

**Kawartha Region Conservation Authority (KRCA) Guidelines for Conducting
Environmental Impact Studies (EIS)**

Environmental Advisory Services

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1.0 Introduction

The Kawartha Region Conservation Authority (KRCA) Watershed covers an area of 2563 square kilometres, and extends from Lake Scugog in the southwest to Pigeon Lake in the east, to Balsam Lake in the northwest and Crystal Lake in the northeast. It traverses the boundaries of six municipalities. These are the City of Kawartha Lakes, Township of Scugog, Township of Brock, Township of Galway-Cavendish & Harvey, Township of Cavan-Millbrook-North Monaghan and the Municipality of Clarington

The KRCA provides an environmental advisory service including reviews of development proposals in support of the municipalities in their responsibility for land use planning, as dictated by the provisions of the current Provincial Policy Statement, and the Planning Act. For example some Zoning By-laws require an Environmental Impact Study (EIS) to be undertaken prior to development being permitted in some sensitive areas. Further development and site alteration shall not be permitted on adjacent lands (within 120 metres) that are contiguous to a provincially significant wetland unless it is demonstrated that there will be no negative impacts on the wetlands or on its ecological function. An EIS is a way of determining these impacts.

In addition the KRCA has statutory responsibilities under the Conservation Authorities Act specifically the KRCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 182/06). The Regulation is administered solely by the KRCA where reviews of applications under 182/06 are undertaken and are enforced.

The KRCA aim is to ensure that all developments in the watershed are undertaken with due regard to their potential impact on the natural heritage features of the watershed. Therefore an EIS is a commonly used evaluation tool. It has been our experience that when an evaluation has been undertaken in the form of an EIS, the review role of the Authority is somewhat constrained by virtue of the fact that in many instances the Terms of Reference (TOR) of the Study was defined and the study executed without any input from the KRCA and may not have addressed all of the Authority's concerns. The intent of this document therefore is to provide guidance to the Municipalities and project proponents as it relates to the KRCA's role and expectations for studies that will have to be undertaken in the future and for which the KRCA is expected to review prior to a decision being made about the project. Therefore when an EIS is required, it is strongly advised that dialogue takes place between the proponents and the Authority to ensure agreement on the components that should be evaluated.

2.0 Environmental Impact Study (EIS)

The Environmental Impact Study (EIS) is a commonly used environmental management tool to integrate environmental concerns effectively in the development process. It is used to evaluate the potential effects of a proposed project/action on the environment. Ideally it should be undertaken very early, possibly at the feasibility stage of the project. The EIS allows various alternatives to be considered by predicting the changes in environmental quality that would result from a proposed project/action. This evaluation can be used to protect the

productivity and capacity of natural systems and the ecological processes, which maintain their functions. It therefore, provides the basis for recommending future strategies by way of avoidance or where unavoidable the use of appropriate mitigation measures

2.1 Applicable Areas

The areas to which these guidelines would be most applicable are listed below but not limited to:

- Valleylands;
- Wetlands;
- Woodlands;
- Areas with Rare Threatened and Endangered Species
- Environmentally Significant Areas (ESA's);
- Areas of Natural and Scientific Interest (ANSI's)
- Fisheries and Wildlife habitat;
- Flood and erosion hazards of watercourses;
- Flood and erosion hazards of valleylands;
- Flood and erosion hazards of shorelines;
- Groundwater recharge and discharge areas;
- Groundwater quantity and quality related to contribution to baseflow and natural heritage features;
- Surface water quantity and quality;

3.0 Terms of Reference (TOR)

Prior to undertaking the EIS it is desirable for a Terms of Reference (TOR) to be determined, as this will chart the direction the study should take. The TOR for the study ideally would determine at a minimum the scope and range of issues that would need to be evaluated to the satisfaction of the KRCA and as such the Authority would like to be consulted very early in the process. This would allow for some pre-consultation between the project proponents and the Authority and if deemed necessary the undertaking of a **site visit**. This pre-consultation would facilitate discussion related to identification of issues that must be considered, potential impacts, level of **public participation** (if considered necessary), and other regulatory requirements. Further it would allow the proponent to be aware of the Authority's expectations as well as conversely providing the Authority with an opportunity to better understand what is being proposed. Ultimately it would also give the Authority a better premise on which to evaluate the final report.

