

# Primer for Preliminary Screeners' Workshop

November 13, 2019

## Contents

1	Purpose of the November 2019 workshop .....	2
2	Review of previous (2016) Preliminary Screeners' workshop .....	2
	2016 Workshop Report actions and next steps .....	2
3	Overview of the preliminary screening process.....	3
3.1	Guiding principles.....	3
3.2	Performing the 'might' test.....	4
3.3	Considering the whole environment and whole development .....	4
4	2019 Workshop discussion topics .....	5
4.1	Reasons for decision on preliminary screenings.....	5
4.2	Completing the preliminary screening early for complex projects .....	7
4.3	Notification of screenings and the 10 day pause period .....	8
4.4	Screening changes to projects .....	10
4.5	Informal communication.....	12
5	Next Steps.....	12

## 1 Purpose of the November 2019 workshop

The purpose of this workshop is to discuss best practices and emerging issues in preliminary screening and to help inform the development of updated guidance for preliminary screeners.

Topics at this workshop will include:

- Screening based on the principles of Part 5 of the MVRMA
- Carrying out the might test
- Considering the whole project and the whole environment
- Writing reasons for decision
- Timing of preliminary screenings
- Notification of screening and the 10-day pause period
- Screening changes to projects that have previously been screened or assessed

This workshop will also build on the outcomes and action items from the 2016 Screeners' Workshop.

## 2 Review of previous (2016) Preliminary Screeners' workshop

In September 2016, the Review Board and Land and Water Boards of the Mackenzie Valley hosted a workshop for preliminary screeners. The purpose was to learn about roles and responsibilities of preliminary screeners, promote communication, discuss challenges, and identify next steps.

[Preliminary Screening Practitioner's Workshop Report September 2016](#)

[Practitioner's workshop presentations 2016](#)

### 2016 Workshop Report actions and next steps

The 2016 Report provided an overview of challenges faced by each organization, next steps to address those challenges, as well as action items that could be accomplished within the existing legislative and regulatory framework. A table listing action items from the 2016 preliminary screening workshop accompanies this primer document. **Before the workshop, Review Board staff asks screeners to update the status of any action items attributed to their organization on the action item table from the 2016 preliminary screeners workshop. Please respond back by November 4. At the November 2019 workshop we will spend some time reviewing the 2016 action items, discussing their status, relevance, evolution, etc.**

### 3 Overview of the preliminary screening process

Preliminary screening is a fundamental part of the integrated resource management system in the Mackenzie Valley. A preliminary screening answers the question, should a development go to environmental assessment? To answer this question, screeners apply the MVRMA “might test” to determine if a development proposal might have a significant impact on the environment or might be a cause of public concern. Preliminary screenings are described in the Review Board’s [Environmental Impact Assessment Guidelines 2004 \(pp 8-21\)](#) published under section 120 of the MVRMA.

The requirement for preliminary screenings is set out in the MVRMA:

- s.118 states “A licence, permit or other authorization required for the carrying out of a development shall not be issued under any federal, territorial or Tlicho or Déline law unless the requirements of [Part 5 of the MVRMA] have been complied with in relation to the development.”
- Under s.124 regulators, government, and first nations/indigenous governments carry out screenings and, under s.125, report the results of the screening to the Review Board.

#### 3.1 Guiding principles

Part 5 of the MVRMA sets up the system of environmental impact assessment – including preliminary screening – for the Mackenzie Valley. These principles are rooted in the land claim and self-government agreements that led to the MVRMA.

The purpose of the Environmental Impact Assessment process (s.114 MVRMA) is:

- to ensure that the environmental impacts of proposed developments are carefully considered before actions are taken; and
- to ensure concerns of aboriginal people and the general public are taken into account.

In addition, preliminary screening and environmental assessment must have regard to (s.115 MVRMA):

- the protection of the environment from significant adverse impacts;
- the protection of the social, cultural and economic well-being of the Mackenzie Valley residents and communities; and
- the importance of conservation to the well-being and way of life of Aboriginal peoples.

### 3.2 Performing the ‘might’ test

Preliminary screening typically begins when a proponent applies for an authorization such as a land use permit or water licence. It is intended to be a cursory look at the potential for impacts with a focus on identification rather than assessment of impacts and mitigations.

The test to determine whether a project should be referred to the Review Board for an environmental assessment is set out under subsection 125(1) and (2) of the MVRMA. Subsection 125(1) refers to projects **outside a local government**. It states that if a proposed development “might have a significant adverse impact on the environment or might be a cause of public concern,” the preliminary screener shall “...refer the proposal to the Review Board for an environmental assessment”.

The screening test for significant adverse impacts on the environment **within local government** boundaries 125(2) is “likely” rather than might.<sup>1</sup> The test for public concern, however, is “might”, the same as outside a local government boundary.

The might test and how to apply it are described in the [EIA Guidelines 2004](#) pp 17-20.

### 3.3 Considering the whole environment and whole development

The MVRMA requires that preliminary screenings consider impacts on the **whole environment**. Part 5 of the MVRMA defines impact on the environment as:

*“any effect on land, water, and air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources”.* [MVRMA Part 5, Section 111\(1\)](#)

The screening must consider a wide range of impacts, including environmental, social, and cultural. The screening is not limited to the types of impacts that will be regulated by the permit or authorization being applied for. The screening needs to consider the whole environment because impacts on aspects of the environment other than land and water can be serious and affect people’s well-being. For example, the screening of a Land Use Permit should consider potential effects on wildlife, air quality, and cultural and social impacts from the development.

The [EIA Guidelines 2004 p16](#) state that it is essential that preliminary screeners consider the **proposed development as a whole** when conducting screenings, rather than focusing only on the aspects related to their regulatory responsibilities. The broad focus of preliminary screening

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<sup>1</sup> Specifically, the wording of s.125(2) is “...likely to have a significant adverse impact on air, water or renewable resources or might be a cause of public concern”

usually requires that agencies doing preliminary screening go beyond the (narrower) scope of the authorizations they issue as regulators.

There is a clear distinction between the application and the proposal for the development: **the application is what triggers a preliminary screening; the development proposal is what is screened**. Even if a permit/licence is required for only a small part of the development (such as a stream crossing), the preliminary screening must consider the whole development and its potential effects on the ecological, social, and cultural environments.

## 4 2019 Workshop discussion topics

The following subsections provide an overview of topics for discussion for the 2019 workshop. These topics are highlighted specifically as screeners have asked the Review Board for additional direction in these areas and/or topics have arisen in screenings over the past few years. They also stem from the action items and next steps from the 2016 workshop.

### 4.1 Reasons for decision on preliminary screenings

Once the preliminary screener has applied the “might” test, they will decide whether to refer the development to an environmental assessment. If the development is not referred to EA, it will proceed to permitting and/or licensing. In reaching its decision, the preliminary screener considers all of the information on the public record collected during the screening process. The screening decision is released to the developer and the public, with supporting documents (such as a preliminary screening form) and reasons for decision.

#### More emphasis is needed on explaining screening decisions

Many preliminary screening decisions have historically relied on the preliminary screening form ([EIA Guidelines 2004 Appendix D p61](#)). A preliminary screening form may be helpful as an analysis tool, but a clear **explanation of why** the screener decided what it did is needed. That is where written reasons for decision come in. Section 121 of the MVRMA requires written reasons for any decision made under Part 5 of the Act. Preliminary screeners are encouraged to provide clear and detailed reasons for all screening decisions.

**Reasons for decision should focus on explaining how and why the screener reached its conclusions**, rather than describing the decision and mechanics of the process. Reasons should explain the screeners’ view of the evidence and how the evidence informs and logically supports the conclusion. Reasons describe the potential impacts and the mitigations and, if not referring to EA, why the mitigations are good enough to make sure there will not be significant adverse impacts. All impacts and mitigations should not be treated equally in reasons for

decision. The impacts with greatest potential and the mitigations that are most heavily relied upon should be the focus, as well as anything unique about the screening.

The degree of confidence needs to be high in screening decisions and the language in reasons for decision should clearly and frankly say so. Reasons should not dismiss or skirt around issues, they should address them directly and explain what the screener decided and why.

Reasons for decision should directly address the requirements of the MVRMA, the screening test, and the kinds of considerations in the EIA guidelines related to screening decisions. For example, writing reasons in a screening decision that answers the might test could describe one or more of the following as described in the [Environmental Impact Assessment Guidelines 2004 p18](#):

1. Development scale: Larger developments often have more potential to cause significant adverse impacts or be a cause of public concern.
2. Development location: Projects near or upstream of protected or culturally important areas, areas used for harvesting, fishing, and trapping, or areas of known ecological sensitivity have more potential to cause significant adverse environmental impacts or be a cause of public concern.
3. Nature of the activity: Some activities typically involve more environmental risk than others, due to factors such as (but not limited to):
  - the degree of disturbance
  - involvement of hazardous chemicals or effluents
  - major infrastructure requirements
  - changes to access, use of a new technology, or known technology in an unfamiliar setting
  - social changes to community structure (such as an influx of migrant workers to a community)
  - changes to stress on existing social services.
4. There is uncertainty (or conversely confidence) in the understanding of the potential impacts or in the effectiveness of proposed mitigation
5. Public concern is either widespread, there is public support, or reviewers of the project did not express concern
6. It cannot be determined that the might test has been met without further analysis, or without new information beyond that of the preliminary screening
7. The professional judgement of the preliminary screener enables them to recognise that the “might” test has been met

In addition, the preliminary screening decision will help the Review Board scope the environmental assessment (if referred) and will help parties, referral authorities, and the

Review Board understand how the screener came to its conclusion, support confidence in screening processes and decisions, and help the 10 day pause period (more detail in Section 4.3.) go smoothly.

### **Workshop discussion**

During the November 2019 workshop, participants will discuss best practices for preparing reasons for decision in screening reports.

## **4.2 Completing the preliminary screening early for complex projects**

### **Timing of preliminary screenings**

Preliminary screenings are meant to be preliminary. The preliminary screening decision does not need to wait until the details of a development proposal are finalized. A preliminary screening is not intended to determine the precise details of the potential impacts of a proposed development; it is intended only to determine whether or not a development might cause a significant adverse impact on the environment or be a cause for public concern.

The screening (and, if applicable, assessment) process required by land claims and the MVRMA must be completed before developments are acted on. Preliminary screening is a separate requirement and a separate decision from permitting/licensing. For small and non-controversial projects it may be efficient and satisfactory for permitting and screening to share a public review process and for decisions to be made together. For screenings of large or complex projects, a screening determination should be made earlier rather than later. If the screening does not happen early, there will be uncertainty among interveners and proponents as to whether or not the project will be referred to environmental assessment.

For example, screenings that include a project with a Type A Water Licence may have a comprehensive process of information requests, technical sessions, and public hearings. It is preferable for a screening decision for a project with a Type A water licence be made early, such as prior to technical sessions to ensure a project is reviewed at the appropriate level.

The [EIA Guidelines 2004 pp12-13](#) acknowledge that the preliminary screener may discover, in response to issues identified during the screening, that more information is needed. If the information presented is insufficient to exclude significant environmental impacts (i.e. to do the might test), the preliminary screener will attempt to gather the relevant information. If questions about potential impacts remain after the developer has had the opportunity to respond, the screening decision may be that there might be significant adverse impacts and the application will be referred to an environmental assessment.

Regardless of any timelines set out in regulations (e.g. 42 days for land use permits), the MVRMA requirements for screenings must be complied with before any authorization can be issued. The timing requirement in any regulation cannot dictate or overrule the screening requirements set out in the MVRMA. Until Part 5 has been satisfied, section 118 of the MVRMA is clear: no licence/permit may be issued.

