

ENVIRONMENTAL ASSESSMENT

A BEST PRACTICE BY THE NATIONAL GUIDE TO
SUSTAINABLE MUNICIPAL INFRASTRUCTURE

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to Sustainable
Municipal
Infrastructure



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INTRODUCTION

INFRAGUIDE – INNOVATIONS AND BEST PRACTICES

Why Canada Needs InfraGuide

Canadian municipalities spend \$12 billion to \$15 billion annually on infrastructure, but it never seems to be enough. Existing infrastructure is ageing while demand grows for more and better roads, and improved water and sewer systems. Municipalities must provide these services to satisfy higher standards for safety, health, and environmental protection as well as population growth. The solution is to change the way we plan, design, and manage infrastructure. Only by doing so can municipalities meet new demands within a fiscally responsible and environmentally sustainable framework, while preserving our quality of life.

This is what the *National Guide to Sustainable Municipal Infrastructure: Innovations and Best Practices* (InfraGuide) seeks to accomplish.

In 2001, the federal government, through its Infrastructure Canada Program (IC) and the National Research Council (NRC), joined forces with the Federation of Canadian Municipalities (FCM) to create the National Guide to Sustainable Municipal Infrastructure (InfraGuide). InfraGuide is both a new, national network of people and a growing collection of published best practice documents for use by decision makers and technical personnel in the public and private sectors. Based on Canadian experience and research, the reports set out the best practices to support sustainable municipal infrastructure decisions and actions in six key areas: municipal roads and sidewalks, potable water, storm and wastewater, decision making and investment planning, environmental protocols, and transit. The best practices are available on-line and in hard copy.

A Knowledge Network of Excellence

InfraGuide's creation is made possible through \$12.5 million from Infrastructure Canada, in-kind contributions from various facets of the industry, technical resources, the collaborative effort of municipal practitioners, researchers, and other experts, and a host of volunteers throughout the country. By gathering and synthesizing the best Canadian experience and knowledge, InfraGuide helps municipalities get the maximum return on every dollar they spend on infrastructure, while being mindful of the social and environmental implications of their decisions.

Volunteer technical committees and working groups—with the assistance of consultants and other stakeholders—are responsible for the research and publication of the best practices. This is a system of shared knowledge, shared responsibility, and shared benefits. We urge you to become a part of the InfraGuide Network of Excellence. Whether you are a municipal plant operator,

a planner, or a municipal councillor, your input is critical to the quality of our work.

Please join us.

Contact InfraGuide toll-free at **1-866-330-3350** or visit our Web site at **<www.infraguide.ca>** for more information. We look forward to working with you.

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EXECUTIVE SUMMARY

Environmental Assessment (EA) is a systematic process used to identify, analyze, and evaluate the potential effects of proposed activities and projects on the environment (including the natural, social, cultural, physical, and economic environment). The objective is to reduce or eliminate adverse environmental effects, which will help to achieve sustainable development objectives within a community. Environmental assessment is typically applied at the project/activity stage but can also be applied earlier, as a strategic step in formulating policy, plans, and programs.

It is important for municipalities to be knowledgeable about EA processes since they may be either a proponent or a stakeholder in them, depending on the nature of a project and the project proponent. A systematic and proactive approach to undertaking EAs, with a commitment to achieving EA objectives, can benefit individual projects as well as help work toward broader goals for sustainable municipal infrastructure and communities. For some municipal projects, there will be federal and provincial requirements to conduct an EA. The *Canadian Environmental Assessment Act* (CEAA) is federal legislation that applies to a physical work (a project) or physical activity that requires federal land, federal approvals or permits, and involves federal funding or is initiated by the federal government.

This document provides conceptual-level information that is pertinent to senior municipal decision makers in leading and managing EA planning processes, in participating as stakeholders in EAs and in making decisions for sustainable municipal infrastructure. In addition, this document outlines some emerging practices and the potential for a comprehensive approach to EAs to assist municipalities in working toward broader sustainable community goals.

There are many benefits of undertaking EA in a proactive manner. In addition to meeting legal obligations (where applicable) and due diligence requirements, the EA process gives decision makers a better understanding of possible direct and in some cases indirect environmental impacts of projects and how to mitigate these impacts. Related benefits include process improvements, management benefits, and public buy-in from following a systematic decision-making process; reduced environmental impacts; reduced overall costs of project development; and assistance in fulfilling sustainable development objectives by ensuring that regard is paid to broad environmental considerations. There can be challenges in undertaking EA for particular projects, but it is possible to mitigate these through a proactive approach. For example, early identification of key stakeholders and government departments and agencies with an interest in a project will save time and effort for the project as a whole.

There exists a tremendous range in the scope and level of detail at which an EA can be conducted. Environmental assessment requirements for a project will depend on the nature and location of the project and related issues, such as the potential for environmental effects, public interest or concern, and jurisdictional issues. The point at which an EA is triggered in the project cycle can also vary, depending on the applicable legislation. As good practice, it is recommended that the EA be initiated as early as possible in planning the project proposal.

Despite variations in EA legislation among the various jurisdictions, most EAs follow similar steps in their conduct. The generic key steps from project initiation to follow-up are outlined in this best practice.

For EA to be adopted as an effective municipal planning and decision-making process, there needs to be a strong commitment to environmental protection, as articulated through a community vision and strategic plan. These higher-level commitments and plans are needed to provide environmental objectives and principles on which the EA can then build. The plan and policy foundation of the municipality can support project decisions when EA process recommendations are challenged by stakeholders. Where EA is not required by legislation, municipalities can adopt EA to assist in land development planning and infrastructure development since it provides a solid decision-making framework and process.

Recognizing that it may not be possible for a municipal staff member or members to become fully conversant with all aspects of the EA process in the jurisdiction, even limited knowledge is beneficial, with considerable value coming from familiarity with the agencies, people, and processes involved. If sufficient resources cannot be established by the municipality in-house, or if a particular project necessitates retention of outside experts, a suitable level of internal capability will facilitate the effective management of the outside experts and provide effective liaison with the decision makers. In identifying appropriate outside resources, the municipality should look for professional level credentials in the required areas of expertise and a proven track record.

Senior municipal decision makers can evaluate the application of EA in two broad areas. The first is the management of the process, including the degree of implementation and level of proactive commitment within the municipality to a strategic and proactive approach to EAs. Key management measures can be used to evaluate the management aspects of the process implementation (such as the cost of EA processes as a percentage of total project costs). The second aspect of evaluation is to assess the results achieved through implementation of EA process outcomes in terms of environmental, social, and economic benefits. Evaluation of the benefits of EA in terms of sustainable infrastructure or meeting broader sustainability goals is more difficult, but the monitoring results from implemented EA projects may provide important information for the municipality's sustainable community indicators. In addition, specific benefits

from changes to the project as a result of the EA process may be identified for many projects, including short- and long-term environmental improvements, measures of public satisfaction and involvement in municipal consultations, and cost savings resulting from choosing an optimal project alternative.

There are numerous information sources available to municipalities on EA. For provincial/territorial EA processes, it is advised that the applicable department or agency be contacted and their Web site visited before beginning the EA to ensure that the most up-to-date legislation/guidelines are followed. In the case of federal legislation, the Web site of the Canadian Environmental Assessment Agency should be consulted. These information sources provide the municipality with details regarding the triggers for an EA, exemptions or exclusions to the EA, the levels or classes of EA, appropriate contacts and the processes specific to the applicable legislation. Guides for proponents and for the public are typically posted on the Web sites and links are usually provided to access the actual text of the legislation.

1. GENERAL

1.1 EA INTRODUCTION

Environmental Assessment¹ (EA) is a systematic process used to identify, analyze, and evaluate the potential effects of proposed activities and projects on the environment.² The objective of the EA process is to reduce or eliminate adverse effects on the natural, social, cultural, physical, and economic environment, which ultimately helps to achieve sustainable development objectives within a community. Environmental assessment provides a framework for the examination of alternatives and helps to plan and design projects to minimize adverse effects and maximize benefits. It is typically applied at the project/activity stage but can also be applied earlier, such as in the assessment of policy, plans, and programs. This is known as strategic EA or SEA.