4.0 Policy, Legal and Administrative Framework

This section of the EIS should describe the policy and legal basis within which the project may be implemented. Therefore Federal, Provincial, Municipal, Conservation Authority, Green Belt, Oak Ridges Moraine etc. requirements relevant to the proposed development must be highlighted. Regulations, and standards and guidelines applicable to the project should also be referred to.

5.0 Description of the Environment

The study should provide a description of the existing environment (also known as baseline studies) that would likely be affected positively or negatively, directly or indirectly by the proposed development or change in land use. This would include primarily bio-physical characteristics as well as socio-economic characteristics (if appropriate and identified in the initial scoping exercise). It should also include specific information necessary for identifying and assessing the environmental effects of the proposed activity, and therefore is ideally best undertaken by qualified professionals using methodologies and timing windows as identified in **Appendix A, and B**. Depending on relevance it should include but not be limited to information on the following:

5.1 Topographical and Geological Features

Landforms; geology, slope; soil; hazard sites;

5.2 Hydrological Features

Chemical, physical and biological parameters of surface drainage features; ground water and lakes; floodplain; channel meander patterns; riparian wetlands; recharge and discharge zones; (see Appendix D)

5.3 Meteorological Features

Air; temperature; precipitation; wind; general climate conditions;

5.4 Vegetation Features

Identify vegetation communities (including wetland vegetation); presence of rare; uncommon; species of concern; and invasive species;

5.5 Wildlife Features

Identification of wildlife species; bird surveys; amphibian surveys; location and distribution of rare or uncommon species; identify and map significant wildlife habitats;

5.6 Aquatic Habitat Features

Identification of location and distribution of fish habitat and species; spawning areas; nursery areas; refuge pools; migration routes; benthic organisms; channel characteristics; temperature; upwellings; springs; (see Appendix B)

5.7 Socio-Economic Features

Identification of land uses; unique attributes, interests and values of people; toxicity; noise; aesthetics;

6.0 Description of Proposed Development

This section of the study should include but not be limited to a description of the physical characteristics of the **entire development** and the **land-use requirements** during the construction and operational phases. It should include but would not be necessarily limited to the following:

- Grading/filling,
- Stormwater management;
- Erosion and sedimentation control measures;
- All building and septic system envelopes;
- Timing of construction, including any phasing of development
- Vegetation to be removed as well as retained;

It should also include information on the main characteristics of the production processes, for instance the nature and quantity of material to be used. In addition, an estimate by type and quantity of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation etc.) resulting from the operation of the proposed development.

7.0 Potential Environmental Impacts

The report should provide in detail a description of the methodology used and the resulting likely potential **significant impacts** of the development on the environment, either during construction and/or operational phases. It should be pointed out that the study would describe negative and/or positive impacts associated with the development. For example, the effects on vegetation communities, fish habitat, wildlife habitats including breeding, over-wintering, habitats and wildlife corridors. It should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development resulting from:

- The existence of the development
- The use of natural resources
- The emission of pollutants, the creation of nuisances and the elimination of waste.

7.1 Significant Environmental Impact

Significant environmental impacts are generally considered to be the ones which have one or more of the following characteristics:

- The degree to which public health and safety could be affected;
- Any unique characteristic of the area likely to be adversely affected;
- The degree to which impacts are likely to be controversial;
- The degree to which the potential impacts are highly uncertain or involve unique or unknown risks;
- The degree to which an action may adversely affect a rare, threatened or endangered species or its habitat;

8.0 Protection or Mitigation Options

It is a fact that it is seldom possible to eliminate an adverse environmental impact altogether, but it may be possible to reduce its intensity through mitigative measures. The EIS should therefore demonstrate how sensitive or significant features would be protected from any potential negative impacts of the proposed development. This can include use of fencing, vegetated buffers, setbacks or proposed use restrictions. The Carolinian Canada Guide for Environmental Impact Studies and the KRCA Watershed Management Policy can be consulted for guidelines related to setbacks and buffers (**Appendix C**). Furthermore, it should be demonstrated how the proponent will adequately compensate for any potential harm to sensitive features through modification of the proposal, timing restrictions, sediment control etc. In addition, a description of how the proposed development will actually enhance habitat through ecological restoration, salvaging plant material, invasive species removal and/or control etc. would be beneficial. Importantly the proposed mitigation measures should be thoroughly explained and be practical and financially feasible.