### **Workshop discussion**

During the workshop, participants will be able to share challenges and best practices regarding the timing of screenings, for example by sharing lessons from recent screenings or asking questions about how other organizations manage competing timelines.

## **4.3 Notification of screenings and the 10 day pause period**

### **Notification**

Subsection 124(1) of the MVRMA says that, where an application for a permit or licence is made to a regulatory authority “the authority or agency shall notify the Review Board in writing **of the application** and conduct a preliminary screening of the **proposal for the development**”

Land and Water Boards maintain distribution lists for their regions that notify Indigenous governments and organizations, government departments, non-government organizations and other interested or potentially affected parties about new preliminary screenings.

In addition, section 124 of the MVRMA requires a regulatory authority to:

1. notify the Review Board in writing of an application, and
2. make a screening determination and report the finding to the Review Board

### **Preliminary screening registry**

The Review Board maintains a public registry for all preliminary screening notifications and screening reports with reasons for decision. The purpose of the screening registry is to provide a central place for the public and all referral authorities to view screenings. Screenings listed on the registry include those conducted by Land and Water Boards as well as federal and territorial department regulators and, if application screenings by indigenous government organizations.

### **10 day pause period after screening but prior to permit issuance**



In 2019, the MVRMA was amended to establish a 10-day pause period following preliminary screening decisions that do not result in a referral to EA. During this period, no authorizations can be issued.<sup>2</sup>

The ten-day pause provides a short, formal period for the Review Board or other referral bodies to order an EA after a preliminary screening decision but before regulatory authorizations are issued and work begins. If there are multiple screeners involved in a project application, the screening process should be coordinated.

The ten-day pause period begins on **the day after the Review Board receives notification** of a preliminary screening decision.

The Review Board will post each screening decision it receives on the preliminary screening registry on its website. If no referral to EA is made by the end of the ten-day pause period, regulatory authorizations can be issued on the following day. The Review Board will only respond back if it refers the project to EA. Anyone, including referral bodies, can subscribe to receive notification of screening decisions posted to the Review Board's registry. [Review Board website - preliminary screening registry](#)

If an EA is ordered, the referral body should notify the regulatory authority and the Review Board as soon as possible and must do so before the end of the ten-day pause period. No authorizations can be issued until after the EA is completed.

The ten-day pause period does not create any new authority to call an EA, it simply gives the Review Board and other referral authorities time – after a preliminary screening decision – to decide whether to exercise their discretion to refer a development proposal to EA.

For details see the [Reference Bulletin 10 day pause period June 2019](#).

### **Workshop discussion**

During the November 2019 workshop, notification requirements will be presented and implementation of the requirements will be discussed.

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<sup>2</sup> The 10-day pause period does not apply to applications that are exempt from screening

## 4.4 Screening changes to projects

A change to a project after an environmental assessment requires a regulatory authority to consider the extent of those proposed changes and their potential effects on the environment and whether there might be public concern.

### Changes to projects after an environmental assessment

If a project is being modified, the regulatory authority must consider whether there are differences between the scope of the development that was assessed and the development which is being proposed. If there are changes that would involve activities that were not previously assessed or that would have impacts that were not considered, then a preliminary screening must be undertaken. The preliminary screening should focus on the effects of activities not previously considered under Part 5 of the MVRMA.

The screener may need to consider:

1. a change in geographic scope, or increase in the area where an activity is proposed
2. a change in the intensity of activity and intensity of the impact in an existing project
3. a change in the duration of an impact
4. a change to type of access
5. a change to use of a new technology in an unfamiliar setting
6. a change to a management plan

### Changes to projects after a screening for projects that did not go to EA

For changes to projects that were screened but were not referred to EA, the regulatory authority (screener) can focus the same new activities described above. In addition, the screener can consider past screenings for the project and what activities were not previously screened.

### Exemptions from preliminary screening for projects that “have not been modified”

There is no definition in the *Exemption List Regulations* for what “modified” means. This means that the determination of how much change is enough to warrant a screening, or conversely, an exemption is a somewhat discretionary matter for Land and Water Boards (or other screeners).

The intent is to ensure that changing small details that will not have a significant impact do not have to go to screening as long as the activities and effects do not deviate too much from the originally screened development. **So long as the changes do not affect the area of land affected or materially change the amount and type of work to be done, then an exemption is reasonable.** In practice, this is what the screener should look at.

## **Changes to project that may affect measures from a Report of EA**

A project change after an Environmental Assessment will require a regulatory authority to consider:

1. the extent and effects of the proposed changes to the project, and
2. how these changes might affect the significance determinations and any resulting measure from the EA approved by responsible Ministers.

If the project is being modified, the regulatory authority must consider whether there are differences between the scope of the development that was assessed and the development which is being proposed. If there are changes that would involve activities that were not previously assessed or that would have impacts that were not considered, then a preliminary screening must be undertaken. The preliminary screening should focus on the effects of activities not previously considered under Part 5 of the Mackenzie Valley Resource Management Act (MVRMA).

### **If a project change has implications on the Review Board's significance determination and EA measures approved by Ministers this is not a preliminary screening question**

There is no provision in the MVRMA allowing the Board's significance determination and the resulting EA measures to be changed through a preliminary screening process. Considering the purpose and intent of Part 5 of the MVRMA and the roles, responsibilities, and authorities of the Review Board, the Review Board must lead any review or reconsideration of its significance determinations or the applicability of measures. To change a measure requires a process led by the Review Board, with a recommendation to and a decision from final decision makers.

Regulators are responsible for detailed implementation of measures through their regulatory instruments and powers, but there is no authority in the MVRMA for a regulator to vary an EA measure approved by Ministers.

If there is a question about applicability of a measure, a regulator should ask the Review Board to provide its views on the matter. The Review Board has serious concerns about any proposal to vary or remove an approved EA measure without the involvement of the Review Board and final decision-makers under Part 5 of the MVRMA.

### **Workshop discussion**

Preliminary screening changes to projects will be discussed by workshop participants.

## 4.5 Informal communication

Review Board staff are always available for informal discussions with screeners on any issue related to completing preliminary screenings. Screeners can seek clarification and guidance from Review Board staff at any time. Early communication at the staff level gives an opportunity to resolve issues and minimize uncertainty for Boards and other decision makers.

## 5 Next Steps

A report will be prepared for the November 2019 workshop summarizing the key topics and priorities of participants and a path forward to preparing Guidelines for Screeners.

A draft “Guidelines for Screeners” document will be prepared by the Review Board in early 2020. Workshop participants will have the opportunity to review the draft Guideline for Screeners document. If it would be useful, a working group made up of screeners may be set up to facilitate collaborative discussions about the draft guidelines.

A final Guideline for Screeners will be completed in 2020.

## Status of Action items from 2016 preliminary screening practitioner's workshop

### 1. Guidance and Information Sharing

Action Item/Need	Group	Status
Develop or, as applicable, further develop internal guidelines and templates to standardize and clarify preliminary screening processes	Each Screener, support from Review Board	Parks - LWB - GNWT – Review Board – guidance
Standardize guidelines / definitions / application of the term “manifestly insignificant” as used in subsection 124(2) of the MVRMA (or Act)	Government screeners	Some sharing between GNWT and parks
Share internal guidelines and templates with other organizations	Collective	MVEIRB has received templates and examples from the Yukon and Nunavut and can share with screeners
Continue to foster and communicate about opportunities for collaboration and engagement	Collective	Ongoing. Communication has improved since 2016 workshop. *NEW* Now also includes 10 day pause period notifications.
Be involved in INAC's review of the Preliminary Screening Requirement Regulations and Exemption List Regulations. (GNWT is interested in sharing information and views with other organizations. Lorraine Seale is the GNWT contact.)	Collective	CIRNAC work now picking up again. Scope is more “updating” than overhauling. “Proposed changes include updating references to various regulations and legislation that have been changed since the regulations were last updated as well as

		<p>other similar type updates.” Draft regs to be sent around in coming months.</p> <p>GNWT Lands - Contact for GNWT is now Melissa Bard, Manager, Legislation Unit, Department of Lands.</p>
Discuss strategy for providing instructions to reviewers for renewal applications which are likely to be exempt from preliminary screening.	LWB/Collective/Review Board	LWB and Review Board have had some discussions about how to clearly communicate to reviewers. Some LWB instructions to reviewers have included more specific information on this than in the past.
In revising / developing guidelines: clearly recommend that proponents apply to the Land and Water Board first for projects that require applications to multiple screeners	Review Board	Option for breakout group on coordination amongst screenings this afternoon.
Coordinate development of updated screening forms: ensure there is clear written guidance for preliminary screeners; develop forms that are scalable with project scope; add additional guidance to receive information regarding cumulative effects, public concern and socio-economic factors; ensure forms show clear links between potential effects and proposed mitigation	Review Board/LWB/Collective	In progress – LWB internal workshop yesterday. Agenda item at Panterritorial meetings this fall. Reasons for Decision item on agenda for today.
Hold additional workshops to further train Board staff for screenings	Land and Water Boards	Workshop yesterday

Clarify how to best capture changes to a PS when a project changes after an EA (during the licensing phase, changes in management plans, etc.)	Land and Water Boards	Recent experiences, breakout group topic today
Think of more ways to get the information that is required for the PS process (eg, change application forms, more guidance, public workshops)	Land and Water Boards	Workshop yesterday,
Develop consistent practices, tracking and understanding across ENR. Standard processes / guidelines that can be shared	GNWT ENR	Loretta Ransom
<p>Cultivate a greater understanding of preliminary screener responsibilities in the limited review time usually available</p> <p>Obtain more information on non-LWB preliminary screenings</p> <p>Better understand what information preliminary screeners want Lands to provide.</p>	GNWT Lands	<p>Continuing interest for Lands – encourage all parties to be aware of potential dual application review/preliminary screener roles</p> <p>Continuing interest for Lands – MVEIRB PS registry is useful. Continuing Interest for Lands – welcome feedback from preliminary screeners and reviewers (contact is Lorraine Seale or Melissa Pink).</p>
Gain clarity around timelines, access to training on preliminary screening, how to deal with renewal authorizations	Parks Canada	
With other organizations, ensuring reports have sufficient detailed information about fish and fish habitat as well as the summary of works to conduct our review in a timely manner	DFO	Working with LWBs?
Continue developing positive working relationships with other organizations to facilitate communication and information sharing	NEB	Now CER, presentation this afternoon

Better understand their “role” as preliminary screener	ECCC/CWS	
Develop templates for notifications and decisions		



## 2. Tools to Develop

Action Item/Need	Group	Status
Support the regulatory process mapping initiative being undertaken by Board Forum – to create an interactive regulatory navigation tool based on up-to-date process maps.	Collective	Board process maps have been developed but, not yet been rolled out officially on a website – technical difficulties
<p>In developing the on-line registry for screenings:</p> <ul style="list-style-type: none"> <li>✓ communicate clearly about when a screener adopts another screener's process</li> <li>✓ communicate clearly about the preliminary screening outcome</li> <li>✓ foster relationships &amp; communication with preliminary screeners</li> </ul>	Review Board	<p>On-line registry on website operational spring 2019</p> <ul style="list-style-type: none"> <li>- clearer communication on screener coordination/adoption?</li> <li>- Clarity on dates - when pause period ends?</li> </ul>
Make progress on CWS permitting process map in the Mackenzie Valley	ECCC/CWS	

