various physical parameters, including parameters related to hydrology, soils, *etc.*

Timing of Surveys

Surveys can be completed at various times throughout the year. Depending on the type of survey, a simple site visit to confirm and describe landform characteristics may be all that is necessary. If a more detailed investigation into potential impacts is necessary, surveys may be required over one or more years to determine soil permeability, changes in river systems, erosion, *etc.*

How surveys could be scoped

Surveys can be scoped based on the survey methods required, frequency of surveys and the level of detail required. Scoping surveys related to geomorphology should be done in consultation with NPCA staff and can build upon existing data and information known about landforms in Niagara Region.

Resources

- Niagara Peninsula Conservation Authority (http://www.npca.ca/)
- Geology Ontario (http://www.geologyontario.mndm.gov.on.ca/)
- Geological Survey of Canada (http://www.nrcan.gc.ca/earth-sciences/dir/index_e.php?id=5025)

11. Hazards

Description of Survey

The NPCA regulates areas with natural hazards to ensure protection of people and the environment. Hazard areas include floodplains, watercourses, wetlands, Great Lakes coastlines, and steep slopes. Specialized studies carried out by qualified scientists (*e.g.*, water resources engineers, geomorphologists, soil scientists, *etc.*) may be required to identify hazards and the setbacks from hazards necessary for protection.

If the proposed development is on a site that contains potential hazard lands mapped by the NPCA, certain studies related to floodplain, coastal high water, steep slopes, and/or slope stability may be required. The types of surveys required will depend upon the type of

hazard present. For floodplains, it may be required that the 100 year flood limit be staked in the field with NPCA staff to ensure that development does not occur within the floodplain. For coastal high water, similar mapping and staking exercises may be required. For steep slopes and/or slope stability, geotechnical studies may be necessary to assess the stability of the slope and determine the potential for erosion and landslide. Staking the boundary of a hazard feature is often required to ensure that development does not occur in hazardous areas.

Timing of Surveys

Surveys related to hazard lands can generally be completed at any time during the year. If soil texturing/sampling is required, it may be necessary that the site be free of snow and ice to enable a soil core sample.

How surveys could be scoped

Surveys will be scoped based on the type(s) of hazard present. The NPCA will determine the survey requirements in consultation with the proponent.

Resources

- Niagara Peninsula Conservation Authority (http://www.npca.ca)
- NPCA Policies, Procedures and Guidelines (http://www.npca.ca/wp-content/uploads/Development_LandUsePolicy_Oct2011.pdf)

12. Hydrology

Description of Survey

Surveys related to hydrology may include stream gauge measurements to determine the rate of flow of a watercourse to determine if it is a permanent or intermittent stream, and to determine water depths throughout a year or season. This information can be used to determine potential impacts from the proposed development, and can also be incorporated into stormwater design and water balance calculations completed for the proposed development. Water quality measurements may also be required, and may involve the Stream Temperature Analysis Tool and Exchange (STATE), to measure the daily maximum water temperature.

Timing of Surveys

Stream gauge measurements can be taken and monitored throughout the year. Water temperature should be measured from July 1 to September 10 using spot temperature measurements. When measuring water temperature, the daily air temperature must exceed 24.5^{o}C and the sample day must be preceded by three days without rainfall that

could affect base flow in the sample watercourse.

How surveys could be scoped

Surveys can be scoped based on the number of survey stations, the frequency of monitoring and the type of analysis completed with the information collected during the surveys. Surveys should be scoped in consultation with the NPCA.

Resources

- Niagara Peninsula Conservation Authority (http://www.npca.ca)

13. Hydrogeology

Description of Survey

Surveys related to hydrogeology involve tracking the movement of groundwater in soil and aquifers. Surveys may involve collecting information to complete a water balance (comparison of pre-construction runoff and post-construction runoff), surveys of groundwater levels using piezometers or other measurement tools, surveys and modelling to determine infiltration rates of water through soil to the aquifer beneath, and/or modelling related to stormwater management. Most often, it is necessary to determine soil texture through soil analysis. Climate data related to average rainfall, *etc.* may be necessary, along with information gathered from groundwater level monitoring.

Timing of Surveys

Surveys and studies can be completed throughout the year, and often take several months to several years to complete depending on the level of detail required and the potential for groundwater impact as related to the proposed development.

How surveys could be scoped

Surveys can be scoped in the following ways:

- The number of piezometers for monitoring ground water levels;
- Level of detail in surveying soil textures;
- Level of detail in modelling stormwater runoff;
- Level of detail in modelling the pre- and post-construction water balance; and
- Level of detail in determining potential impacts to groundwater.

Resources

- Niagara Peninsula Conservation Authority (http://www.npca.ca)
- The Hydrogeology of South Ontario

(http://www.portal.gov.on.ca/drinkingwater/stel01_049392.pdf)

14. Other Specialized Wildlife Surveys

Description of Survey

Specialized wildlife surveys may be required in support of surveys for rare species or Species At Risk, or in support of Significant Wildlife Habitat assessments, or if unique habitats are present at the site. Examples of the type of specialized wildlife surveys that may be required include:

- Mammal Surveys: which may involve active searching, recording sightings of tracks and other signs (*e.g.*, dens, scat or hair), echolocation detection surveys for bats, motion-censored photo surveys, live trapping surveys, *etc.*
- Reptile Surveys: which may involve active searching, surveys of winter snake habitat called snake hibernacula, radio telemetry studies, *etc.*
- Odonata Surveys: (dragonflies and damselflies) which may involve capture and release using a net, and active searching.
- Lepidoptera Surveys: (butterflies and moths) which may involve capture and release using a net, and active searching.
- Mussel Surveys: which may involve sampling riverbed bottoms.
- Benthic Invertebrates: which may involve sweep netting and sampling protocols developed by the Ontario Benthos Bio-monitoring Network.

For surveys undertaken in addition to required monitoring protocols, the methods used for mammals, reptiles, amphibians, odonates (dragonflies and damselflies), butterflies and moths, *etc.* should describe fieldwork methods used and include date, time, location, weather, crew members, and other incidental information such as, number of logs overturned, transects followed, animals signs (*e.g.* scat, hair, burrows, nests, *etc.*).

Timing of Surveys

Timing of surveys will depend on the species being surveyed for the type of information required:

- Mammal surveys can be completed throughout the year, although live trapping should occur during the warm months, and bat roosting habitat should be determined during the warm months.
- Reptile surveys (e.g., for snakes and/or turtles) should be completed in April-June.
- Odonata surveys should be completed between May and September during warm periods, on sunny days with little wind and no precipitation.
- Lepidoptera surveys should be completed between June and September during warm periods, on sunny days with little wind and no precipitation.

- Mussel surveys should be completed between May and September or whenever the ground has thawed enough to sample riverbed bottoms properly.
- Benthic surveys should be completed between May and September.

How surveys could be scoped

Surveys can be scoped based on the number of samples required, the number of survey stations required, the number of visits required and the level of detail required in the study. Scoping of specialized wildlife habitat surveys should be completed in consultation with Niagara Region and the MNRF, where appropriate.

Resources

- Ontario Benthos Bio-monitoring Network (http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=845207E3-C9C9-4D7B-9B47- B41E7B990989)