Environmental assessment has its origins in the 1960s, when the combined effects of population growth, urbanization, industrialization, and natural resource extraction began to result in increasing environmental damage. In response, governments came under increased public pressure to manage development processes in ways that would avoid negative environmental outcomes. In the United States, the *National Environmental Policy Act* (NEPA) was legislated in 1970. This was followed in Canada by the first federal and provincial environmental assessment requirements, including the federal Canadian Environmental Assessment and Review Process (EARP) and the Ontario *Environmental Assessment Act*. Initially, EARP existed as a policy guideline; however, its role was raised to that of a government order in 1984. This was followed in 1995 by the promulgation of the more comprehensive *Canadian Environmental Assessment Act* (CEAA). At the provincial/territorial level, various environmental assessment acts were also established to further define EA requirements and processes within the areas of provincial/territorial responsibility.

There is little EA legislation in place at the municipal level, although some municipalities reflect environmental protection goals through policies and bylaws, such as in community strategic plans and official (land use) plans that guide development in a community. Environmental assessment can complement these other municipal mechanisms to protect the environment.

The benefits of EA can most readily be realized if the EA process is supported by a strong commitment to environmental protection, as articulated through the community vision and municipal strategic plan(s). Even where EA is not a mandatory requirement, the systematic process advocated by EA can serve as a model for a sustainable municipal infrastructure decision-making approach.

¹ Environmental assessment (EA) or environmental impact assessment (EIA) are interchangeable terms and are distinctly different from environmental site assessments that examine soil and groundwater contamination for an individual piece of property.

² The term "environment" has generally been expanded in most EA legislation to recognize the natural, social, cultural, physical, and economic environment.

Senior municipal decision makers can ensure the effective implementation of EA through evaluation of the implementation and results of EA projects.

Benefits of EA

The EA process affords decision makers with a better understating of possible environmental impacts and how to mitigate these impacts. Related benefits can include:

- process and management benefits with a framework to support decisions and gain public support for projects/activities;
- reduced environmental impacts;
- reduced overall costs of project development by considering relevant issues upfront before decisions are made; and
- assisting with sustainable development objectives by ensuring that regard is paid to environmental considerations.

1.2 TERMINOLOGY

There are several terms associated with environmental assessment processes across Canada. This document uses the term “environmental assessment” in a generic sense as the process to identify and assess the environmental effects of a proposed project or activity and to develop mitigation to reduce those effects. We refer to this process as “EA,” which is also known in some jurisdictions as environmental impact assessment (EIA) or environmental and social impact assessment (ESIA).

EA as a Voluntary Process

It is recommended by this BP document that, even if a particular project being undertaken by a municipality does not trigger an EA under applicable legislation, the municipality nevertheless undertake an informal EA as an internal, voluntary action. The need for such a review may be suggested or implied in the case of policies or bylaws that discuss the need for mitigation measures in certain situations. Even where this is not the case, the municipality may derive considerable benefit from an internal review of the possible environmental consequences of an undertaking, even a simple one. Such reviews may identify inadequate planning, unanticipated consequences, or possibly even lower cost alternatives. Voluntary reviews need not be complex to be effective and to have value.

1.3 PURPOSE AND SCOPE OF THIS DOCUMENT

Environmental assessment legislation and associated requirements are complex and constantly changing. It is important for municipalities to be knowledgeable about the processes, proactive in initiating their early involvement in them and committed to achieving the EA objectives, since municipalities may find themselves filling the role of either a proponent or a stakeholder in EA processes, depending on the nature of the project. As a proponent, the municipality may be subject to provincial/federal EA legislation for project proposals that it either undertakes directly or through its partners. In other cases, the municipality may be a stakeholder in an EA process and be required to participate and/or provide

input to ensure that municipal environmental objectives are being recognized and accounted for in the project.

This best practice provides an overview of the EA process to assist municipalities in understanding:

- the nature of EA;
- the objectives and goals of EA including
 - project planning/modifications to avoid or minimize adverse environmental effects, and
 - project design/mitigation requirements to address adverse effects;
- why municipalities should engage in EA for project planning;
- the role of EA in a municipal context;
- EA process and methodologies;
- benefits of public and First Nation involvement/consultation in EA;
- challenges faced by municipalities in their involvement with EA; and
- emerging practices for EAs.

It is not the intention of this document to prepare an individual to conduct an EA. Environmental assessments are typically undertaken by multidisciplinary study teams with education/training in a number of environmental disciplines. Rather, the intent of this document is to provide conceptual level information regarding EA for municipal decision makers to:

- understand the role of EA in project planning;
- determine when an EA process should be initiated/would be of value;
- assist in the preparation of a request for proposal to conduct an EA;
- understand the potential of EAs to improve decision making for sustainable municipal infrastructure; and
- participate as stakeholders in EA studies being conducted by other proponents/agencies.

Ultimately, it is the intention of this document to promote the use of EAs by Canadian municipalities and to encourage the advancement of the practice.

1.4 HOW TO USE THIS DOCUMENT

Section 2 provides an overview of the rationale and benefits of undertaking EAs as part of project planning and development activities.

Section 3 describes an overview of a typical EA process and introduces some methodologies for undertaking EAs.

Section 4 provides some guidance on how a municipality can support the use of EAs.

Section 5 describes the importance of follow-up by senior-level management of EA processes.

This document is one of a series of best practice guides that support sustainable infrastructure decision making by elected officials and senior administrative and management staff of municipalities. This and other best practices advocate a strategic and proactive approach that positions infrastructure management within a broader long-term municipal vision, with associated strategic goals and planning processes. These other best practices present policy and evaluation methods or tools that complement and support the effective application of EA. For example, readers of this best practice may also be interested in:

- Strategic Commitment to Environmental Protocols by Municipal Corporations;
- Accounting for Environmental and Social Outcomes in Decision Making; and
- Developing Indicators and Benchmarks.

1.5 GLOSSARY

Note: the following definitions may not be consistent with terminology used in specific pieces of EA legislation. The reader is cautioned that such differences may have significant legal implications. Accordingly, reference should be made to the applicable regulatory document whenever a specific project is being considered.

Adaptive management — A systematic process for continually improving policies and practices by learning from the outcomes of their implementation.

Adverse effect — An effect that damages the environment.

Alternative methods/means — An alternative way of implementing the proposed solution (e.g., an alternative route for a road, alternative designs for a facility, alternative mitigation measures).

Alternatives to/solutions — An alternative way of resolving the identified problem or deficiency.

Class environmental assessment — Some jurisdictions have provision for the preparation of Class EAs, which are pre-approved EA planning processes for specific types of infrastructure or activities. Class EAs typically have a provision **which may** elevate the EA to a higher level as a result of adverse environmental effects or stakeholder concerns.

Class screening — Under the *Canadian Environmental Assessment Act* (CEAA), the environmental screening of some projects may be streamlined through the use of a class screening, which is a pre-approved process that contains the accumulated knowledge of the environmental effects of a given type of project and the measures that are known to eliminate or mitigate those likely effects.

Cumulative effects assessment — An assessment of the incremental effects of an action on the environment when the effects are combined with those from other past, existing, and future actions.

Deleterious substance — Any substance, that if released into the environment, could adversely affect wildlife habitat and/or wildlife populations as well as human health.

Effect significance assessment — The process of determining the value of the net or residual effect by considering, for example, effect magnitude, effect duration, effect frequency, and sensitivity of the affected environment.

Environment — Typically includes the natural, biophysical, social, economic, health, and cultural components of our environment.

Environmental effect — Any change, either positive or negative, that a project may cause to the environment, including changes to health, socio-economic conditions, physical or cultural heritage, and land and resource uses.

Environmental impact assessment — The same process as EA; also known as EIA.

Environmental protocol — A set of considerations governing the impact of municipal infrastructure on the environment.

Environmental site assessment — The assessment of property or land to determine soil and groundwater contamination levels.

Mitigation — The elimination, reduction, or control of an adverse effect of a project through an implemented activity or action. Mitigation may include compensation.

Municipality — A legally incorporated or duly authorized association of inhabitants of limited area for local governmental or other public purposes.