9.0 Monitoring

It may be necessary to undertake some monitoring activity depending on the nature of the development and the impact it is likely to have on the environment. This monitoring would therefore be specific to the project and may be necessary to ensure compliance with all the proposed mitigation measures outlined in the EIS. In addition it could entail monitoring to determine the adequacy of the mitigation measures identified in the EIS, especially if these represent measures that are relatively new and untested. This could result in some future refinement of the mitigation strategy. The monitoring report should clearly state the following among other criteria:

- Identification of persons /organization to do the work;
- Parameters to be monitored;
- Methods to be employed and standards and guidelines to be used;
- The schedule and duration of the monitoring;
- Format and frequency of reporting

10.0 Final Report

The EIS must be concise and focused on significant environmental issues. It will contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations for any references used in interpreting those data. The environmental impact study should be organized according to, but not necessarily limited by, the outline suggested below.

- Executive Summary
- Policy, Legal and Administrative Framework
- Description of the Environment
- Description of the Proposed Project
- Significant Environmental Impacts
- Mitigation Measures

- Monitoring Plan
- Maps, Photographs/Appendices/List of References/CV of study team

The final report should adhere to the guidelines set out in Appendix E

Appendix A

Terrestrial Natural Heritage Features and Functions

The EIS should include an inventory of natural features found on and within the immediate vicinity (minimum 120 m wherever possible) of the site in question. Only qualified field biologists should undertake the surveys. Features of national, provincial or local significance should be identified and mapped, including significant wetlands, significant woodlands, significant wildlife habitat, or species of conservation concern. The study should also include an assessment of the potential impacts of the proposed development on such features where they occur, and what measures will be taken to avoid or mitigate against such impacts. The terrestrial natural heritage evaluation should consider three levels: landscape, vegetation community, and species.

Landscape

Any given site has a landscape context. It influences and is influenced by the surrounding landscape matrix. In southern Ontario sensitive habitats and species are lost incrementally because development decisions are often made in isolation, without consideration of landscape ecological function or the contribution of the site in question for supporting the populations of sensitive species. An EIS should consider the landscape ecological function of the site and report on potential negative impacts of proposed developments on habitat connectivity, sensitive habitats or species. It should also note whether or not the site is part of a natural heritage system, as defined by the Province, municipality or Conservation Authorities. A map should be included showing the site and the proposed development in relation to surrounding habitat and land use features. Guidelines for assessing boundaries of habitat patches can be found in the Carolinian Canada Guide for Environmental Impact Statements.

Vegetation Communities

The EIS should include mapping of vegetation communities using the Ecological Land Classification System for Southern Ontario (Lee et al. 1998). The ELC mapping should at a minimum be to the Ecosite level, and wherever possible be to the Vegetation Type level. Ideally, ELC community polygons should be superimposed on a recent aerial photo in the report.

In order to adequately identify plant species it is preferable to undertake ELC mapping between the months of May and October. Any ELC communities designated as provincially, or globally uncommon or rare (G1, G2, G3 and S1, S2, S3) by the Natural Heritage Information Centre (NHIC) should be highlighted, and recommendations made for protecting these features (refer to NHIC website for definitions).

In addition to the ELC mapping the EIS should report on habitat quality features. This should include the stage of ecological succession in the communities, the presence or absence of old growth forest, any ephemeral pools on the site, the presence and extent of exotic species

infestations, signs of human use, and the presence, location, and extent of any form of habitat degradation.