### 3. Process Related Steps

Action Item/Need	Group	Status
All preliminary screeners must notify the Review Board when they are in receipt of an application in order to satisfy the Act	Collective	Communication has improved since 2016 workshop. Ongoing engagement needed with staff turnover etc.
Explore opportunities for non-LWB screeners to use the ORS for their own screenings. There needs to be more work done to take advantage of existing tools (e.g. ORS) while being clear about who is leading each screening process (e.g. ORS is MVEIRB/LWB tool, but other organizations may be able use it for their own screenings).	Collective	LWB – Parks collaboration? GNWT?
Increase local and regional presence to be able to develop a better understanding of local concerns	Land and Water Boards	
In the interim of developing new screening forms, encourage (or require) applicants to use the existing forms or at least provide the necessary information in an equivalent format	Land and Water Boards	LWB workshop yesterday, new draft guidelines for applicants
Develop consistency in application of preliminary screening process	Parks Canada	
Develop a public-facing process that respects the confidentiality requirements of the Petroleum Resources Act	OROGO	

Agree on requirements for the content and timing of applications such that OROGO can continue to accept the PSs conducted by the land and water boards, confident that the full scope of the project has been screened.	OROGO	Also, communication RE adopting PS. Also see potential breakout on coordination.
Ensure that the scope of the screening matches the scope of their authorizations so it is readily adoptable	NEB	See above and CER presentation.
Notify and seek input on applications (i.e. registry)	ECCC/CWS	

# Preliminary Screener's workshop

Preliminary screening within the  
Environmental Impact Assessment (EIA)  
process

Nov 13, 2019

# Purpose of workshop

1. Discuss best practices and emerging issues in preliminary screening
2. To build on the outcomes and action items for the 2016 workshop
3. To help inform the development of updated guidance for preliminary screeners

**Specifically for screeners,**  
to foster communication & support each other.



# Action Items

Review of action items from 2016

(show word document on screen)

# Overview of preliminary screening

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# Screening in the MVRMA Context - 1

MVRMA implements the land claims..

Guiding principles of Part 5 MVRMA

- Purpose of EIA (screening, EA, EIR):
  - To ensure that the **environmental impacts** of proposed developments are carefully **considered before actions are taken**
  - To ensure concerns of **aboriginal people and the general public** are taken into account





# Screening in the MVRMA Context - 2

- EIA must consider (screening, EA, EIR):
  - the **protection of the environment** from significant adverse impacts
  - the protection of the **social, cultural and economic well-being** of Mackenzie Valley residents and communities.
  - the importance of conservation to the well-being and **way of life of Indigenous peoples.**



## Screening in the MVRMA context - 3

- 95% of developments go only through screening
- *Mostly* done by Land and Water Boards
- Start when developer applies for permits

# What is preliminary screening?

- Cursory look at potential for impacts
  - Identification if impacts vs. Assessment
  - potential for impact on the environment and potential for public concern
- First and often last stage in the EIA process
- Preliminary screening functions as an early warning system identifying when an environmental assessment is necessary

**Not a mini-EA**



# The might test

## Outside a local government:

- Whether a proposed development **might** have a significant impact on the environment or **might** be a cause of public concern

Inside a local government: whether a project **likely** to have significant adverse impact on environment.  
Public concern test remains might

If no, project gets permits.  
If yes, Review Board does an EA



Ultimately, screenings answer the question

# Should the development go to environmental assessment?

Alan will expand on the might test later this  
afternoon

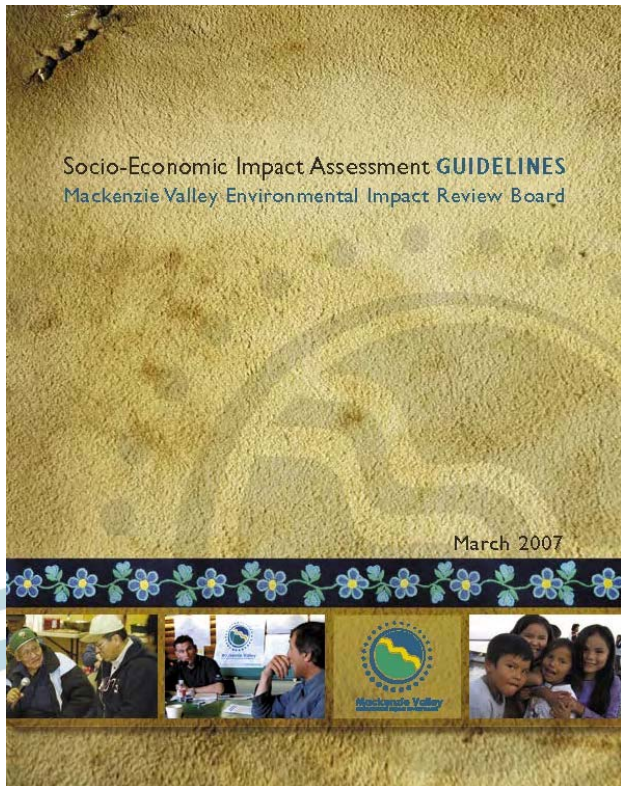


# Communication

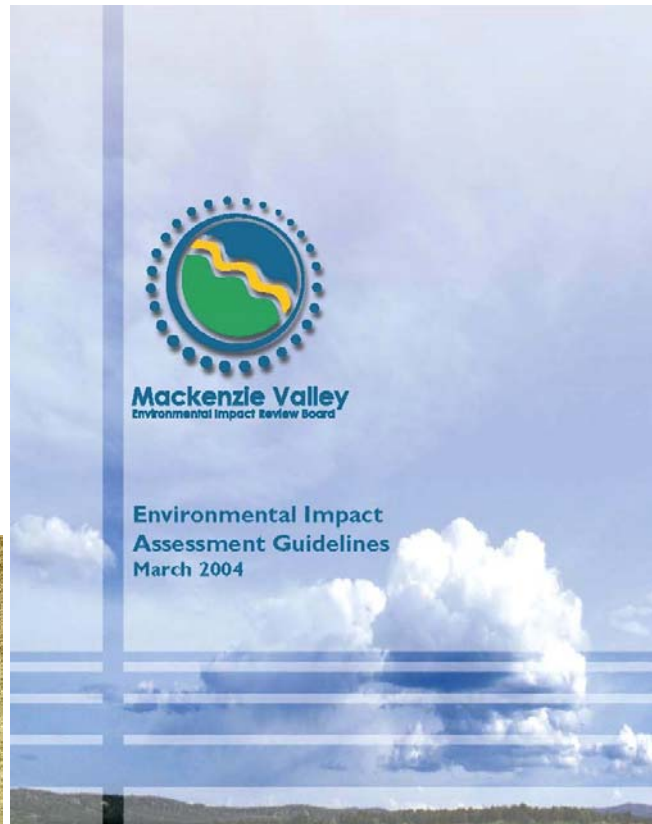
- When regulatory authority receives application:
  - Notify review board
  - Conduct a screening
- When a screening decision is made:
  - Report outcome to the Review Board



# MVRB Guidelines to assist screeners

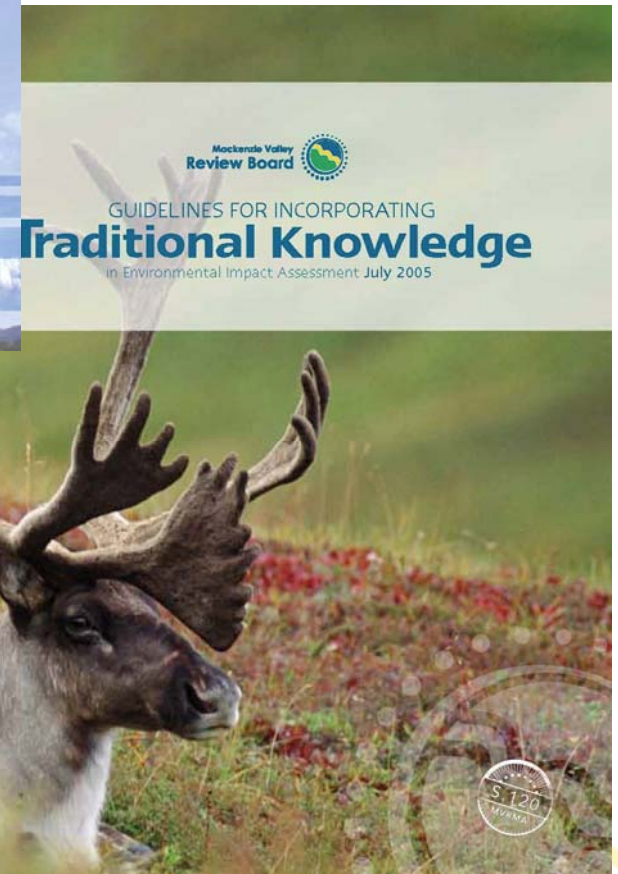


*working together to make wise decisions*



## Primer document

## Updated guidance



# Screening the **whole** **development** and the **whole environment**

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# Screening the whole development

- Clear distinction between the application and the proposed development
  - **application** is what triggers preliminary screening
  - **development proposal** is what is screened

Example: permit/authorization may be for only a part of a development (stream crossing)

- preliminary screening must consider all parts of the development and its potential impacts

# Screening the whole development

Separating the dual roles of the preliminary screener and the regulator

- Screeners examine the proposal to determine scope of development
- Screeners consider proposed development as a whole when conducting screenings
- Consider project aspects beyond the screener's regulatory responsibilities



# Whole environment

MVRMA requires preliminary screenings consider the whole environment. Impact on the environment means:

**“any effect on land, water, and air on any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources”**

Screening considers a wide range of impacts including environmental, social, and cultural



# Screening the whole environment

- Water quality & fish
- Wildlife and wildlife habitat
- Air quality
- Traditional use of the land & aboriginal way of life
- Community wellbeing



# Screening requires a broad focus

- Potential challenge is that organizations conducting preliminary screenings are the same regulators that issue authorizations with conditions
- Broad focus of screening usually requires that agencies doing the screening go beyond their authorization mandate
  - Relies on input from other departments, communities, indigenous governments



# Why is a broad focus important?

- Screening not limited to the types of impacts regulated by the authorization being applied for
- Impacts on aspects on the environment other than the mandate of the authorization can be serious and affect people's well-being
- Project that requires a Land Use Permit should consider potential impacts on wildlife, air quality, cultural and social impacts





## Case Study - Drybones Bay: referral by MVLWB

Small mineral exploration project located in culturally sensitive location:

- Scale of the issues mattered despite small scale of the project

Reasons for referral:

- evidence of cultural, spiritual and environmental importance of the Drybones area, the Board decided that the test in Section 125(1) had not been met with regard to public concern



# Timing of Screenings



# Timing of preliminary screenings

- Screening intended to determine whether a development might cause significant adverse impact or be a cause of public concern
- Preliminary screening decision does not need to wait for all the details of impacts of a development proposal
- Preliminary screening is a separate requirement and separate decision from permit/licensing
- For small or non-controversial projects screening and permitting decisions can be made together



# Timing – preliminary means preliminary

Preliminary screening intended to be carried out before a development is acted on

The reasons for this:

- It is still feasible for the developer to make voluntary changes to project design and reduce or eliminate impacts
- Allow for measures or conditions to be put in place on the project to address concerns
- EA is a project planning & review process – often results in project changes

# Timing of preliminary screenings

- For larger projects or small projects with big issues, the screening determination should be made before getting too far into the licensing process

Why have early screening determination?