Net effect — The resultant effect after mitigation has been applied.

Proponent — The person, organization, authority, or government that proposes a project.

Residual effect — See net effect.

Scoping — The process of determining what the EA should focus on including the environmental and project components to be considered.

Screening — A screening level EA is typically an initial level of assessment to determine the potential for effects. The results of a screening may lead to a need for a more comprehensive level of assessment.

Strategic EA — The assessment of policies, plans, or programs that may have environmental implications through an EA process.

Trigger — An action or thing that initiates the need for an environmental assessment.

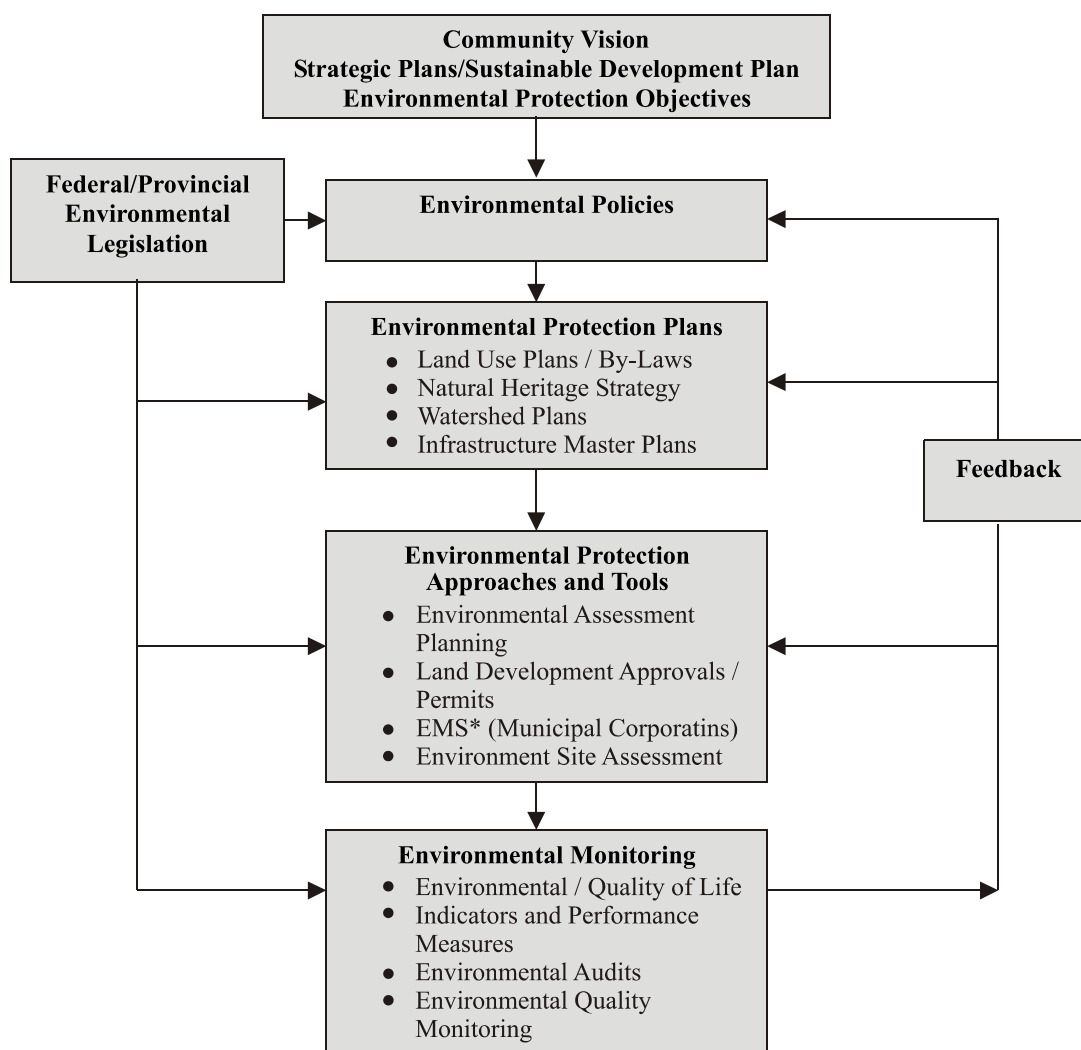
Valued ecosystem component — Any part of the environment that is considered important by the proponent, public, scientists, or government involved in the assessment process. Importance may be determined on the basis of cultural values or scientific concern.

2. RATIONALE

2.1 BACKGROUND (ROLE AND VALUE OF EA IN MUNICIPAL DECISION MAKING)

As shown in Figure 2-1, EA is one component of the larger system of environmental protection/sustainable development planning for a municipality and requires a frame of reference for its implementation. The environmental policies and plans of a municipality serve as this framework and these in turn should reflect the community vision, as illustrated by the hierarchy of boxes in Figure 2-1.

Figure 2-1: Municipal Environmental Planning Framework



*EMS: *Environmental Management Systems*

Environmental assessment can be integrated at two points in this overall planning framework. The first is through the use of strategic environmental assessment (SEA) when developing environmental policies, as shown in the Environmental

Policies box of Figure 2–1. The second point where EA is more typically applied is in the assessment of project proposals, either proposed by the municipality or proposed by other proponents. This is indicated in the Environmental Protection Tools box of Figure 2–1. In this context, EA can be considered an environmental protection approach that allows for the incorporation of environmental objectives/policies and environmental protection plans of a municipality into the project planning process. Environmental assessment in itself does not achieve sustainable development, but it can guide decision makers to help move toward sustainable development and help decision makers determine how (if at all) a human activity should occur so environmental impacts are minimized.

A key feature of the environmental planning framework presented in Figure 2–1 is that of the process of feedback to all stages within the framework. The feedback can be used to establish an adaptive management approach, whereby the experience of implementation is reflected back into policy formation and plan development.

2.2 BENEFITS OF AN EA PROCESS

As mentioned above, EA is a systematic process that links potential adverse project effects (**defined problems**) to environmental impacts. This systematic process also allows for the documenting of mitigation strategies to address known or unknown negative effects (**defined solutions**). A knowledgeable and proactive approach to the EA process gives decision makers a better understanding of possible environmental, social, and economic costs, and how to mitigate these costs. This insight for decision-makers is the major benefit of an EA. Related benefits include the following.

Process/ Management Benefits

- Legal obligations are met where relevant triggers have been initiated and fulfilling the requirement is mandatory.
- Risk management and communication is improved and due diligence demonstrated.
- **Allows for the implementation of land use planning decisions**
- **Helps improve deep infrastructure decision making & investment planning**
- Improved development planning demonstrates the municipal commitment to environmental management, leadership, and safeguarding the public trust.
- The proponent receives some certainty in terms of the approvals process.
- Stakeholder participation and communication is well defined and made transparent.
- Opportunities improve for building relationships with communities, including First Nations communities, through the use of a transparent process.
- Stakeholder support or concerns for the proposal are made clear.
- Political interference is minimized through process transparency.

Reduced Environmental Impacts

- Adverse effects can be identified, assessed, and mitigated, or designed “out” before project implementation.
- Cumulative effects can be better understood and considered.

Costs Avoided

- Through reducing environmental damages, societal costs can be avoided or minimized.
- Proponent costs can be reduced through a well-defined process, involving stakeholders in a timely manner to avoid revisiting decisions in advanced project development stages.

Assists in Meeting Sustainable Development Goals

- Make sure the natural, social, cultural, physical, and economic environments are considered during project development.

2.3 CHALLENGES

Environmental assessment processes can be complex and, in the case of large or controversial projects, require significant resources and time to complete.

Challenges that a municipality may encounter in conducting an EA are outlined below as well as possible solutions to address these challenges.

