

Environmental Impact Study (EIS)

An Environmental Impact Study identifies and evaluates potential impacts of a proposed development on natural heritage and water resource features and systems. An EIS provides recommendations to avoid, minimize and mitigate these impacts. Key components may include:

- › A biophysical inventory and analysis
- › Identification of development constraints and opportunities
- › An assessment of impacts from the proposed activities
- › A proposal of mitigation measures
- › The identification of monitoring requirements for developments within and/or adjacent to natural areas or hazards.

Required by Legislation

The Ontario Planning Act.

Who should prepare this study?

An Environmental Impact Study should be prepared by a qualified professional with expertise in species identification, biological, ecological and/or environmental functions and processes.

Why do we need this study?

An Environmental Impact Study (EIS) is required for developments where negative environmental impacts are anticipated. An EIS may be scoped where detailed environmental field work has already been completed (e.g., through a Master Environmental Servicing Plan) or for developments where it is anticipated that there will be minimal negative environmental impacts.

An Environmental Impact Study (EIS) is required to:

- › Identify natural heritage and hydrologic features, functions and/or systems, hazard lands, and associated buffers
- › Determine limits of development
- › Identify potential impacts and measures to mitigate impact
- › Determine compliance with relevant Federal, Provincial, Regional and / or local municipal legislation, policy and/or guidelines

An Environmental Impact Study may be required as part of the following applications:

- › Regional and Local Official Plan Amendment
- › Zoning By-law Amendment
- › Draft Plan of Subdivision
- › Draft Plan of Condominium
- › Site Plan Control
- › Minor Variances.

How should this study be prepared?

A Environmental Impact Study Report should at a minimum contain:

Introduction and Purpose

- › Project details including the municipal address, location, context map, and applicant and owner's information
 - › A description of the subject property and surrounding landscape including existing land uses and structures
 - › The purpose of the study
 - › A brief description of the proposed development including current and proposed land use designations and zoning permissions
 - › The author's name, title, qualifications, company name and appropriate stamp.
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Proposal Description, Policy and Regulatory Framework

- › A description of the existing conditions as well as surrounding areas, roads, natural areas, buildings, parking areas and other impermeable areas
 - › A description of the proposal, development statistics (such as number of units, site area), type of development proposed, height, parking areas, access points, location of amenity areas, grading and proposed phasing
 - › A list and description of activities associated with the proposed development, during construction and post development that may have an impact on natural heritage and hydrologic features, functions and/or systems such as: the area of development and units, servicing, stormwater management, roads, parkland areas, recreational uses, urban barriers, lighting, site remediation, grading and filling. This is to include the subject land and adjacent lands
 - › Identification of the applicable Federal, Provincial, Regional, local and Conservation Authority legislation, plans and policies that apply to natural heritage and hydrologic features, systems, and natural hazards.
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Characterization of Natural Heritage Features and Functions

Pre-construction baseline data collection and monitoring may need to be undertaken to account for seasonal variation at the site and should be initiated at least two years prior to any site development plans. Identification of appropriate monitoring locations, methods, and parameters should be reviewed by the municipality in consultation with relevant agencies to ensure the Environmental Impact Study (EIS) will provide adequate characterization of the subject lands.

This section of the EIS should include the following information:

Environmental Features Inventory

- › Review of background data sources including the Province's Natural Heritage Information Centre (NHIC) database, conservation authority mapping and historical environmental studies
- › Description of soils, topography, landform, and surficial geology based on review of available mapping and literatures
- › Description of the property based upon Ecological Land Classification (ELC). ELC data sheets may be requested for more complex applications
- › Identification of known natural heritage and hydrological features, areas, and designations within and beyond the site, such as Areas of Natural and Scientific Interest (ANSI), Provincially and Locally Significant Wetlands (PSWs and LSWs), Oak Ridges Moraine designations, Greenbelt designations, significant wildlife habitat, habitat of endangered and threatened species, fish habitat, etc.
- › Description of the flora, vegetation, wildlife (insects, birds, amphibians, reptiles, mammals, and fish) and wildlife habitat of the study area (based on fieldwork in the three growing seasons)

How should this report be prepared? (continued)