- If not there may be uncertainty among interveners and proponents about whether or not project will be referred to EA
- Example – screenings with a WL



# Case Study: Diavik PK into pits

- June 2018 – Reviewers asked to provide comments on licence amendment by August
- August 2018 – WLWB determines that insufficient information to inform a preliminary screening determination and issues IRs
- November 2018 – Diavik responds to information requests
- November 2018 – WLWB asks reviewers to comment on Diavik's responses to the IRs through December and January
- January 2019 – WLWB hosts technical session, further IRs
- February 11 – deadline for responses to information requests
- February 25 – Review Board refers project to EA on its own motion prior to completion of screening

# Reasons for Review Board referral to EA

## 1999 CEAA comprehensive study did not assess:

- placing processed kimberlite in the pits and underground mine workings
- whether the activity was acceptable and what the effects might be
- how to mitigate potential impacts of placing PK back into the pits and underground



# Reasons for Decision – referral to EA

Putting processed kimberlite in the pits outside the scope of:

- the original Diavik CEAA Comprehensive study
- the current approved version of the *Interim Closure and Reclamation Plan*
- the existing *Fisheries Authorization*

Placing processed kimberlite in pits is **permanent and irreversible**

**Restoring pits to fish habitat** important to the 1999 CEAA decision

Impacts of proposed changes on traditional use of Lac de Gras and cultural values needs careful consideration



# Diavik Reasons for decision – other considerations

**Large scale** of the proposed activities

The **sensitive ecological and cultural setting** of Lac de Gras

The potential for adverse effects to water quality in Lac de Gras after closure

The risk that placing PK in pits could **jeopardize** the closure plan and objective of **reconnection to Lac de Gras** and the restoration of the pit areas

The use of a relatively **new technology** (meromixis for processed kimberlite containment) in an untested setting (large deep, culturally important, cold climate lake such as Lac de Gras)

The potential impacts from proposed activities to combine with **cumulative effects** of past and present activities from the Diavik and Ekati mines on water quality, fish and wildlife





## Diavik Reasons for decision – other considerations

- the potential impacts of the proposed activities on traditional use, wildlife (including caribou), and the cultural value of Lac de Gras (as per section 125(1)) have not been evaluated
- Parties indicated that the developer did not provide enough information to justify position that the proposed development is unlikely to cause significant adverse impacts (onus is on developer)
- where uncertainty persists around the potential impacts and effectiveness of mitigations, and EA should be conducted





# Screening Process

# Mackenzie Valley Environmental Impact Review Board Preliminary Screeners Workshop

November 13, 2019

# NIRB Roles and Responsibilities

## The NIRB is responsible to:

- Screen project proposals to determine whether or not a review is required
- Gauge and define extent of regional impacts
- Review ecosystemic and socio-economic impacts of project proposals
- Determine whether project proposals should proceed, and if so, under what terms and conditions
- Monitor projects that have been approved to proceed

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# What types of Projects are Screened?

Roads / trails

Marine infrastructure

Research

Exploration

Mining developments

Seismic activity

DEW Line Cleanups

Access / Tourism

**Examples of regulatory authorities and types of permits that may activate NIRB screening assessment**

**These permits are not necessarily dependant on one another**

**and other authorizations may apply**

**Nunavut Research Institute**  
Scientific Research Licenses



**Department of National Defense & INAC**  
DEW Line Clean Ups

**Department of Fisheries & Oceans**  
Fish Habitat Authorizations



**Crown Indigenous and Northern Affairs Canada**  
Crown Land Leases and Permits

**Regional Inuit Associations**  
Inuit-Owned Land Leases and Permits



**Parks Canada**  
Research Permits in Parks



**Nunavut Water Board**

Water Licenses



**Canadian Coast Guard**  
Navigable Waters Permits



**Canadian Wildlife Service**  
Migratory Bird Sanctuary Permits & Scientific Take Permits

**Natural Resources Canada**  
Explosives Permit



**Transport Canada**  
Launch Safety Office Authorizations



**Hamlet Offices**  
Fuel Tanks, Quarry Permits & Industrial Activities



**Government of Nunavut**  
Fuel, Transportation, Quarries & Wildlife

# Application

## Applicant details

- Name, Representative
- Previously screened?

## Project Type

- main and sub-project types (e.g., exploration with a winter road and baseline research)

## Project Map

- Draw or upload shape or .kml files

## Activities

- Linked to geometries from map
- Land status (crown, commissioners, Inuit Owned Land)
- Site History (used in past?)
- Archaeological/paleontological value (if known)
- Proximity to nearest community

## Community Involvement and Regional Benefits

- Who contacted, meeting date and key questions/concerns (or meeting minutes)

## Authorizations Required

- Regulatory Authority
- Status of application

# Application

## Details

- Mode of transportation (air, land, water)
- Number of people on site and number of days on site
- Project schedule (dates, phases)

## Non-technical project proposal

- WHO:** Company, individual or entity proposing project
- WHAT:** The type of undertaking being proposed and how it would be carried out. Description of the scale of the project, number of people involved, permanence of any facilities constructed and methods of transport.
- WHY:** The objective and need for the project and potential long-term implications
- WHERE:** General location of the project in relation to closest communities and protected areas
- WHEN:** Timeframe (fixed, seasonal, multi-year)
- Provides members of public with enough information to understand what is being proposed
- Translations Required

## Material Use

- Equipment (type, proposed use, quantity, dimensions)
- Fuel Use (type, proposed use, quantity, containers, capacity)
- Hazardous materials (type, proposed use, quantity, containers, capacity)

## Water Use / Water Retrieval

- To obtain water for camp /municipal use or industrial purposes
- To cross a water course
- To alter the flow off (divert) or store water
- Amount of water (daily, proposed retrieval methods)

## Waste

- combustible, greywater, non-combustible, overburden, sewage, other)

# Application

## Impacts Identification

- Description of Existing Environment (physical, biological, socio-economic)
- Identification of predicted impacts and mitigation measures
  - Proponent to provide specific details based on project type and subtypes
- Cumulative Effects (past, present, foreseeable future)
- Transboundary Effects

## Impacts Table

- Identification of environmental impacts for each activity identified.
  - Positive
  - Negative/Non-mitigable
  - Negative/Mitigable
  - Unknown

## Additional Information / Supporting Documents

- Emergency Response Plans
- Monitoring and Management Plans (e.g., wildlife, air quality, water, waste)
- Abandonment and Reclamation Plan
- Images
- Design drawing
- Meeting Minutes
- Translated Materials



# Completeness Check and Scoping

Applications are checked for *Administrative* and *Technical* Completeness

Ensure enough information to determine scope of project and assess potential impacts

- NOTE: Level of detail required is based on project specific information requirements

Application returned to proponent *if further information required*. Timeframe in which deficiencies should be cured otherwise risk suspension of assessment.

Use of internal resources to scope project (i.e., Project Scoping Checklist)

# Public Comment

## Notice of Screening and Comment Request

- Comment Forms (online form, e-mail, fax, or phone)
- Public Notices (Translated Community Posters)
- Distributed to communities, Hunters and Trappers Organizations, Regional Inuit Associations, federal and territorial agencies, public and interested parties.

## Commenting Period

- 10 day Minor Screening (Use Minor Screening Criteria Checklist)
- 21 day Regular Screening

## Comments Received

- Notice distributed to all parties

## Proponent Opportunity to Respond to Comments

- If required

Summary of Comments and Proponent Responses incorporated into Screening Decision Report

# Technical Assessment

## Identify potential impacts using:

Inuit Qaujimajatuqangit (Traditional  
knowledge)

+

Scientific knowledge

## Staff must advise the board on the following:

- **Would there be significant adverse ecosystemic or socio-economic impacts or significant adverse impacts on wildlife habitat or Inuit harvest activities?**
- **Could the project have significant adverse effects on the well being of northerners?**
- **Does the project cause significant public concern?**
  - **Comments received from communities, government, Regional Inuit Association, and various experts**
- **Would the project use new technology for which the effects are unknown?**
- **Cumulative Effects (past, present, foreseeable future)?**
- **Transboundary Effects?**

# Technical Assessment

## ENVIRONMENTAL IMPACTS

- What are the possible environmental impacts of a proposed project on the land, wildlife, water and air?
- What are the consequences of these impacts on the environment?

## SOCIAL IMPACTS

- How will a proposed project effect the public, their families and their communities?
- What are the expected social impacts of a proposed project?
- How can the positive impact be assured, and the negative impact be limited?

## ECONOMIC IMPACTS

- What needs to happen to make sure Nunavumiut are able to participate in economic opportunities provided by development?
- What are possible negative economic impacts of a project and how can they be limited?

# Screening Decision Report

## Project Referral

- Date NIRB received referral and from whom

## Project Overview and the NIRB Assessment Process

- Information requests
- Summary of Project Proposal
  - Project name, location, distance to closest community, what the proponent intends to do and the time period.
- Project Scope (any inclusions or exclusions)
- Screening Process Dates
- Summary of Public Comments and Concerns Received
- Comments and concerns received with respect to Inuit Qaujimaningit, Traditional and Community Knowledge
- Proponent's Response to Public Comments and Concerns

## Assessment of Project Proposal (specified in Act)

- Determination of significance of impacts
  - *the size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts;*
  - *the ecosystemic sensitivity of that area;*
  - *the historical, cultural and archaeological significance of that area;*
  - *the size of the human and the animal populations likely to be affected by the impacts;*
  - *the nature, magnitude and complexity of the impacts;*
  - *the probability of the impacts occurring;*
  - *the frequency and duration of the impacts;*
  - *the reversibility or irreversibility of the impacts;*
  - *the cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out; and*
  - *any other factor that the Board considers relevant to the assessment of the significance of impacts.*

# Screening Decision Report

## Views of the Board

- Identification of the issues and discussions regarding whether the proposed project has the potential to result in significant impacts.
- ecosystem, wildlife habitat, Inuit harvesting activities and Socio-economic effects on northerners
- Significant public concerns
- Technological innovations for which the effects are unknown
- Sections include relevant discussions on mitigation measures and the Terms and Conditions proposed to mitigate

## Recommended Project Specific Terms and Conditions

- NIRB worked with regulatory authorities to develop standard terms in conditions
- Terms and Conditions are based on assessment of project and its impacts

## Monitoring and Reporting Requirements

- Reports the Proponent is required to submit (e.g., Annual Report, Wildlife Monitoring and Mitigation Plan, Spill Contingency Plan, Abandonment and Reclamation Plan)

## Other NIRB Concerns and Recommendations

- Any other project-specific terms and conditions

## Regulatory Requirements

- Acts and Regulations
- Other Applicable Guidelines

## Conclusion / Decision

# Board Decision

## Option 1



### **Approve with terms and conditions**

The Board may recommend that a project be approved and go directly to licensing. When the impacts are well known and can be managed, the NIRB can specify the terms and conditions the proponent must follow to prevent or lessen any negative impacts to an acceptable level.

## Option 2



### **Additional Review required**

The Board may decide a project be sent for a full environmental and socio-economic review because of the potential for significant impacts. This is what happens, for example, with mining or large infrastructure projects where the plans are complex and require more study and consultation with affected communities.

## Option 3



### **Modify or abandon the project**

When the impacts of a project are considered by the NIRB to be unacceptable, the Board may recommend that the proposal be modified so that certain components are changed, or abandoned completely.

# Board Decision



Highlights key areas of the project proposal that have potential impacts (positive or negative) and  
Proposed mitigation measures.