Table 2–1: EA Challenges and Solutions

Challenges	Solution
Time and Cost — Undertaking an EA can increase the time and cost of project planning at the front end of a project. The need for approvals can extend timelines and delay construction start-up.	Proponents/municipalities need to factor in and plan for EA costs and time required for their completion. The total cost of undertaking an EA is typically only a small fraction of total project costs and can result in significant savings by planning the project properly in the first place. Projects should be initiated early to allow time to complete the EA and obtain the necessary approvals.
Loss of Control — Proponents often think they will lose control of project decisions in initiating an EA process, particularly if the public is to be involved.	EA provides proponents with a planning/ decision- making framework. Proponents are not obligated to adopt what stakeholders suggest. The decision-making process still largely rests with the proponent. The need to implement mitigation as a condition of approval is typically negotiated with the approval agency.
Expertise — Particularly in the case of smaller municipalities, suitable EA expertise may not be available in-house.	EAs are typically undertaken by external consultants with specific expertise in the conduct of EAs. Training is available through various agencies (e.g., the Canadian Environmental Assessment Agency) for municipal staff to increase their level of EA expertise.

Challenges (cont'd)	Solution (cont'd)
Determining EA Scope — One of the greater challenges of the EA process is in determining the scope of the EA, that is, the components of the project to be assessed, how to assess, and the level of detail.	The preparation of an initial EA scoping document or EA terms of reference can help in the scoping decision by engaging the public and agencies in this decision. A scoped EA provides greater direction and assurance to a proponent in conducting the EA.
Cumulative Effects — Despite the development of numerous procedures and models to assess cumulative effects, determining the potential for project effects to combine with other future projects and activities remains a considerable challenge.	The expectation for cumulative effects assessment has become more modest in recent years. Rather than attempting to assess these effects in detail, approaches now focus on determining their potential for occurrence, then establishing appropriate monitoring and response mechanisms to manage them. Having larger environmental plans in place (e.g., watershed plans) can help in the assessment of cumulative effects as well.
Politics — Political interference can influence the EA process.	It is hoped this best practice will assist municipal decision makers in understanding EA requirements and the need to avoid political interference, except in unusual circumstances. Political leaders should be kept informed through regular briefings by staff and invited to key public events.
Lack of commitment — Lack of commitment to environmental protection by a municipality tends to lead to the allocation of insufficient resources, half-hearted information gathering and analysis, and strained relations for other parties involved in the process.	Corporate commitment to the environment is essential if a municipality is to expect a satisfactory outcome of an EA process. A strategic commitment by senior municipal leaders to undertaking EAs in a proactive and transparent manner will mitigate this challenge.
Demands on Staff Time — Initiating an EA could require significant input from staff, to manage the project and work with consultants (e.g., to obtain needed information, co-ordinate consultation activities, keep council informed, field public inquiries, etc.).	Staff need to be given adequate time to participate in EAs, particularly if they are to co-ordinate them. It may be necessary to assign one or more staff members to assist in the conduct of EAs. In addition, training for key staff members may reduce the staff time required for EAs.
Multiple EA Legislation — A proposal may be subject to more than one EA process. This can lead to uncertainty for a proponent due to the need for different EA requirements to be met and the need for more than one approval.	In some provinces, EA harmonization agreements exist between provincial and federal governments. Where no such agreements exist, governments work together in conducting EAs, although there is a greater onus on the project proponent to ensure that all requirements are met.

The key to meeting the potential challenges of EA is to proactively manage the process so that sufficient time can be allocated to each required step. Time is particularly important to identify, contact, and involve potential stakeholders and interested senior government departments or agencies.

3. METHODOLOGY

3.1 PRINCIPLES OF EA

Although there is no accepted worldwide standard for EA, most follow a similar process and subscribe to a similar set of principles. In the absence of an EA standard, the International Association for Impact Assessment (IAIA) has developed a number of EA principles to help guide the practice and promote the advancement of EA. These principles are summarized as follows.

Table 3–1: IAIA EA Principles

Purposive	The process should inform decision making and result in community protection.
Rigorous	The process should apply the best applicable science.
Practical	The process should result in information and outputs, which assist with problem solving.
Relevant	The process should provide sufficient, reliable, and usable information for decision making.
Cost-effective	The process should achieve objectives within limits of available information, time, resources, and methodology.
Efficient	The process should impose the minimum cost burdens in terms of time and finance on proponents and participants.
Focused	The process should concentrate on significant environmental effects and key issues.
Adaptive	The process should be adjusted to the realities and circumstances of proposals under review.
Participative	The process should provide appropriate opportunities to inform and involve interested stakeholders.
Interdisciplinary	The process should employ appropriate methodologies on relevant biophysical and socio-economic disciplines.
Credible	The process should be carried out with professionalism, rigour, fairness, objectivity, impartiality, and balance.
Integrated	The process should address the interrelationships of social, economic, and biophysical aspects.
Transparent	The process should be clear in its approach and ensure the public access to information.
Systematic	The process should result in full consideration of all relevant information on affected environments, of proposed alternatives and measures to reduce the effects.

3.2 THE EA PROCESS AND THE PROJECT CYCLE

There exists a tremendous range in the scope and level of detail at which an EA can be conducted. The time required to complete an EA can range from a few days to several years. The amount of documentation produced for an EA can range from a one-page screening checklist to multi-volume reports hundreds of pages long.

Factors that influence the scope of an EA include:

- the complexity of the project (i.e., technical, and/or construction complexity);
- the complexity of the environmental issues associated with the project;
- the geographic scale of the project and study area;
- the sensitivity of the study area;
- land requirements and jurisdictional issues;
- the potential for, and significance of, environmental effects;
- the level of public concern related to the project; and
- the requirements of the specific legislation applicable to the EA.

Canadian Environmental Assessment Act

The CEAA is federal legislation that applies to a physical work (project) or physical activity that:

- requires federal land;
- requires federal approvals/permit;
- involves federal funding; and
- is initiated by the federal government.

Environmental assessments under the CEAA may be completed as either a screening, comprehensive study, or panel review. For all CEAA EAs, there is at least one federal department acting as a responsible authority (RA). The RA oversees the EA and makes the sign-off or approval decision.

Although an EA can be applied to policy, plan, or program decisions (known as strategic EAs), EAs are most typically applied at the project level. The point at which an EA is triggered in the project cycle depends on the applicable legislation. Some processes (e.g., the Ontario EA Act) are initiated very early on in the planning process with the requirement to consider project need and alternatives to the project (see Section 3.3 for details). For other legislation, the EA is triggered much later in the project cycle (e.g., after the proposed project or undertaking has been identified) and thus the EA focuses on assessing the environmental effects of the proposed project and identifying appropriate measures to reduce effects. *As good practice, it is recommended that the EA be initiated as early as possible in the planning of the project proposal.*

As well, the action that begins the initiation of the EA process also varies. In some cases, an EA will be triggered by an application by the proponent for a permit to undertake some component of the project. Examples of such permits are fisheries authorizations, waste deposit licences, and water use approvals. In other cases, an EA may be triggered if a government agency becomes involved in the project through the provision of resources, such as money and land. In some jurisdictions, the need for an EA and the level/scale of the EA to be conducted is based on the type of project.

Municipalities should contact their federal or provincial/territorial EA office as soon as possible once a project concept has been established. The early initiation of this contact will allow the proponent to maximize control of the process steps, as well as provide an early indication of the likely complexity of the EA and the resources that may be required to complete it. This provides valuable planning and budgeting information for the municipality.

The need for federal Department of Fisheries and Oceans (DFO) approvals under the federal *Fisheries Act* as a result of adverse effects to fish habitat and fish populations from a proposed project is a common trigger for the CEAA. Project design information, at least at a conceptual level, including proposed mitigation, is often required for the EA screening to be completed.

EA Harmonization/Coordination

There may be projects that are subject to both provincial and federal EA processes. Some provinces have harmonization agreements in place whereby one EA can be completed to meet both federal and provincial requirements and approvals are coordinated. In provinces where no agreements exist, separate EA reports are typically required and approvals are sought separately.

3.3 KEY STEPS OF THE EA PLANNING PROCESS

Despite the variation in EA legislation among jurisdictions, most EAs follow similar steps in their conduct. Figure 3–1 illustrates the key generic steps of the EA planning process. *Not all EA legislation in Canada requires all of these steps to be undertaken in completing an EA.* Whether a step is required often depends on the size and complexity of the project. The following sub-sections describe each of the key steps identified in Figure 3–1.