Environmental Features Inventory (continued)

- › Comprehensive lists of plants and wildlife observed within the site including each species' status at a local, Regional, Provincial, and national level
 - › Document the presence of species and habitats protected under the Endangered Species Act and/ or the Species at Risk Act, following accepted processes and protocols as identified by the provincial Ministry of Environment, Conservation and Parks or the Federal Department of Fisheries and Oceans
 - › Identification and evaluation of wetlands and woodlands based on the municipality's Official Plan, Conservation Authority's mapping and the Ontario Wetland Evaluation System (OWES)
 - › Description of hydrologic and hydrogeologic conditions including headwater drainage features, seepage areas and springs
 - › Description of interconnection between surface and groundwater systems and the natural heritage system including feature-based water balance
 - › Identification of natural hazards
 - › Location and extent of trails and pathways.
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Staking of Wetlands, Woodlands, and Top of Bank

Staking exercises may be required to verify the exact boundaries of natural heritage and hydrologic features and to apply the appropriate vegetation protection zones.

- › Applicants are responsible for coordinating the staking of protected features with a qualified wetland evaluator, municipal and Conservation Authority staff as appropriate and for arranging for a qualified Ontario Land Surveyor to be present with sufficient stakes and flagging materials
 - › Conservation Authority staff will participate in staking the top of bank and contiguous vegetation to the watercourse, valley system and/or wetlands
 - › Wetlands may be confirmed through application of the OWES with Conservation Authority staff and, where applicable, a qualified wetland evaluator
 - › Conservation Authority and/or municipal staff will assist with staking woodland limits.
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Evaluation of Ecological Cores, Corridors and Linkages

Ecological cores, corridors and linkages are essential components of natural heritage systems. The larger cores and ecological corridors will be identified in the municipality's Official Plan.

- › Where ecological cores and corridors are identified, the Environmental Impact Study (EIS) must address how these components will be delineated and implemented
 - › The width and location of ecological corridors and linkages should at a minimum include consideration of the targeted wildlife species, the distance between the features, the proposed adjacent land use, life cycle requirements, and any other uses proposed within the linkage (e.g., trails)
 - › The Environmental Impact Study (EIS) shall also identify opportunities to improve connectivity between features through existing hedgerows, agricultural fields, and valley corridors where appropriate and feasible.
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How should this report be prepared? (continued)**Assessment of Function**

The Environmental Impact Study (EIS) is to discuss in detail the nature and extent of ecological features and their functions on the subject site. This section should include an evaluation of components of the natural heritage system and the characteristics of the site. Identification of the key features and functions including:

- › Whether the feature or function is measurable in its occurrence, and if so its significance in maintaining biodiversity;
- › Whether the feature or function contributes to the quality and integrity of the area;
- › Whether the feature or function contributes to the identification of the area as a natural heritage or hydrologic feature or area or;
- › Whether there is a reasonable expectation that the feature or function is sensitive to the type of development proposed.

Evaluation of Significance

Woodlands, wetlands, and valleylands identified on the subject property or on adjacent lands should be assessed for their significance:

- › Examination of the functions of natural heritage and hydrologic systems, features and functions, including sensitivity and significance
- › Identification the location and extent of sensitive or significant natural and hydrological features
- › Woodlands over 0.5 ha shall be assessed for significance based on regional and local municipal official plan criteria
- › Woodlands located in the Oak Ridges Moraine or Greenbelt Plan areas shall be assessed for significance using relevant Provincial criteria
- › Where wetlands have not been assessed by the Province, they shall be evaluated using OWES regardless of their status or size if requested by Conservation Authority or MNRF staff. Wetlands determined not to be a Provincially Significant Wetland will be assessed using protocols provided by the Conservation Authority
- › Valleylands shall be assessed for significance in accordance with Provincial guidance. All major valleyland systems contained within the Oak Ridges Moraine and Greenbelt Plan areas are significant valleylands
- › Significant wildlife habitat shall be assessed by the applicant if requested by municipal and/or Conservation Authority staff and/or Ministry of Environment, Conservation and Parks.