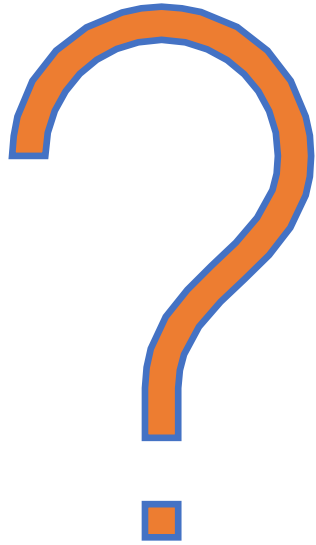


Recommends terms and conditions to be included in the permit or licence.  
Conditions are developed to include mitigation measures to mitigate ecosystemic and socio-economic impacts that was identified during the EA process.



Decision is sent to the Minister within 45 days of the start of the process.





Thank you

Mahsi Cho

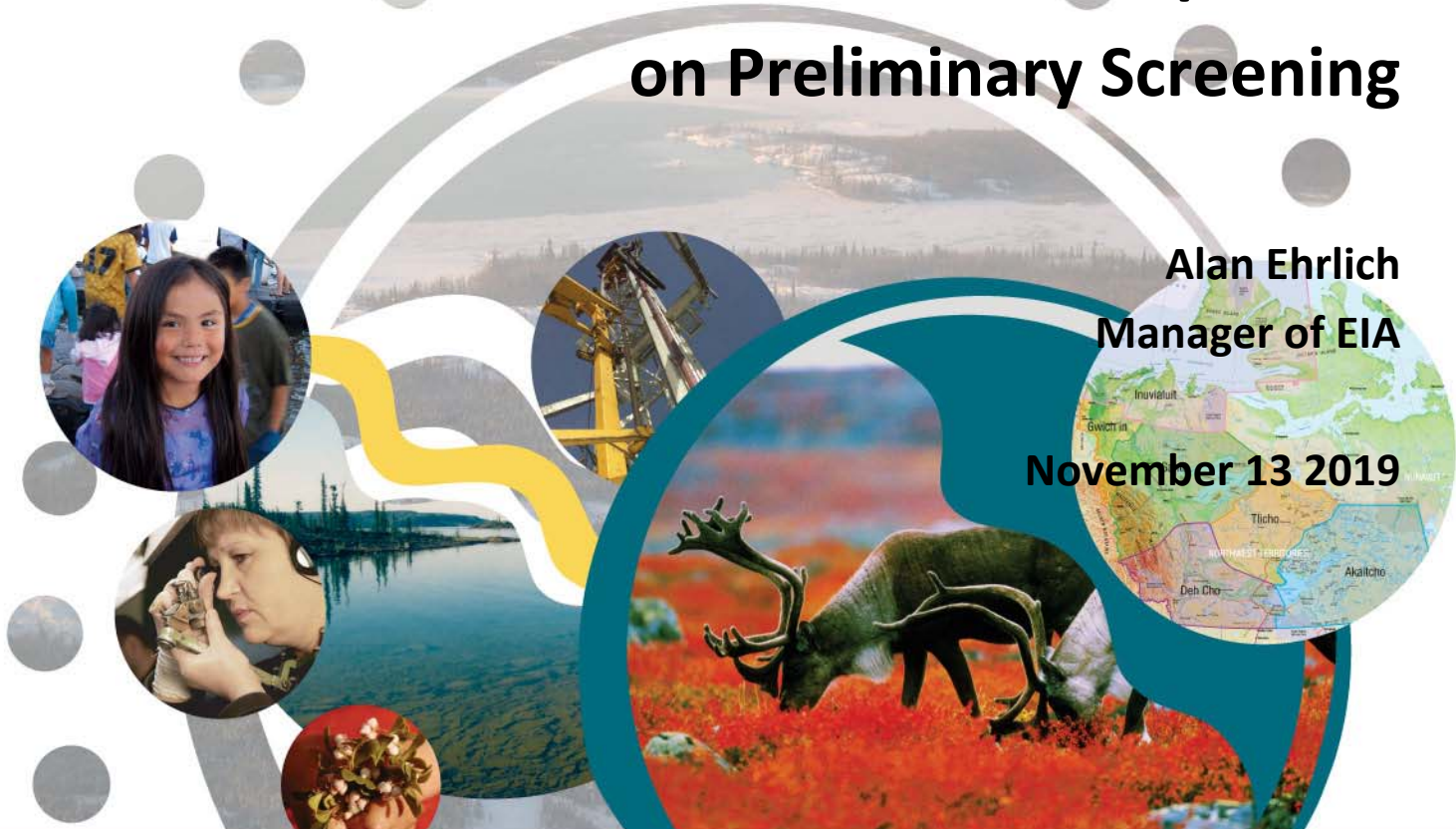
Questions?

# The Mighty “Might Test”

## A Review Board Perspective on Preliminary Screening

Alan Ehrlich  
Manager of EIA

November 13 2019





# Outline

- General intro to PS in the EIA system
- Review Board's involvement in screening
- Scoping challenges faced by regulators in screenings
- The "Might Test"
  - What it is
  - General criteria
  - How to apply it



# Screening and the EIA System

- Three levels of EIA
- MVRMA delivers on land claims
- <95% of developments go only through PS
- *Mostly* done by Land and Water Boards
- Starts when developer applies for permits
- cursory initial look at potential for impacts

## What's it to us?

Review Board does not conduct screenings, so why is it involved?

- Responsible for writing guidelines
- Screeners must send results to Review Board
- Review Board may conduct an EA regardless

# Development Scoping in PS

- Screeners must consider development as a whole, not just regulatory aspects, during PS
  - Some regulatory duties don't come from MVRMA
  - EIA includes important issues that are not regulated: "Impact on environment" is broadly defined
  - Lets screeners adopt others' reports
  - Fishing: Why the hook?
- Take off your regulatory hat when you screen





**Cultural  
impacts**



**Socio-  
economics  
Cumulative  
impacts**



# General steps

- **Notify** the public and others
- Get and share **comments**, expert advice
- List potential **impacts**
- Consider adequacy of **mitigations**
- **Conduct the “might test”**







# The Might Test

- Used to decide if project might cause impacts or concerns (might ≠ likely)
  - If no → project gets permits
  - If yes → project goes to Review Board for EA
- You determine:
  - Whether the development **might** have a *significant* adverse impact on the environment
  - Whether the development **might** cause public concern



# How do you do this?

- “Might” is a sensitive trigger
- The world is a complex and chaotic place that is hard to predict
- Are there relevant unanswered questions about the development?
- If yes, consider referral
- Don’t do a mini-EA



# General factors

- Development **scale**: Larger developments *often* have more potential for impacts
- Development **location**: Ecologically or culturally sensitive areas, protected areas, areas near communities or harvesting areas
- Nature of **activity**:
  - Degree of disturbance
  - Hazardous chemicals or effluents
  - Changes to access
  - Infrastructure needs
  - New tech or setting
  - Severity of worst case scenarios

# Criteria to consider

Many factors can help inform you whether there might be a potentially significant impact:

- magnitude
- duration
- reversibility
- spatial extent
- likelihood
- nature of the impact

The same factors are applied more rigorously during an EA



# Not the test



Screeners should use their  
professional judgment:

**Should the  
development go to  
environmental  
assessment?**



# Operational interpretation of the Might Test:

Screeners must ask:

1. Has the developer **proven,**
2. **to the screener's satisfaction,**
3. **that there is no reasonable possibility**
4. **of significant adverse impacts**
5. **or public concern**
6. **from the proposed development?**

If not, refer development to environmental assessment

## In summary:

- Screen the whole development
- Put on the big hat
- Screening is not a mini EA
- Has the developer proven **no reasonable possibility** of significant adverse impacts?
- Should the development go to environmental assessment?





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Regulator

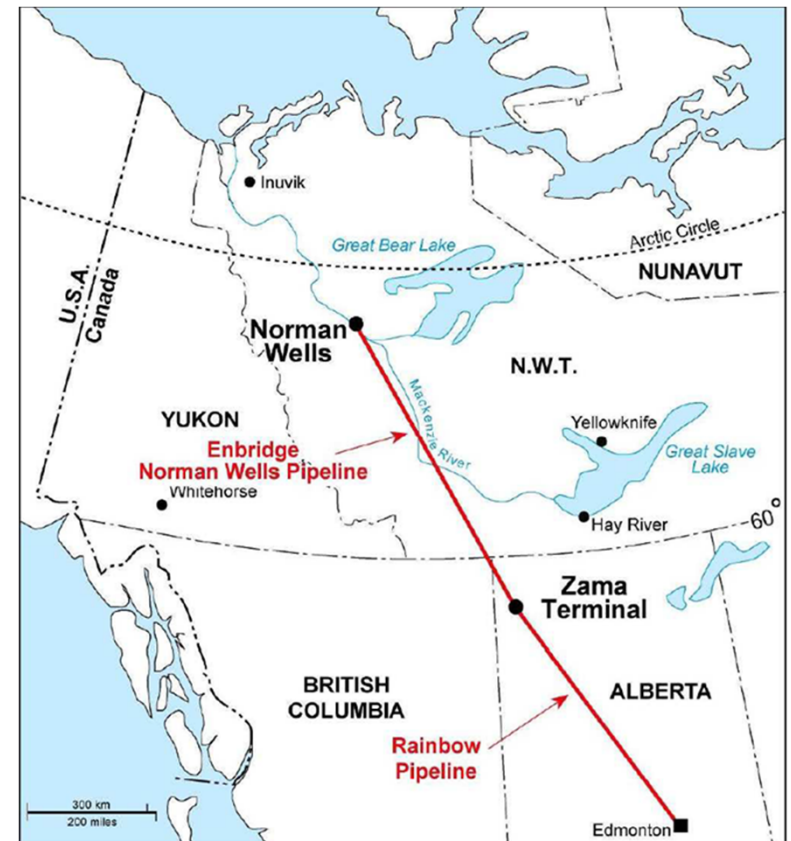
Régie de l'énergie  
du Canada

# Line 21 Lessons Learned

Anne-Marie Hesse – Technical Specialist, Environment

- The Project
- Preliminary Screening
- Authorizations
- Coordination
- Challenges
- Highlights