EA and Land Use Planning

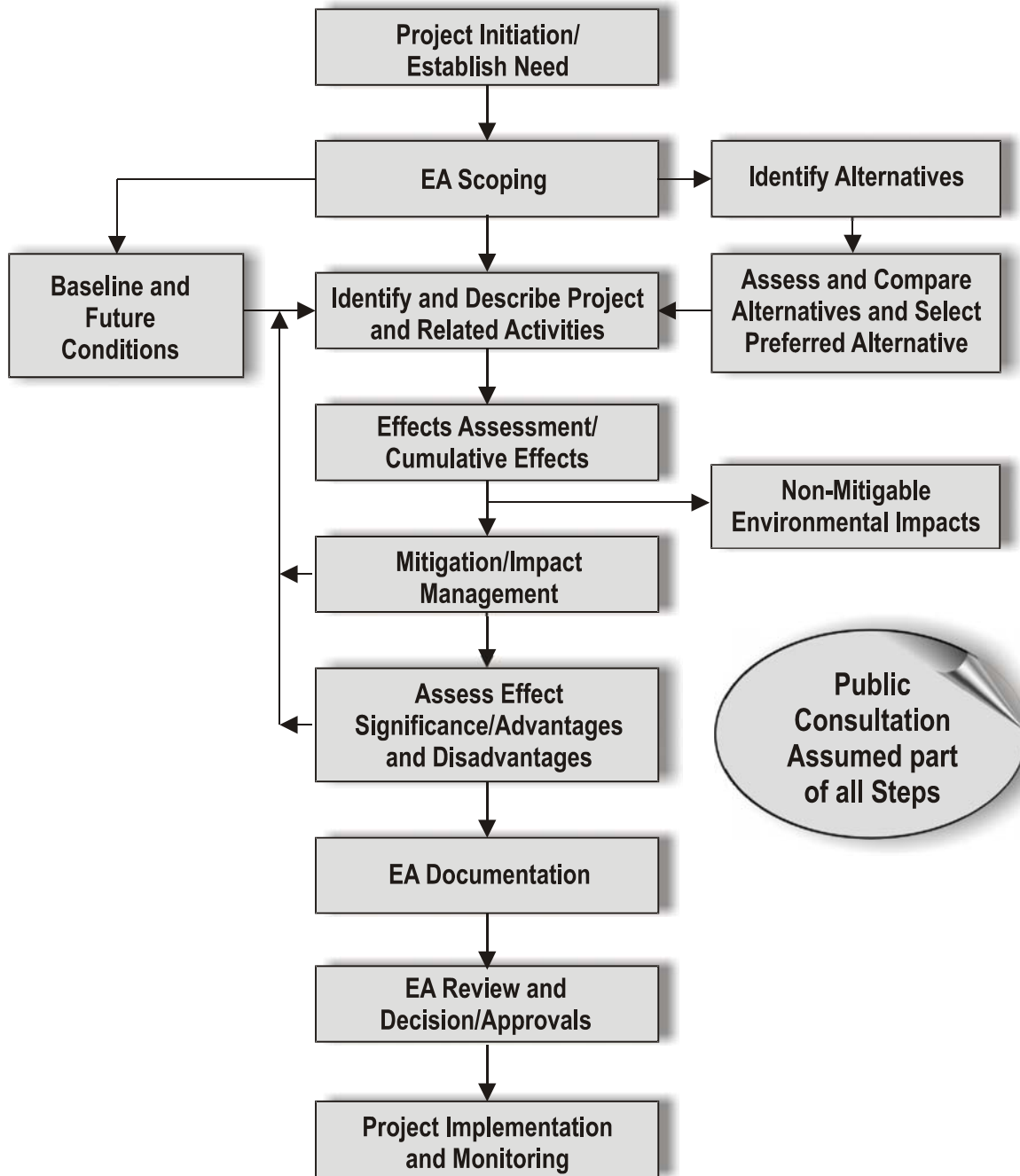
There exists the potential for overlap between EA and land development approval processes, such as in the installation of new wastewater servicing for a new residential subdivision. This servicing might be subject to both EA and land development approvals though planning legislation. In such a case, to avoid duplication of approvals, some jurisdictions would require only the land use planning approval under the condition that the key steps of the EA process are also fulfilled. EA can provide a valuable decision making process for land use planning and development by providing a framework for the systematic evaluation of alternatives.

3.3.1 PROJECT INITIATION/NEED

The first step of the larger EA planning process is the recognition of the need for the proposal. The project proposal need might be in the form of an existing problem or the expectation of a future deficiency. If the proponent is a private sector entity, the need may be in the form of a business opportunity that the entity wants to advance. Often, need is established through another planning process (e.g., a solid waste management plan). For a municipality, the need for new infrastructure, for example, may be in response to community growth; thus there is a need to service this growth.

Not all EA processes/legislation require the consideration of need. Even where the EA legislation does require the consideration of need, some proponents have argued that need determination is part of internal business operations and thus should be conducted in advance of the EA being initiated. That said, the consideration of need is a **fundamental** part of an EA as it helps to rationalize the project and demonstrates to stakeholders that the proposal is justifiable. Many EAs have been denied approval on the basis of the proponent not being able to justify the project.

Figure 3-1: EA Process Outline



3.3.2 EA SCOPING

Environmental assessment scoping is the process of determining study “boundaries” and typically involves some form of contact with the public. What elements of the project are to be assessed, and what components of the environment should be considered? Scoping helps focus the EA on the most critical elements. The extent to which scoping is required in an EA varies by jurisdiction, but even when not required by legislation, for complex projects, it has become common practice to produce an EA scoping document.

How Far to Scope?

A common challenge for EA is determining how far to scope or focus the EA. If the assessment is scoped too widely, it could bog the process down on issues that are not absolutely critical. Alternatively, if the project is scoped too narrowly, it may not adequately address the potential effects of the entire project (including accessory projects) and/or fail to meet legislative requirements if certain components of the EA are omitted. Scoping continues to evolve and is often being “tested” through the court system in Canada. Municipalities are advised to consult with regulatory agencies in undertaking scoping activities.

Issues examined as part of the EA scoping (also called EA terms of reference) document include:

- project rationale;
- project description/elements of the project to be assessed;
- study area boundaries (spatial and temporal);
- description of general study area conditions;
- the consultation plan;
- components of the environment to be assessed;
- the EA approach/methodology; and
- the EA schedule.

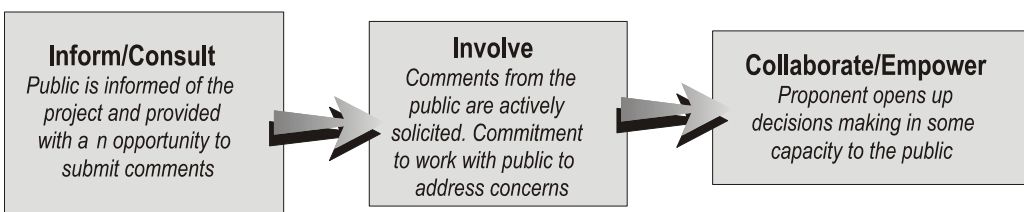
In some jurisdictions, the scoping document needs to be submitted for approval by a regulatory agency.

The CEAA requires the determination of “scope of project” and “scope of factors” for the EA. Scoping the project involves determining the nature and limits of the project components to be analyzed for the EA. The scoping of factors involves determining the breadth and level of detail for analyzing the project's environmental effects. Scoping is to be undertaken/overseen by the federal responsible agency, but does not require the preparation of a scoping document.

3.3.3 PUBLIC AND AGENCY CONSULTATION

The involvement of the public, interest groups, and agencies (key stakeholders) is one of the most important elements of an EA. The success of an EA is often based on the degree of stakeholder support. Consultation provides an opportunity to inform stakeholders and to obtain their input and support for the proposal. *Consultation is strongly advised for most EAs.* There exists a tremendous range in the extent to which the public can be involved in an EA study, as shown in Figure 3–2.

Figure 3–2: Continuum of Public Consultation



For most EAs, the first and second levels of involvement are most typical as proponents are hesitant to open up decision making to other stakeholders. Shared decision making may be more appropriate for community-led initiatives that might be seeking government funding and thus may require an EA.