Species

The EIS should contain records and locations of rare species, and any known sensitive or indicator species found on site. Potential impacts of the proposed development on species, and suggested mitigation measures, if appropriate, should be noted. The Natural Heritage Information Centre database, as well as any existing studies of the site and persons with local expertise, should be consulted for historical records. In addition, a site inventory is expected in order to undertake breeding bird and plant inventories, which are considered a minimum requirement. Although it is not expected that all sensitive and indicator species be highlighted, a complete list of species recorded should be included with the report that would allow peer reviewers to determine if these are present. This list should highlight nationally or provincially designated species at risk and any species ranked G1 to G3 and S1 to S3 by the Natural Heritage Information Centre. Incidental records of mammals, reptiles and amphibians should also be included. Surveys of breeding amphibians should be included if wetlands are present on or adjacent to the site. The schedule of species inventories should be undertaken based on Table 1. Specifics related to each survey are as follows:

Amphibians:

Natural ponds and ephemeral pools should be searched for salamander egg masses in mid April, and the number of egg masses by species recorded. To record all possible breeding frog species wetlands should be inventoried a minimum of one warm day in mid April, one warm day in mid May, and one warm evening in mid June. The approximate number of individuals seen and heard for each species should be noted.

Birds:

Breeding birds should be surveyed on at least two clear calm days in June. Surveys should take place between 5 AM and 9 AM. All species heard or seen should be recorded, as well as any direct evidence of breeding, such as nests or young. For large sites 10-minute point counts should be undertaken at regular intervals, encompassing all major habitat types.

Vascular Plants:

Plant inventory expectations depend on the types of habitat present and the size of the site. All vegetation community types should be included in the survey, with enough time invested to completely cover the entire site.

Active searching is the most suitable method for a plant inventory component of an EIS. Trees, shrubs and herbaceous species should be recorded. For forested areas surveys should be conducted in late May to ensure that sensitive spring ephemeral wildflowers are included. Surveys on open sites dominated by meadows should be undertaken at least once in late summer. Wetland plant surveys should be undertaken at least once in mid-summer. To

reduce the risk of overlooking species, surveys should go beyond this minimum requirement wherever possible, to include several site visits over the course of the warm season.

Table 1. Recommended times for species inventory.

	April	May	June	July	August	September
Amphibians	x	x	x			
Birds			x			
Plants		x		x		x

Appendix B

Aquatic Natural Heritage Features

A fisheries component to the EIS will apply to all projects and activities, large and small, in or near the water, that could "alter, disrupt or destroy" fish habitats, by chemical, physical or biological means. The federal *Fisheries Act* provides for the protection of fish habitat. Under the Act, "fish habitats" are defined as those parts of the environment "on which fish depend, directly or indirectly, in order to carry out their life processes". The Act defines "fish" to include all the life stages of fishes. The Act also states that no one is permitted to deposit a deleterious (harmful) substance including silt into water containing fish.

Information that should be included in the EIS, but is not limited to the following:

- The average annual high-water mark of the aquatic area adjacent to the work site.
- A description of construction details, timing, building techniques and materials. Also describe any alternative designs considered
- List of equipment to be used
- Photographs of the work site and the surrounding shoreline during ice free conditions
- Proposed start and end date for the project
- Description of the substrate at the work site indicating approximate percentages of sand, silt, clay, rock, gravel and aquatic vegetation, etc.
- An evaluation of potential construction and operating impacts on fish and fish habitat and the intended method(s) to reduce or compensate for any alteration of fish habitat
- Description of existing fish habitat and fish communities (species names) at or near the site, including rare species.
 - Fishes have different habitat requirements depending on the time of year. Please make note of whether the area also acts as a migratory route and/or spawning location and/or over-wintering area for other species (muskie, walleye, brook trout etc.) that may not have been present during the time of collection or site investigation.
 - If in-water works are required and no detailed assessment has been completed by the regulatory agencies, then these data will be required.
 - Minnow traps are not considered a suitable method for community inventories; unless coupled by an active sampling method.