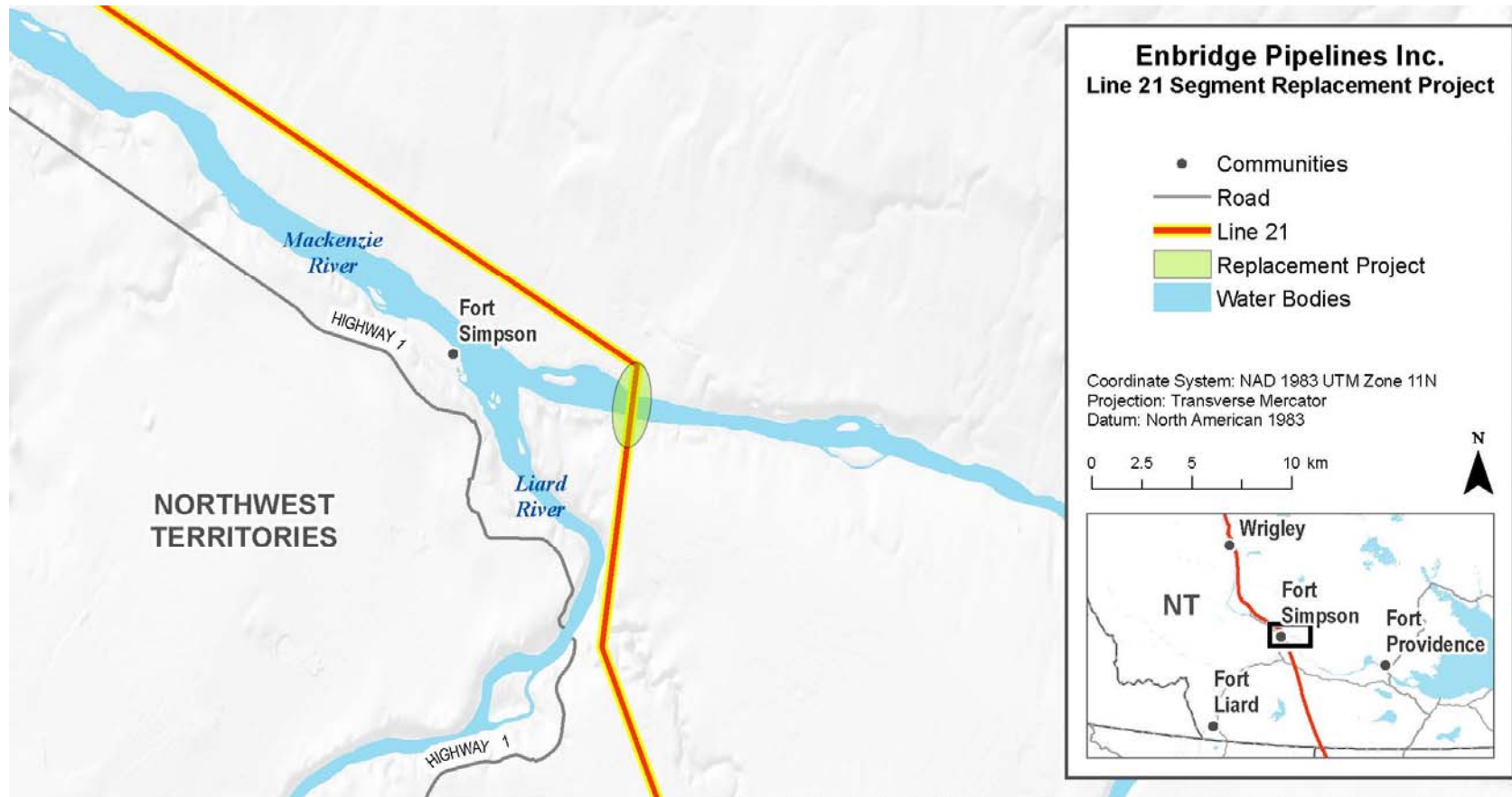
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Map produced by the NEB, May 2017. The map is a graphical representation intended for general informational purposes only





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# Preliminary Screening Requirements

The NEB (now CER) is a Designated Regulatory Agency under the MVRMA

The Mackenzie Valley Land and Water Board determined that s157.1 of the MVRMA applies to the Applications and that the Applications are exempt from preliminary screening

*Part 5 does not apply in respect of any licence, permit or other authorization related to an undertaking that is subject of a licence or permit issued before June 22, 1984, except a licence, permit or other authorization for an abandonment, decommissioning or other significant alteration of the project*

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Canada

# Authorizations Required

*National Energy Board Act*

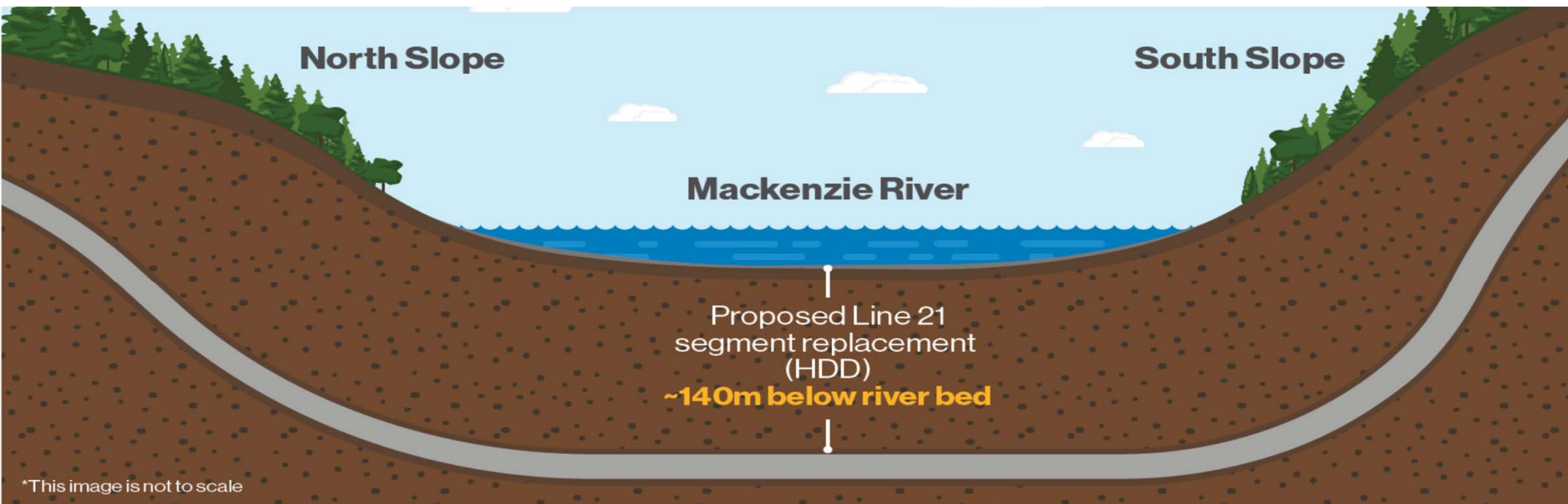
s. 58 (Horizontal Directional Drill)

s. 45.1 (Decommissioning)

*Mackenzie Valley Resource Management Act*

Type B Water Licence

Type A Land Use Permit



Line 21 is 12" in diameter and is currently located approximately 4 meters under the Mackenzie River. The Line 21 Segment Replacement Project will locate the pipeline approximately 140 meters under the Mackenzie River.



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## Coordination

Parallel but separate processes

Sequential Hearing in Fort  
Simpson (same week as Part 1 of  
MVLWB hearing)

Board staff kept in  
communication as both  
processes unfolded

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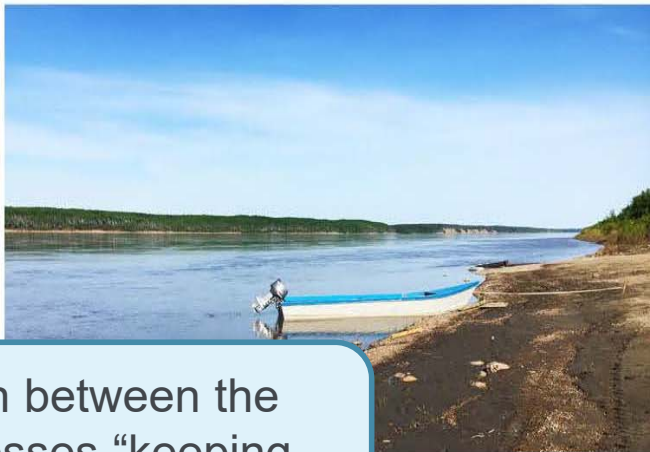
Canada

# Challenges

Participant Funding  
for NEB hearing



Sequential processes on  
the same week may have  
resulted in fatigue on  
community members  
participating in both  
processes



Confusion between the  
two processes “keeping  
records separate”



Perception of  
duplication/overlapping of  
hearing processes

# Highlights



Maintaining established relationships with community leadership contributed to the success of the hearing



Board staff continued contact with the Mackenzie Valley Land and Water Board as both processes unfolded

...é k'áogedéh-ke gondj ts'éh k'éh feg...  
...qki hono ?qó líe njaa su, ekqh zheq daa g...  
National Energy Board Information Session  
ridge Line 21 Pipeline Segment Replacement  
njaa, Enbridge ezheq Tíeh ts'é k'áogedéh-ke gots'é  
íeh gha, ezhyj ía Tíeh Gúlj ts'éh tleh k'o njaa qt'é. Da  
deh tlaa ekó unaa ehth'I ne zhíh gogedíeh gha.

...to the National Energy Board to replace  
...eline. The company plans to drill under  
...onal Drilling.

Public Notices were translated into Dene Zhatie and simultaneous interpretation (Dene Zhatie/English) was provided at the oral portion of the hearing



The Panel's decision to design a hearing process with an oral portion was made in light of the Project location and potential community interest







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[www.cer-rec.gc.ca](http://www.cer-rec.gc.ca)

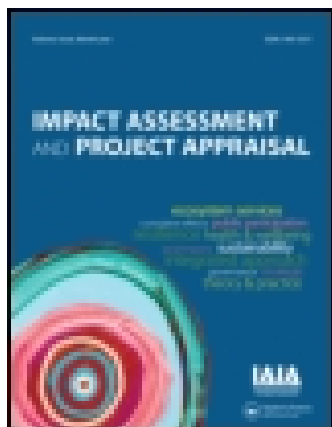
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## Impact Assessment and Project Appraisal

Publication details, including instructions for authors and subscription information:  
<http://www.tandfonline.com/loi/tiap20>

### The significance spectrum and EIA significance determinations

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Published online: 23 Jan 2015.



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To cite this article: Alan Ehrlich & William Ross (2015): The significance spectrum and EIA significance determinations, Impact Assessment and Project Appraisal, DOI: [10.1080/14615517.2014.981023](https://doi.org/10.1080/14615517.2014.981023)

To link to this article: <http://dx.doi.org/10.1080/14615517.2014.981023>

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## The significance spectrum and EIA significance determinations

Alan Ehrlich<sup>a\*</sup> and William Ross<sup>b</sup>

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(Received 21 May 2014; accepted 8 October 2014)

The concept of significance is fundamental to environmental impact assessment (EIA). Even though there are many guidelines describing technical characteristics of impacts (such as magnitude, geographic extent, extent and frequency) that should be considered, there has remained a long-standing need for increased clarity on how significance determinations are ultimately reached by significance determiners, those who, on behalf of governments, make a legal determination of significance in EIAs. This involves the application of societal values, in the form of subjective informed judgement, about the acceptability of the predicted impacts. This paper introduces the significance spectrum, a graphic model that illustrates a process for determining significance, using the following steps: (1) determining the threshold of significance for each valued component; (2) weighing the evidence and considering predicted impacts; (3) deciding which side of the threshold the predicted adverse impact falls on; and (4) for unacceptable impacts, deciding if mitigations can make the residual impact acceptable. Concepts such as ecological significance should not be confused with significance in EIAs, which may not only include ecological significance but also considers societal values. We provide specific steps for determining significance that help clarify this fundamental aspect that lies at the core of EIA decision-making.

**Keywords:** EIA decision-making; EIA significance determination; significance spectrum; societal values

### Introduction

Determining the significance of predicted impacts is one of the most important decisions in the environmental impact assessment (EIA) process. Good EIA should focus on the impacts that matter most, and, as a result, EIA systems involve systematic steps to determine whether the likely adverse impacts of proposed projects are significant. This paper:

- (1) briefly identifies the key academic literature regarding the importance of significance determinations in EIA and the need for improved understandings of how to determine significance;
- (2) looks, from the perspective of the academic literature and practically, at why and how values are part of significance determinations;
- (3) presents a simple visual model, called the significance spectrum, to clarify how significance determinations are made; and
- (4) examines some of the implications of the role of values in significance determinations to contrast ecological significance with significance as it is used in EIA.

### Significance is a fundamental question of EIA

The question of whether or not the impacts (in this paper, the terms 'impact' and 'effect' are used interchangeably) of a proposed project are likely to be significant is key in many, if not all, EIA systems (e.g. EC 2001; CEQ 2005; World Bank 2013). Sippe (1999) lists examples of the legislative bases of significance determinations from around the world, including the USA, New Zealand, the

European Union and Australia. The United Nations Environment Programme states that '[p]articular attention is given in EIA practice to preventing, mitigating and offsetting the significant adverse effects of proposed undertakings' (Sadler et al. 2002, p. 103).