Consultation is optional under some EA legislation and required in others. Where it is required, the timing of the consultation is typically specified, but the form of consultation is not specified. For example, as a minimum, consultation is typically recommended when an EA is initiated and again after the EA has been completed in draft. This consultation could be in the form of a public meeting or, more simply, through a notice in the local newspaper. For more complex EAs, additional opportunities may be provided for public input, such as in the examination of alternatives, the selection of assessment criteria, mitigation development, etc.

Relevant federal and provincial agencies should be contacted to obtain information regarding the proposed study area, to identify other approvals potentially required and keep them informed.

A tremendous range of mechanisms are available to engage the public in an EA process. Common methods include:

- notices in local media;
- newsletters;
- public meetings;
- open houses;
- workshops;
- liaison committees;
- side visits;
- kitchen table meetings;
- opinion surveys;
- design charrettes;
- Web sites; and
- documentation review opportunities.

A consultation program needs to be designed to satisfy the specific circumstances of the project. Input on the proposed consultation program should be obtained from the public in the initial activities. Not all EAs require extensive consultation opportunities. The amount, form, and frequency of the consultation program should consider the complexity of the proposal and the level of stakeholder interest/concern.

It is important that all comments received from the public be documented and distributed to the study team for consideration.

When First Nation communities may be involved/affected by a proposal, it is critical that they be contacted early to obtain their input on how they would like to be consulted during the process.

The Township of Cavan Millbrook North Monaghan, Ontario (population 8,453) undertook a Class EA in order to determine the improvements required for the provision of water and wastewater to neighbouring Fraserville Secondary Plan area and parts of the North Monaghan ward. Public consultation processes were simultaneously undertaken and included two sets of public meetings where comment sheets were provided. Those comments were reviewed and responded to. Steering committee meetings were also open to the public. All notices and updates during the public consultation process were continuously posted on the township's website.

3.3.4 IDENTIFY PROJECT ALTERNATIVES

Although not required for all EAs by legislation, the examination of alternatives is an important step as it provides an opportunity to consider other solutions/methods to the problem at a point in the process before decisions are made. Examining alternative solutions provides for the greatest flexibility to minimize environmental effects. Alternatives can be examined as either “alternatives to” or as “alternative means or methods”. Alternatives to are functionally different ways of solving a problem. For example, for a roadway deficiency problem, possible alternatives might include roadway widening, new roadway development, improved transit service, and bicycle lanes. If the preferred solution for the same problem was a new roadway, the alternative methods could include alternative routes/locations for the roadway.

3.3.5 ASSESS AND COMPARE ALTERNATIVES

The process to select a preferred alternative usually involves the assessment of each alternative against a set of evaluation criteria and then the comparative evaluation of those options. Alternatives to evaluations tend to be more conceptual in nature and usually rely on secondary information sources. The evaluation of alternative methods is more detailed and is usually spatially specific involving the assessment of actual on-the-ground effects and primary data collection.

Once the alternatives have been identified and assessed on the basis of a set of evaluation criteria and possible indicators, options are then ranked and/or scored to reflect relative importance levels. Input from stakeholders can also be sought to determine the relative importance of the criteria. On the basis of these comparative rankings, the alternatives would then be comparatively evaluated through an evaluation methodology.

Numerous evaluation methodologies exist. Considerations to take into account in selecting a methodology include the type of data collected (qualitative or quantitative), the number of alternatives being considered, the number of evaluation criteria, the level of rigour required, how the results are to be communicated to stakeholders, and the range of difference among the alternatives. Some possible evaluation methods include:

- dominance analysis;
- pair-wise comparison;
- additive weighting;
- concordance analysis; and
- simulation modelling.

A common error in the use of comparative evaluation methods is the application of mathematical operations to ranked data. While rankings provide an indication of the relative difference among a set of alternatives, ranked data cannot provide an indication as to the level of difference among those alternatives. For example, we may know that Alternative A is preferred over Alternative B, but we do not know how much more Alternative A is preferred over Alternative B. As a result, methodologies, such as additive weighting, are not appropriate when ranked data are involved.

The individual co-ordinating the evaluation should be familiar with evaluation approaches and the conditions under which they should be used. Readers are encouraged to consult the references in this best practice or textbooks covering EA processes if they would benefit from understanding these approaches in detail.

3.3.6 PROJECT DESCRIPTION

To provide a basis for the EA, it is necessary to describe the proposal. This step is often a challenge as the full nature of the project is not always known. The project needs to be described in enough detail to allow for an accurate assessment of the proposal. Most EAs require the consideration of all phases of the project life cycle including construction, operation and maintenance, and decommissioning. The project to be described and assessed is to include the principal project, plus all accessory projects required to support the project. For example, if the principal project is a new wastewater treatment plant, the project description would also need to include new roads to access the site as well as the outfall pipeline.

In conducting an EA, the nature of the project could change (e.g., as a result of public concern), thus requiring a change to the project description. If this were to occur, the assessment would need to be re-examined to confirm that it would still be accurate in light of the changes to the project description.

3.3.7 BASELINE CONDITIONS CHARACTERIZATION

Most EAs involve some description of baseline biophysical and socio-economic conditions. The description of existing conditions is required to provide the basis from which to assess future environmental effects with the proposed project in place. The characterization of baseline conditions is more difficult in study areas that are expected to change in the near future, perhaps even before the proposed project is developed. This might involve green-space properties that are to be redeveloped, for example. Ultimately, the environment to be characterized should be the future environment so it can be compared against the future proposed project. However, EAs typically tend to assume the current conditions will be the same in the future due to the difficulties in characterizing some unknown future baseline condition.

The characterization of baseline conditions typically can rely on secondary source information and should include the full scope of the environment (natural, social, economic, cultural, and physical). Information should be mapped where possible to help present and communicate the information to stakeholders. Baseline condition information is also useful in facility siting/routing constraint mapping exercises.

3.3.8 IMPACT ASSESSMENT

Impact assessment is the process of determining whether the proposed project will result in an effect (either positive or negative), and if so, describing the nature of any effects. The impact or effects assessment stage is typically organized in one of two ways:

- One way is a set of *assessment criteria* that covers both biophysical and socio-economic considerations (e.g., potential for removal of terrestrial habitat, potential for noise effects to residents). The assessment criteria are usually organized by project phase (e.g., construction and operation).
- Using a set of *valued ecosystem/social components (VECs/VSCs) and project activities* involves the formation of a matrix that allows the assessor to first identify where an interaction between a VEC/VSC and project activity may occur. For these interactions, the nature of the effect is then described.

In either situation, the effects may be described in a qualitative or quantitative manner (e.g., area of habitat removed). The impact assessment work is typically undertaken by a specialist in that area of work (such as a biologist).

3.3.9 CUMULATIVE EFFECTS ASSESSMENT

In addition to assessing the effects of the project itself, some EA processes require the assessment of cumulative effects. This kind of assessment must consider the combined effects from other projects or activities as well as the proposed project. Cumulative effects assessment (CEA) continues to be a challenge in the practice of EA; some practitioners have argued that CEA cannot be effectively implemented at the project level as it requires the consideration of issues that are better addressed in more comprehensive environmental plans.

Cumulative effects assessment is typically expected to:

- assess effects over a larger area and over a longer time frame than the proposed project;
- consider effects due to interactions with other actions (past and future);
- consider numerous small projects within a defined area;
- evaluate significance (considering not just local, direct effects);
- consider synergistic effects, carrying capacity, and thresholds; and
- set up process for long-term monitoring.

Recognizing the methodological challenges inherent in assessing the effects of other existing and future projects to arrive at a total effect level, emphasis is now being placed on developing appropriate monitoring and response programs to detect and manage cumulative effects should they occur once the project is implemented. Cumulative effects assessment may be incorporated into a broader approach of adaptive management.

In the planned expansion of a residential sub-division, the Town of Canmore, Alberta (population 10,792) requested that the development firm conduct a Cumulative Effects study to determine the wider reaching and longer term impacts on neighbouring wildlife habitat and wildlife movement corridors. This was done by calculating the available habitat within successive development scenarios, with three wildlife species chosen as indicators. Four development scenarios were examined where the final scenario included the proposed expansion. Direct and indirect habitat loss was determined for each scenario. It was determined that the sub-division would contribute only a small loss of wildlife habitat relative to pre-existing habitat loss.