To protect local fish populations during their spawning and nursery periods, the in-water work timing window established by the Ministry of Natural Resources (MNR), are:

Coldwater Fishery: July 1st – September 15th

Warmwater Fishery: July 1st – March 31st

If the intended work falls outside of this period, depending on circumstances and related activities, these windows may be amended.

The removal of vegetation should be minimized to the greatest extent possible. A rehabilitation plan should be developed to restore the construction site back to its pre-

construction state, or better, including inspections to ensure the vegetation has established. Any disturbed area along the banks and plateau area must be re-vegetated by September 15th to ensure the viability of the root systems. If this is not possible, these areas should be isolated with proper sediment and erosion control measures to prevent sediment from entering the water during spring freshet. There should be a plan in place to monitor the site the following year to ensure the mitigation measures put in place have been successful.

Appendix C

Buffer Zones

The Kawartha Region Conservation Authority recognizes the importance of conservation buffers. Buffer zones help to stabilize stream banks and prevent erosion; trap waterborne contaminants that pollute streams, rivers and lakes; and provide habitat for fish and wildlife.

For all new development, the Kawartha Region Conservation Authority will require that a vegetative buffer zone be maintained along both sides of a watercourse and along the shoreline of lakes. The buffer zone is to be measured perpendicularly outward from the edge of the annual high water mark as follows:

1. a minimum of 15 metres (49.2 feet) for all warmwater streams/lakes;
2. a minimum of 30 metres (98.4 feet) for all coldwater or marginally coldwater streams/lakes;
3. greater buffer widths may be required in areas characterized by high permeability, shallow soil depths, or extensive organics;
4. buffer zones may be interrupted to allow watercourse crossings;
5. trails and paths may be allowed in a buffer zone provided that:
 - there is a compensating buffer allowance added to the width of the buffer zone;
 - the trail or path does not come closer than 4 metres (13 feet) to the edge of a watercourse;
 - the trail or path does not impede the natural function of the valleyland; and
 - the trail or path has a permeable surface.

The Kawartha Region Conservation Authority shall encourage municipalities to place protective zoning on watercourse buffer zones.

Appendix D

Water Quality and Quantity Assessment

In situations where information on water quality is being provided based on the scoping exercise, it may be necessary to provide data on the following background parameters:

Dissolved oxygen, water temperature and specific conductivity, pH. At least ten (10) samples that would have been analysed for nutrients and other water quality parameters such as nitrate, nitrite, TKN, ammonia, total phosphorus, soluble phosphorous, suspended solids chlorides and total metals. Some situations may require shallow groundwater samples, and these should evaluate the parameters previously mentioned plus metals. Depending on the situation (e.g. site influenced by petroleum seepage) it may be necessary to sample for total petroleum hydrocarbons.

The minimum amount of samples should be taken between May and November, but (if required) other samples could be taken outside the stated time period. Importantly these surface water samples should seek to capture both dry and wet weather conditions.

Water quantity assessment should consider surface and groundwater resources, especially as it relates to fish, wildlife and amphibian habitat and productivity, channel morphology, gradients, recharge/discharge points, local upwellings and spring seeps. It should also consider the incidence of current and historical water takings.

Appendix E

Guidelines for Final Report

- At least two (2) copies of the report on standard sized paper (8.5 x 11) should be submitted to the KRCA.
- All maps should adhere to sound cartographic principles and should include a north arrow, a metric scale, and a legend corresponding to all the features depicted on the map.
- Maps not exceeding 11 x 17 can be bound in the report while large maps can be folded and inserted in a pocket within the report.
- The use of orthoimagery is encouraged and should be as recent as possible.
- For ELC mapping digital information is preferred.
- Either hard copy or digital versions of the final report is acceptable.
- The submitted copies of the report shall remain the property of the KRCA.

References

COSEWIC (2004) Canadian Species At Risk May 2004 Committee On The Status Of Endangered Wildlife in Canada. 49 pp.

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OMMAH 2005. Provincial Policy Statement. Ontario Ministry of Municipal Affairs and Housing. Toronto: Queens Printer for Ontario 37 pp

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