Figures and Mapping**Figures and mapping will be required to depict the following:**

- › Location of the subject property
- › Regional and landscape context of the subject property including nearby natural heritage features, watercourses, major landform features, etc.
- › Limits of the Oak Ridges Moraine Conservation Plan, Greenbelt Plan and Lake Simcoe Protection Plan area, where applicable
- › Vegetation communities by ELC, with modifications as appropriate
- › Location of any significant flora and fauna, with consideration for species subject to confidentiality protocols
- › Location of watercourses and headwater drainage features (HDFs should be labelled by the recommended management recommendation)
- › Constraint lines for each natural heritage and hydrologic feature, natural hazard, and vegetation protection zones. The purpose of this figure is to identify areas that are constrained and (un)suitable for development from a natural heritage/hazard perspective
- › A constraint map overlaid with the proposed development. This may be combined with the previous figure
- › Each figure should be overlaid on a current aerial photograph base and should provide property limits (study area), scale bar, names of roads and watercourses.

Impact Assessment

The objective of the impact assessment is to identify potential impacts to natural heritage and hydrologic systems, features (including linkage areas) and their functions and demonstrate how these impacts are being addressed through a hierarchy of avoidance, minimization, mitigation, and where no other options exist, compensation. The impact analyses must be undertaken in a systems context and assess impacts regarding the immediate feature, longer term and the system as a whole.

- › Direct impacts must be identified and described in detail. Direct impacts could include the removal of all or a portion of a natural heritage feature, or altering it to the extent that the ecological or hydrological function(s) are impacted
 - › Indirect impacts must be identified and described in detail. Indirect impacts could include changes to drainage or water quality that will likely affect a natural heritage or hydrological feature or its function(s). Indirect impacts may also include the effects of activities or a change in land use adjacent to features such as the impacts from increased trail activity, influx of domestic pets and invasive horticultural plants, or changes in light, noise, and moisture regimes, etc.
 - › Cumulative impacts must be identified and described in detail. Cumulative impacts include the combined or additive impacts from land use changes in the past and near future and/or on lands adjacent to the proposal, such as the additive effects of stormwater management facilities in existing and proposed development on receiving watercourses
 - › The impact assessment must also evaluate the potential for impacts during construction and after construction, including the expected long-term impacts that will result from a proposed change in land use
 - › A preliminary design or construction methodology should be provided for more complex, site-specific issues where more detail is needed to assess impacts due to construction of infrastructure, unique site issues or constraints, areas where policy flexibility is sought, or features being altered or compensated.
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Mitigation Measures

Identification and detailed explanation of alternative options and measures that would mitigate any predicted environmental impacts, including:

- › Avoidance of any predicted environmental impacts
 - › Modification to development proposed to avoid effects on features or functions
 - › Methods to restore features or functions that might be impacted
 - › Where avoidance on non-significant feature is not possible a rationale for alteration, removal or compensation should be provided
 - › Wherever possible, the EIS should provide mitigation measures for each impact based on the magnitude and duration of the impacts. Mitigation should be provided in the context of adaptive management, whereby mitigation is monitored and evaluated for its effectiveness.
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Monitoring Plan

Monitoring before, during and after construction is an essential part of any EIS process where mitigation is identified. The purpose of monitoring is to ensure mitigation measures are correctly implemented, and to evaluate the effectiveness of mitigation measures.

Examples of monitoring include:

- › Inspections of tree and woodland protection fencing
- › Inspections of erosion and sediment controls
- › Inspections of the integrity of vegetation protection zones
- › Monitoring of vegetation, breeding birds, amphibians and/or other wildlife to determine if the new development has resulted in any changes
- › Monitoring of wetland hydrology

Monitoring Plan (continued)

- › Monitoring the success of any invasive species removal, restoration of other management initiatives
- › Monitoring of natural heritage features for encroachments, invasive species, and changes to hydroperiod
- › Monitoring of restoration and replanting plans.

Monitoring should include baseline data collection prior to any construction (this can include but is not limited to the inventory data collected for site characterization), monitoring during construction and post-construction monitoring. In most cases, the monitoring plan should be undertaken in the context of an adaptive management approach. This includes:

- › Objectives for mitigation and management initiatives
- › Targets or performance measures for each mitigation action
- › Monitoring protocols that will determine whether objectives are being met
- › A schedule for evaluating monitoring data and reporting results to the municipality and Conservation Authority
- › Proposed refinements and/or alternatives if mitigation does not achieve objectives.