3.3.10 IMPACT MANAGEMENT

Where adverse environmental effects have been identified, either direct or cumulative, **long term or short term**, it is necessary to identify measures to reduce or eliminate them. These measures are referred to as mitigation measures. Mitigation measures can be implemented at any project phase and could involve standard construction practices or measures developed to address the proposed project specifically. The measures may be required as a condition of approval through other applicable laws/bylaws (e.g., noise reduction through barrier walls). In preparing an EA, these measures could be developed with the assistance of regulatory agencies and would be documented in the EA report.

Mitigation may also be in the form of financial payment to an affected party; this is known as compensation. Compensation could be paid to either individuals or communities. Compensation is often considered as a “last resort” mitigation measure and used when adverse effects cannot be reduced further. In a sense, compensation is payment to receptors for accepting to live with the proposed facility in their community. Payment could be a one-time lump sum or an annual payment.

In addition to mitigation/compensation, other components of the impact management plan include effects monitoring and contingency measures. A monitoring program is set up to detect effects that may not be anticipated at this time. A good example is the testing of groundwater at property limits of a landfill. Contingency measures are the initiatives that would be implemented in the event that the monitoring program detects a problem in the future. In the development and implementation of the impact management program, the local community can be involved in the form of a community liaison committee.

Impact assessment information, like cumulative effects information, can inform an adaptive management approach. Where unexpected results are found as a result of monitoring, this information would be used to inform decisions made for future, similar projects.

The Municipality of North Cowichan, British Columbia (pop.26, 148) is planning to undertake an environmental assessment related to the potential for a new well water supply source in their community. The impact management approach used by the Municipality will include: 1) the drilling and pumping of three test wells to confirm that the aquifer will provide the quantity of water required by the community; 2) establishing several monitoring wells to ensure the water quality meets health standards; and 3) installing a monitoring gauge on the Chemainus River downstream from the site to monitor river flows and levels.

3.3.11 NET EFFECTS/ASSESSING SIGNIFICANCE

Once effects have been described and the impact management program developed, the next step in the process is the identification of net effects: the remaining effects after mitigation has been applied. Net effects are often presented in table format that includes the evaluation criterion/VEC, a description of the project effects and proposed mitigation, and a description of the net effect with comment regarding the anticipated effectiveness of the mitigation.

Under some EA legislation, it is necessary to assess the significance of the residual effects and comment on the advantages/disadvantages of the proposal. The purpose of this step is to make the determination as to whether the project is acceptable from an environmental perspective and whether it should be approved (if applicable).

The determination of effect significance is a subjective and value-laden exercise. Under some EA legislation, a project cannot proceed if a significant effect is expected (or at least the project needs to be elevated to a higher level of EA for further study). Under other legislation, it is necessary to describe on balance whether project advantages exceed disadvantages.

A significant amount of literature exists on the issue of determining effect significance. The following factors have been suggested:

- magnitude of the effect (e.g., the amount of noise level increase);
- duration of the effect (how long it will last);
- frequency of the effect;
- scale of the effect (geographic extent of the effect);
- nature/sensitivity of the environment affected; and
- level of concern by the public/agencies.

In determining effect significance, a common issue raised by stakeholders is “significant to whom”. It is important that the community be consulted in this step and their values recognized. Where First Nation communities may be affected, it is critical that the communities be consulted in this step since an assessment of effect significance is often even more challenging due to the potential of various environmental effects to impact these communities.

Although decision making in an EA context has, for the most part, been focused on impact minimization and impact acceptance, some proponents have suggested that the higher test of sustainable development should be used to determine whether an EA should be approved or not. This is a much “higher bar” for EA to attain and few EAs have used it as a basis for approval. Nevertheless, for a community that has aggressive sustainable development objectives, it may be an appropriate test and should be considered.

3.3.12 EA DOCUMENTATION

Practically all EAs are documented in some form. For simple projects with few effects, the documentation may be brief involving perhaps a checklist form. For more complex EAs, the documentation may be extensive involving multiple volumes. In preparing the documentation, most EAs should include a description of:

- the proposed project including a map showing location;
- alternatives if considered;
- baseline environmental conditions;
- the effect assessment;
- proposed mitigation;
- comments received from stakeholders; and
- a statement regarding project acceptance.

3.3.13 EA REVIEW AND APPROVALS

Where EA processes often differ is in their agency review and follow-up procedures. Some EAs are self-assessing processes and require no formal approvals. Although this may seem like a conflict of interest to have the same organization decide on the acceptance of an EA that prepared it in the first place, there are often opportunities for stakeholders to request an elevation to a higher level of EA, if there are concerns. For larger more complex projects, EAs typically require some form of government agency approval. The approval process may require substantial amounts of time and revisions to the EA. Some EAs are referred to tribunal boards or panels for their consideration. Environmental assessment decisions are also subject to judicial review in the courts.

3.3.14 EA FOLLOW-UP

Although infrequently done, EA follow-up involves the process of reviewing a project and its impacts after implementation and comparing these actual effects to the predicted effects made through the EA process.

Post-project follow-up/monitoring:

- demonstrates accountability;
- ensures compliance with identified mitigation measures;
- measures the effectiveness of the identified mitigation and documents modifications to any ineffective mitigation;
- determines whether there are any negative residual effects of the project that contribute to degradation of the receiving environment;
- identifies potential mitigation measures that might be more applicable in a similar future situation;
- provides an evaluation of the apparent success of the EA strategy followed;
- measures cost, time, and other resource requirements for future planning purposes; and
- provides information that may have application to other environmental impact concerns facing the municipality.

An appropriate evaluation strategy involves:

- documenting the process followed;
- retaining and cataloguing all relevant information and documents used during the process;
- assessing the success of the strategy and identifying potential alternative approaches for future reference;
- documenting costs and schedules; and
- monitoring the environmental impact of the mitigation measures implemented and the biophysical and socio-economic effects of the project on the environment through an appropriate environmental management system.

In some cases, follow-up may be mandated through the conditions of EA approval or through the conditions of required approvals/permits.

The Town of Mississippi Mills (population 11,647) in North Eastern Ontario has planned to reconstruct a 700M section of a heavily used commuter transportation link through the community of Almonte. Reconstruction of the roadway would help increase vehicular capacity, access to commercial development, improve pedestrian access, signage and landscaping. In addition to complying with provincial environmental assessment regulations, the town would attempt to evaluate the long-term effectiveness of the project after completion. This includes documenting traffic counts, monitoring local commercial and residential growth in the area surround the roadway, and identifying any triggers for additional lanes, or future bypass construction.

3.4 CLASS EAS

Some EA processes (e.g., Ontario EA Act) have a provision for Class EAs, which are a pre-approved planning process for specific types of infrastructure or activities. Class EAs are intended to cover projects that have well-understood and predictable ranges of effects. The Class EA is a form of a guideline document, which specifies the steps a proponent must follow to complete an EA. Some Class EAs have different levels of EA depending on the type of project being proposed. Many EAs completed under Class EAs are very comprehensive in scope, involving significant amounts of public and agency consultation. Class EAs differ from “full” EAs in that they do not typically involve approval by a provincial or federal agency. Class EAs can have provisions for elevations to higher levels of EA, and stakeholders can request the higher level EA process where concerns can be justified.

Class EAs can also have provision to streamline municipal infrastructure master plans. In this case, a municipality can plan for long-term infrastructure needs through an EA process (see text box example), thus satisfying long-term planning needs and EA requirements in a single co-ordinated process.

Regional Municipality Infrastructure Master Plan

The former Regional Municipality of Ottawa-Carleton (now the City of Ottawa) used the Ontario Class EA process to develop its community growth strategy and plan for future infrastructure needs to service the planned growth. The process was unique in that it assessed effects associated with potential growth scenarios by considering the effects associated with infrastructure needed to support each growth scenario. The study provided input to the development of its land use plan and also satisfied the first two steps of the Ontario Class EA process.