Despite this widespread centrality of the question of significance in EIA, straightforward methods for reaching significance determinations remain challenging and sometimes unclear. This is true even though there are many examples of EIA guidance that identify characteristics of a predicted impact that need to be considered in reaching significance determinations. These typically include impact characteristics such as magnitude, duration, frequency, likelihood and reversibility (e.g. EC 2001, p. 25; Mackenzie Valley Environmental Impact Review Board [MVEIRB] 2004, p. 18; Canadian Environmental Assessment Agency 2012, p. 3; Glasson et al. 2012, p. 126). The United Nations Environment Programme describes similar characteristics (Sadler et al. 2002, p. 264). In the USA, the Council on Environmental Quality regulation (CEQ 2005, s. 1508.27) describes the determination of a significant impact as a function of context and intensity. The five characteristics listed in Canadian guidance (magnitude, geographic extent, duration and frequency, reversibility and ecological context) are widely cited and, superficially, appear to suggest that determinations of significance are a scientific exercise. We think not.

*Note:* Many participants and parties make decisions about the significance of potential impacts throughout the EIA process, such as a developer deciding what mitigation to propose or interveners deciding whether they agree with a developer's impact predictions. Sippe (1999, p. 81–84) and Weston (2000, p. 186) list several others. In this paper,

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we are primarily referring to the determination of significance made on behalf of government(s). Such decisions are made by governments, by regulators, by independent tribunals (environmental assessment panels) and the like. These are different from the views of significance by others because they stand as legal determinations of what constitutes significance.

### Need for a clear process for determining significance

The need for greater clarity and understanding of the actual process of significance determination is recognized in the literature ranging from the 1980s to present, but there is little apparent progress evident. Beanlands and Duinker (1983) call significance determinations 'the very heart of EIA', and recognize the need for an operational framework regarding significance as a concept to guide EIA practitioners and participants (p. 43). Sippe (1999) observes the centrality of the concept of significance to decision-making in most EIA systems, but notes that 'despite the prominence of the concept around which decisions turn and the controversy which such decisions attract, the concept remains largely undefined, at least to the point of general consensus amongst decision makers' (p. 74). Wood and Becker (2004) recognize the need for improved understanding of significance evaluation in EIA. They attribute the complexity of significance determinations partly to the role of values in EIA decision-making. Wood and Becker state:

Decisions that surround the evaluation of the significance of environmental impacts are a critical component of EIA, with implications for all stages in the process. Despite this, significance evaluation arguably remains one of the most complex and least understood of EIA activities, involving a combination of technical 'scientific' approaches to appraisal situated within a political decision making arena, characterised by value judgements and case-specific interpretations. (2004, p. 73)

Several others have recognized this need for increasing clarity of the significance determination process:

- Haug et al. (1984) observe of the US National Environmental Protection Act regulations that 'they provide no clear definition of significance that can be applied objectively and uniformly to environmental issues and the consequences of man's activities' (p. 16).
- Lawrence (2005) concludes that '(i)mpact significance determination is widely recognized as a vital and critical EIA activity, both in Canada and in other jurisdictions. Yet it remains one of the most complex and least understood of EIA activities' (p. 33). He lists several criticisms of significance determination requirements, and observes that this 'suggests a far from settled EIA sub-field. Clear and unequivocal good practice significance determination standards are unlikely to emerge in the foreseeable future' (p. 12).
- Lawrence (2007) lists numerous criticisms of prevailing practices of significance determination,

and says that '[a] necessary first step toward addressing these needs (for an enhanced level of EIA practice) is greater clarity, specifically regarding the basic characteristics of significance determination activities' (p. 757).

- Wood (2008) states that '(t)he evaluation and communication of the significance of environmental effects remains a critical yet poorly understood component of EIA theory and practice' (p. 22).
- As recently as 2013, Lyhne and Kornov recognized that although there are many checklists, criteria and thresholds available to guide significance determination, non-technical subjective elements make the determination of significance more complex. They identify 'a need to notice and recognize significance determination, (to) have conversations in interactions about its nature and role ...'.

This paper is intended to add clarity to the significance determination process. The paper and the model it presents are products of the authors' reflections on direct experiences in numerous deliberations in Canada. Federal Canadian legislation sets the determination of whether a project is likely to cause significant adverse impacts as the main question that decision-makers must answer (Canadian Environmental Assessment Agency 2012, s.52). In EIA under the Canadian Environmental Assessment Act (CEAA), the Mackenzie Valley Resource Management Act (MVRMA), and elsewhere (as described above), much depends on these determinations of significance. Under CEAA 2012 the question of impact significance is fundamental to whether the project may proceed to the regulatory stage or if it is referred to Governor in Council (Government of Canada 2012, s. 52). Under the MVRMA [s. 128], the question of impact significance is fundamental to determining whether a proposed project needs to undergo an environmental assessment, and whether, at the outcome of the environmental assessment, the project is required to proceed with or without with mitigation measures, or indeed if the project is to proceed at all [Government of Canada 1998]).

In our experience, we have observed that technical experts are usually engaged in analysing impact characteristics such as impact geographic extent, magnitude, etc. (typically described as the technical bases for significance determinations). For example, a biologist may predict that a valued component may be affected to a certain degree, over a certain area, over a certain time, with a certain probability. We suspect, however, that if you were to ask that biologist the crucial question of whether or not the predicted change is acceptable, the biologist should respond that the answer is not a strictly scientific judgement.

### Subjective informed judgement

In the authors' experiences, determinations of significance depend on the *subjective informed judgement* of decision-makers concerning the valued component being considered. This does not replace considering the detailed characteristics of the predicted impact, but necessarily



goes beyond that. Subjective does not mean arbitrary – those using subjective informed judgements to make significance determinations still must rely on the evidence that has been brought forth by the participants of the EIA, and must use cogent reasoning. Importantly, when an EIA significance determiner applies subjective informed judgement to make a significance determination, it reflects the significance determiner's (and, ideally, society's) values.<sup>1</sup>

Subjective judgement informed by a body of evidence compiled through a fair process and reflective of a set of societal values is not only credible, but it is in fact a mainstay of some of the most important decisions made in society – by the courts. The same principles lie at the heart of significance determinations in EIA. As in the courts, this approach is used to decide between two categories. Court judges must determine whether the accused is guilty or not; EIA decision-makers must determine whether potential impacts are significant or not.

Below, we examine why the role of values is and should be central to EIA significance determinations, and how, step by step, they can be practically applied to go from impact predictions to legitimate significance determinations.

### The role of values in significance determinations

The EIA academic literature supports the idea that value judgements are, and should be, an important part of significance determinations.

- Beanlands and Duinker (1983) assert that 'ultimately, impacts would be measured on the yardstick of human values. Any comprehensive definition of a significant impact with respect to environmental assessment must reflect this value judgement' (p. 45).
- Lawrence (2005) notes, among other things, that the 'central role of values and subjectivity' is a factor that makes the emergence of good practice standards for significance determination unlikely (p. 12). In his conclusions, he describes significance determinations as 'subjective, normative and value-dependent' (p. 33).
- Haug et al. (1984, p. 18) conceptually separated the values associated with of a predicted impact (which they refer to as 'the meaning of the impact') from the characteristics of the impact ('the fact of the impact'), and stated:

*The fact of an environmental impact is the change itself, its magnitude, direction, units, and the estimated probability that it will occur. The meaning of an environmental impact is the value placed on the change by different affected interests. It is the answer to the question: If this impact occurs, so what? The 'so what?' determines how important or 'significant' an environmental issue is, and to whom. (Italics in original)*

- Sippe (1999) asserts that the adaptability of the concept of significance to sociopolitical contexts (presumably including values) has been an important part of the international success of EIA (p. 74).

He includes a decision tree for determining environmental acceptability that considers both of the components identified by Haug et al. (1984) above.

- Glasson et al. (2012) frame significance in terms of impact acceptability (p. 126). The same paper notes (with respect to socio-economic impacts) that significance determinations involve weighing the importance of impacts, and that '[t]his involves interpretation and the application of judgement. Such judgement can be rationalized in various ways and a range of methods are available, but all involve values and all are subjective' (p. 128).

There are several other examples recognizing the importance of value judgements in EIA significance determinations.

- Weston (2000) notes that significance-based decisions in EIA are 'inherently based upon value judgements and are made within a political context' (p. 200), and that these value-based decisions 'will inevitably rely on professional, political and intuitive judgements' (p. 198). Weston further states that 'the (scoping) process is therefore at heart human centred and not ecocentric; it is anthropocentric rather than ecocentric' (p. 199), and describes this as a strength of EIA, not a weakness.
- Harding (1998, p. 79) emphasizes that inadequate consideration of values often underlies apparent disagreements over fact in the environmental decision-making process.
- Sadler et al. (2002, p. 274) describe two steps for evaluating significance that emphasize the consideration of 'impact importance' in the second step, using a subjective value.
- Gibson et al. (2005) state that 'the significance decision involves judgement in light of context' and argue that the unique context-specific nature of the interplay between a particular project and its setting requires 'context-specific choices that depend on fair process rather than regulatory type pre-determined thresholds' (p. 166–167).
- Briggs and Hudson (2013) recognize that subjectivity is a part of determining significance, but observe that there exists concern that developers, or the consultants working for them, can use it to minimize the predicted impacts to increase odds of project approval (p. 17). This is discussed further below.
- Gibson et al.'s sustainability-based criteria and trade-off rules for evaluating the significance advocate for applying specific values (in these cases, based on sustainability principles) to significance determinations (2005, p. 173–178). In this context, Gibson et al. state that '... significance decisions are essentially matters of public choice. Assessment is more about valuing than calculating' (p. 175).
- Rowan (2012, p. 190) argues for applying specific human values to improve the credibility of the social impact assessment process.

It is noteworthy, with respect to the significance spectrum presented below, that some of these authors have described significance in terms of impact acceptability (e.g. Beanlands & Duinker 1983, p. 44; Haug et al. 1984, p. 19; Sippe 1999, p. 85; Sadler et al. 2002, p. 274; Gibson et al. 2005, p. 174; Lawrence 2007, p. 763; Glasson et al. 2012, p. 126). The International Association for Impact Assessment's *Principles of Environmental Impact Assessment Best Practice* also states that the evaluation of significance involves determining the importance and acceptability of impacts (Senecal et al. 1999).

To summarize, there are many published guidelines describing criteria for impact prediction, and there is a recognition that values play a role in significance determinations. However, there is little straightforward guidance available to EIA decision-makers on exactly how to apply values to impact predictions to reach significance determinations. Even though this is a vital part of the EIA process, we have observed that this remains problematic to practitioners. That is the purpose of this paper – to help clarify how significance determinations are actually made. The model below, which we call 'the significance spectrum', is intended to illustrate a clear and straightforward method of determining significance.

### **Why social values are central to significance determinations**

There are two distinct reasons why we conclude that societal values (supraindividual values, according to Rokeach [1979]) need to play a central role in determining significance. The first is more theoretical, based on the proper role impact assessment plays in leading to better development decisions. The second is based on best professional practice in Canada and, we believe, elsewhere.

### ***Theoretical reason for societal values in determining significance***

The International Association for Impact Assessment defines impact assessment as 'the process of identifying the future consequences of a ... proposed action'. Impact assessment is important because it leads to better decisions concerning proposed projects. The World Bank (2013) requires EIA '... to help ensure that [projects proposed] are environmentally sound and sustainable, and thus to improve decision making'. This purpose of EIA is made clear in Canada where the Canadian Environmental Assessment Agency indicates 'environmental assessment provides an effective means of integrating environmental factors into planning and decision-making processes in a manner that promotes sustainable development' (Canadian Environmental Assessment Agency 2012).