Monitoring may need to continue for several years after development. For example:

- › Natural channel design where a watercourse is being altered may need to be monitored for up to 10 years
- › Erosion or thermal impacts in sensitive locations within a valley corridor, such as downstream of a proposed stormwater management pond may require long-term monitoring
- › Feature-based water balance typically requires a minimum of 3 years of post-construction monitoring.

The prescribed length of monitoring is typically influenced by the risk associated with the works undertaken. An applicant is not expected to continue monitoring on a long-term basis, although some post construction monitoring may be required for some mitigation initiatives. However, monitoring must be undertaken in an adaptive management framework to allow other agencies or parties to undertake data collection in the future, assess impacts and/or evaluate the effectiveness of mitigation on an opportunistic basis. The obligations of an applicant with respect to post-construction monitoring and any corrective actions identified through monitoring will be discussed at the pre-consultation meeting and finalized through the review and approval of the EIS.

Recommendations

The Environmental Impact Study (EIS) should provide a summary of all recommendations provided throughout the report in a "Recommendations" section, with guidance as to how they will be implemented. Coordination between the various disciplines involved in the development application will be necessary to ensure that the recommendations of the EIS have been appropriately incorporated into the plans and reports.

Recommendations should address and identify:

- › Whether the proposal should proceed as identified
- › Whether the proposal should be revised to eliminate or reduce impacts
- › What minimization, mitigation and/or compensation is required
- › What are the conditions of development approval
- › What are the monitoring recommendations
- › What are any net negative impacts to natural heritage and hydrological features and recommend how the proposal will address and appropriately avoid, minimize, mitigate, maintain, restore, protect, or enhance or compensate the natural features and ecological function of the area.

Drawings and Supporting Information

- › Provide an outline of the supporting studies submitted (i.e., hydrogeological, tree preservation plans, urban design briefs).
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What else should we know?

The scope of the study should be discussed with the community planner and/or other staff or agencies as part of the pre-consultation process.

Consultation with the local municipality and local Conservation Authority should occur early in the process (pre-consultation) as the results of this study and those addressing any natural hazards will determine the opportunities and constraints for the site. Also, guidance can be given with respect to the number of seasons in which inventories must be taken. Often, a site visit with the municipality and commenting agencies are required to identify and delineate the limit of the features on-site. The EIS should begin early in the development process when there is the greatest opportunity to design in harmony with the natural environment.

It is important that this study not be finalized until the results of other studies are completed such as an Environmental Site Assessment, hazard-related studies, servicing, grading, erosion control, and slope stability studies.

Additional Terms

To be identified by the local municipality where proposed development is located.

Study Submission Instructions

To be identified by the local municipality where proposed development is located.

What other resources are there?

Ministry of Natural Resources – [Natural Heritage Reference Manual](#)

Ministry of Natural Resources – [Significant Wildlife Habitat Guide](#)

TRCA – [Environmental Impact Statement Guidelines](#)

[Lake Simcoe Region Conservation Authority Policies and Guidelines](#)

About these Terms of Reference

These Terms of Reference were developed as a joint effort with participation by representatives from all York Region municipalities and the Region. The Terms of Reference are in widespread use across the Region, with local requirements added as prescribed by each municipality at the pre-consultation stage.

The need and scope for this study will be decided by a municipality during initial pre-consultation process with input from partner agencies. This pre-consultation process may include:

- Determination if this study is applicable
- Confirmation of criteria within these Terms of Reference that are appropriate for your development project
- Identification of specific technical components that need to be addressed
- Identification of detailed standards to be met

Notes:

If the proposed development is revised, the study/report shall reflect the revisions by an updated report or letter from the author indicating the changes and whether or not the recommendations and conclusions are the same (Note: this is subject to the extent of the revisions).

A peer review may be required. The cost of the peer review will be borne by the applicant.

If the submitted study is incomplete, is authored by an unqualified individual or does not contain adequate analysis, the applications will be considered incomplete and returned to the applicant.