3.5 STRATEGIC EAS

Strategic environmental assessment (SEA) was developed in response to criticisms that traditional project EIA is too focused, applied too late in the decision-making process and thus the range of available alternatives is too limited. The SEA concept was developed to allow the integration of environmental considerations in public policy decision making at a conceptual level of detail so the “big picture” could be considered. SEA can be applied to almost any sector and at varying scales.

SEA is a systematic process for evaluating the environmental consequences of proposed policy and planning of program initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on a par with social and economic considerations (Sadler and Verheem, 1996).

At the federal level, a Cabinet Directive requires federal government policies, plans, and programs, requiring ministerial or Cabinet approval, which have the potential to result in environment effects to be subject to a SEA.

Strategic environmental assessments follow a similar process to the project level EA although they tend to be focused on the evaluation of alternatives, are undertaken in much less detail and are more conceptual in nature. On-the-ground effects are not typically considered in a SEA.

The benefits of SEA include:

- encourages consideration of environmental/social objectives at all levels (can promote sustainable development);
- enhances public consultation opportunities (less adversarial);
- can identify development constraints/opportunities;
- allows for the consideration of a wider range of alternatives;
- can be integrated with current planning processes;
- can better consider cumulative/synergistic effects;
- allows for more scoped and effective project EIAs; and
- regulatory agencies can use SEA to justify their decisions.

The theory and practice of SEA is growing rapidly with an extensive body of literature being developed. Strategic environmental assessment has great potential for application by municipalities. It provides for a framework for policy making that is typically done in an ad hoc manner. This can be of significant value in justifying policy directions to the larger community. For example, SEA can be used to develop strategic and municipal land use plans (see text box).

Chatham-Kent Official Plan SEA

To assist in the development of their land use plan, the Municipality of Chatham-Kent in southwest Ontario (population 107,709) used a SEA approach to evaluate various land-use policy alternatives. Policy options were developed for a variety of issues including form/level of growth and levels of environmental protection. The evaluations were guided by an extensive set of criteria and documented in a table format for public review and comment.

4. EA IMPLEMENTATION

Environmental assessment is about balance: that of making proposal/project decisions recognizing the trade-offs among biological, social, economic, physical, and cultural considerations. For EA to be an effective municipal planning and decision-making tool, there needs to be a strong commitment to environmental protection as articulated through a community vision and/or strategic plan. Environmental assessments are often challenged by various stakeholders. To support decisions made through an EA process, there needs to be a higher level plan in place that provides a set of environmental objectives or principles. The EA can then build on these principles to support its recommendations.

Where EA is not required by legislation, municipalities can adopt EA to assist in land development planning and infrastructure development. To assist in such processes, EA guideline documents should be prepared to provide support to municipal staff and decision makers.

Many municipalities typically have a department or an individual responsible for the organization's environmental matters. Municipalities are encouraged to follow this model if feasible, recognizing that it may not be possible for municipal staff members to become fully conversant with all aspects of the EA process in their jurisdiction. Nevertheless, even limited knowledge is beneficial, with considerable value coming from familiarity with the agencies, people, and processes involved.

If sufficient resources cannot be established by the municipality in-house, or if a particular project is of a sufficient level of complexity that it exceeds the capability of those resources, it may be necessary to retain the services of outside experts. Even in this situation, however, a suitable level of internal capability will facilitate the effective management of outside experts as well as provide liaison with the decision makers within the municipal organization. In identifying appropriate outside resources, the municipality should look for professional-level credentials in the required areas of expertise and a proven track record.

5. EVALUATION

Senior municipal decision makers can evaluate the application of EA in two broad areas. The first area of evaluation is the management of the process, including the degree of implementation and level of proactive commitment to a strategic and proactive approach to EAs. The second aspect of evaluation is to assess the results achieved through implementation of EA process outcomes in terms of environmental, social, and economic benefits.

It is important for senior management and political leaders to understand and assess management of EA processes within the municipality. This is especially true for municipalities that have committed to apply the EA tool as a proactive, strategic approach to sustainable municipal infrastructure, but it is also important for all municipalities undertaking EAs to ensure the process is being applied to achieve the full potential benefits. An evaluation mechanism should be established to assess how well the EA process is working and the extent to which it is being applied for suitable municipal uses. Key management indicators to assess might include:

- the cost of the EA process as a percentage of the total project cost;
- staff time devoted to EA processes as a percentage of the total project time;
- a review of projects that did not include an EA process (to ensure this was appropriate); and
- staff training time on EA and the staff level of comfort with EA requirements.

In addition, staff feedback on the application of the EA process within the municipality and suggestions for areas to improve can provide important insights to management issues pertaining to EA application. The EA management assessment for the municipality should be undertaken in the spirit of continuous improvement and learning so the benefits of a proactive approach to EA can be realized.

Evaluation of the benefits of EA in terms of broader community and infrastructure sustainability is much more difficult since the factors of interest (i.e., environmental, social, and economic factors) are very broad, multi-dimensional and interact with local scale issues as well as those on other larger scales. This is the crux of a common issue facing municipalities that are seeking to improve the sustainability of their communities. To help address this problem, many municipalities are tracking a series of community sustainability indicators. The monitoring results from implemented EA projects may provide important information for the municipality's sustainable community indicators.

In addition, changes to project plans as a result of the EA process, often lead to the identification of specific benefits including:

- short-term environmental benefits (such as reduced noise during construction);
- long-term environmental benefits (such as shoreline habitat restoration); and
- global environmental benefits (such as reduced greenhouse gas emissions due to energy efficiency improvements in design).

Other aspects of the EA application may also demonstrate social or economic benefits. Factors that may be monitored for these benefits include:

- public participation in EA consultation processes;
- public satisfaction with project results where the EA process has been applied;
- costs avoided due to an improved option being identified; and
- costs avoided due to early identification of significant stakeholders and governments with an interest in a project.

6. LIMITATIONS

This report provides a general overview on the practice of EA. It is intended to serve as an introduction to EA to municipal staff and decision makers. The guide is not intended to be a “how to guide” to allow someone unfamiliar with EA to carry an EA study out. It is recommended that EA professionals be engaged to undertake more complex EAs, particularly those required under legislation. References are included at the end of this best practice for those municipalities wishing to voluntarily in some decision-making processes.

REFERENCES

EA INFORMATION RESOURCES

For provincial/territorial EA processes, it is advised that the applicable departments or agencies and their Web sites be contacted before starting the EA to ensure that the most up-to-date legislation/guidelines are followed. In the case of federal legislation, the Web site of the Canadian Environmental Assessment Agency should be consulted. These information sources provide the municipality with details regarding the triggers for an EA, exemptions or exclusions to the EA, the levels or classes of EA, appropriate contacts, and the processes specific to the applicable legislation. Guides for proponents and the public are typically posted on the Web sites and links are usually provided to reach the actual text of the legislation.

The following are some Web site references that could be consulted:

- Canadian Environmental Assessment Agency, URL: <http://www.ceaa-acee.gc.ca>
- International Association for Impact Assessment, URL: <http://www.iaia.org/>
- International Institute for Sustainable Development (IISD)
<<http://iisd1.iisd.ca/>>
- Municipality of Chatham-Kent, *Official Plan*, URL: <http://www.chatham-kent.ca>
- Municipality of North Cowichan, BC, URL: <http://www.northcowichan.bc.ca>
- Muniscope Information and Networking (local government information system) <<http://www.muniscope.ca>>.
- Ontario Association for Impact Assessment, URL: <http://www.oaia.on.ca/>
- Quebec Association for Impact Assessment, URL: <http://www.aqei.qc.ca/>
- Township of Cavan Millbrook North Monaghan, Ontario, URL: <http://www.cmmn.ca/>
- Town of Mississippi Mills, Ontario, URL: <http://www.mississippimills.ca/>

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Cumulative Effects Assessment Working Group, AXYS Environmental Consulting Ltd, *Canadian Environmental Assessment Agency: Reference Guide to Cumulative Effects Assessment*. Prepared for the Canadian Environmental Assessment Agency, February 1999. URL: http://www.ceaa-acee.gc.ca/013/0001/0004/index_e.htm