In short, EIA is used to determine the consequences of proposed actions (projects) to determine if they are environmentally acceptable. Indeed, one of the purposes of the CEAA is to 'to ensure that projects are considered in a careful and precautionary manner before federal authorities take action in connection with them, in order

to ensure that such projects do not cause significant adverse environmental effects' (Government of Canada 1992). It is clear from these features that the use of EIA is to assist decision-makers to avoid significant adverse effects.

This provides the important link between the impact assessment process and the subsequent regulatory decision-making process into which impact assessment feeds. While these two processes (impact assessment and regulatory decision-making) are conceptually different, they are closely linked and it is very desirable to have the meaning of significance be the same, not different. It should be noted that regulatory decision-makers will consider more than what is included in the impact assessment. But what is in the impact assessment documents ought to be in the same 'language' as the decision-makers are using.

Decision-makers in Canada and in most of the world make project decisions based on some form of public interest test. A clear example of such a test is found in Alberta (the Energy Resources Conservation Act) where the test to approve energy projects (from producing wells to oil sands mines) is to determine the project is 'in the public interest having regard for environmental, social and economic matters'. The main point is that significance of effects is determined by the decision-maker. In making a public interest decision, legitimately determined public policies and societal values should properly influence that decision.

As noted above, a purpose of the CEAA is to ensure that 'projects do not cause significant adverse environmental effects'. It is clear that this determination of significance for each effect (and hence the determination of the project as a whole being in the public interest) is the responsibility of the significance determiners. It seems equally clear that significance relies heavily on the values of the society related to the valued component for which the decision is being made. Note that significance is attributed to each effect and thus is determined for the specific valued component affected. The public interest test is applied to the project as a whole. The level of significance for each effect would properly be determined based on ecological, social and financial considerations and would be based on the values of society. For example, in Alberta to determine significance, air quality is often compared to the Alberta Ambient Air Quality Objectives. These are, according to the Alberta Environment web page, determined based on scientific, social, technical and economic factors. Such regulators, for example, should not (barring exceptional circumstances) permit projects that would create effects in violation of laws and regulations. For this reason, the US EPA has provided the following example of a significant adverse effect: 'the activity will introduce pollutants to the air that will cause ambient air quality to exceed established levels' – violating levels established by society. The point being made here is that significance determiners should identify an impact as significant if it does not meet government determined objectives, regulations and standards. However, the corollary is not necessarily true – that is, an impact may

meet government determined objectives, regulations and standards, and still be significant for other reasons.

As mentioned above, Briggs and Hudson (2013) cite the concern that subjectivity in significance determinations allows unscrupulous developers or their consultants to sugar-coat (i.e. minimize) the significance of potential impacts, in order to make them seem more acceptable. While this does sometimes occur, in this paper we are referring primarily to the EIA significance determiner (as described above). In the context in which we are writing, the EIA significance determiner in a procedurally fair EIA must be without apprehensions of bias. Significance determiners are in a good position to use their own subjective informed judgement, when weighing evidence, to consider possible misrepresentations and biases of EIA participants (including those with interests that oppose one another) to reach wise decisions that reflect societal values – which can ultimately help to *reduce* the problem described by Briggs and Hudson.

Our use of the term ‘societal values’ is not at all intended to mean values of individuals or groups that are arbitrary. We mean subjective informed judgements. Examples include compliance with legislation, regulations passed by responsible authorities, regional policies set by authorities following appropriate public consultation and the like.

Sadar (1996, p. 100) states that:

in the first stage (of significance determination) one relies on scientific and/or specialized knowledge. In the second stage, one is concerned with the relative values of the society or segments of it. This latter stage involved value judgements and is not necessarily based on scientific knowledge.

Sadler (1996) mentions that ‘During the more detailed phase of impact analysis, determination whether impacts are significant and acceptable involved both prediction and estimation of nature, magnitude, timing, and duration, as well as the attribution of importance or value to these findings’ (p. 118).

Furthermore, the CEAA 2012 indicates: ‘If the decision maker decides that the designated project is likely to cause significant adverse environmental effects ... the decision maker must refer to the Governor in Council the matter of whether those effects are justified in the circumstances’ (Government of Canada 2012, s. 52). The sequence is first a determination of the significance of (adverse) effects based on a societal threshold of significance (including environmental and ecological features as important factors) and then using this (and other) information to decide whether the project as a whole is in the public interest. In deciding whether the project is in the public interest, it may be necessary to decide if any significant adverse effects are justifiable under the circumstances.

Two features are worth noting. First, if the likely significant adverse effects are justifiable, the project may be allowed to proceed – the public interest may override significant adverse effects. Second, the determination that the likely significant adverse effects are justifiable can only be made by Cabinet, a high level of government.

The regulator uses the term ‘significance’ in such a manner that it includes a variety of social, economic and ecological aspects (public interest). There are two reasons for expecting the word to have the same meaning in impact assessment. The first is that the wise proponent will make decisions regarding mitigation measures based on the analysis presented in the EIS, more precisely, based on the possibility of significant adverse effects. The proponent will almost certainly be paying attention to the decision to be made by the regulator, who will base the decision on the public interest and hence (*inter alia*) on the significance of effects. If the term ‘significance’ has a different meaning in the EIS than it has for the regulator, that will be a disservice to the proponent or will require a complicated discussion between the proponent and its consultant.

The second reason is that, if the term has a different meaning, this will cause much confusion for all participants in the project review process. They will need to use the meaning the regulator will use in spite of the term having a different meaning in the EIS. This confusion may even create uncertainty in the mind of the significance determiner, a situation that could jeopardize the review process, or lead to judicial review. Anyone may make an argument regarding effect significance or regarding project public interest. But such arguments must only be treated as advice to the significance determiners.

### *Professional practice in implementing the CEAA*

Independently of the above theoretical analysis, we took the following two steps to determine best practice in determining significance under the CEAA. We examined the significance guidance document (Canadian Environmental Assessment Agency 2012). In this document, it is stated:

The most common method of determining whether the adverse environmental effects of a project are significant is to use environmental standards, guidelines, or objectives. If the level of an adverse environmental effect is less than the standard, guideline, or objective, it may be insignificant. If, on the other hand, it exceeds the standard, guideline, or objective, it may be significant.

Environmental standards, guidelines and objectives have been established by federal, provincial, and in some cases municipal departments, ministries, and agencies. They often define either maximum levels of emissions or discharges of specific hazardous agents into the environment or maximum acceptable levels of specific hazardous agents in the environment. They are usually based on the results of studies in the field and with laboratory animals, available technology, and/or prevailing attitudes and values.

That is, the guidance document suggests using government determined standards, guidelines or objectives. Because the standards, guidelines and objectives are based on prevailing attitudes and values are used to determine significance, this also suggests that significance can properly be based on prevailing attitudes and values.

In addition, we consulted a very knowledgeable expert on the CEAA, Bob Connelly. Connelly (personal



communication, 2012), conveyed the following message regarding the determination of significance under the Act:

I would agree that societal values should, and I believe are meant, to be included in determining significance ... Public participation is a fundamental purpose of the Act and provision for it is reflected throughout. It is therefore implied and widely accepted that public values will be considered in the CEAA process including, in my view, in determining significance. After all, significance involves value judgements and consequently understanding public values is essential in making this judgement.

This idea of significance determinations being based on subjective informed judgement instead of a purely technical factoring of characteristics means that significance determinations are more than inevitable deterministic outcomes. Because this involves the application of values, it matters who decides. For example, the MVEIRB is a co-management court-like tribunal composed of members who are nominated by Aboriginal (Indigenous) organizations and non-Aboriginal governments in equal numbers. Different board members bring different world views and societal values to the decisions (Christensen et al. 2007).

In the case of co-management, and in other settings where the potentially affected public includes primarily Aboriginal communities, social values of the potentially affected community should be an important factor in determining significance. When these social values conflict with those of non-Indigenous society, reaching significance determinations can be much more difficult. Larcombe (2000) noted that '[t]he practice of determining significance is highly subjective and driven by non-Aboriginal society values' (s. 4.3.2). The MVEIRB's co-management approach to EIA decision-making makes it easier for it to recognize, consider and incorporate Aboriginal social values when making its significance determinations.

### Significance simplified

The MVRMA EIA process (Government of Canada 1998) requires that any project that is determined likely to be a cause of significant adverse impacts must have its impacts prevented by measures or be rejected (unless ordered to a review panel for further assessment, which has occurred only twice since the Act was passed). The question of whether an impact is significant can therefore be reasonably interpreted operationally by the decision-makers to mean 'Does the impact matter enough so that it should be reduced or prevented?' If so, the impact is significant. Board members have found that this question has greatly simplified significance determinations. This wording clarifies the decision while emphasizing the subjective determination of acceptability based on social values and considering the public interest.

The following graphic model (Figure 1) further clarifies the significance test, helps show the role of mitigations and clarifies the separate roles of the EIA significance determiners and those of the regulators who will later decide on project approvals for most projects.

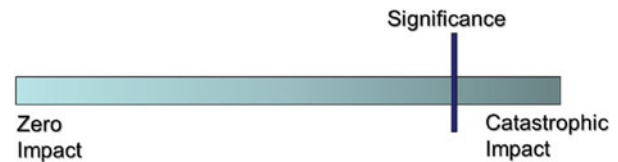


Figure 1. The significance spectrum and threshold of significance. The EIA significance determiner decides where the significance threshold should be drawn for each potentially significant impact.

We call it 'the significance spectrum'. Although drawn from our experiences, the significance spectrum model is not specific to any particular EIA regime. It is intended to illustrate how to go from impact predictions to significance determinations.

One of us (Alan Ehrlich) has used this model successfully to clarify the process of significance determination for EIA significance determiners from different cultures with varying degrees of technical background, prior to actually reaching significance determinations for several high-profile environmental assessments of proposed large-scale projects. In discussions with EIA practitioners at International Association for Impact Assessment conferences, we have determined that EIA decision-makers from other regimes in other countries confirm that it is an accurate representation of the process they too have implicitly undertaken when making significance determinations. This model has been accepted and adapted by regulatory boards in Canada's Northwest Territories as a conceptual basis for an entire adaptive management framework (Racher et al. 2011), and has recently been reflected in a management framework of a major multinational mining company (De Beers 2014).

This model is based on the principle that significance determinations involve the comparison of a predicted change to a limit of acceptable change, which is a case-by-case application of a value-based threshold (Ehrlich 2007). This idea is supported by Haug et al. (1984), which similarly identifies the concept of a threshold of concern, described as 'a maximum or minimum number, or other value, for an environmental impact of resource use which, if exceeded, causes that impact or use to take on new importance' (p. 18), and as 'the point at which an impact becomes acceptable or unacceptable ...' (p. 19).

The significance spectrum model represents the full continuum of possible adverse impacts arising from a proposed project, ranging from the theoretical extreme of no impact whatsoever to the opposite extreme of catastrophic impact (the horizontal bar in Figure 1). Because significance tests focus primarily on likely adverse impacts, the spectrum does not include the range of beneficial effects, although one could reasonably imagine a mirror-image extension of the scale to the left to include a full continuum of desirable impacts.

*Note:* Likelihood is a common element of significance determination in many jurisdictions (e.g. Government of Canada 1998; EC 2001; Sadler et al. 2002; CEQ 2005; Canadian Environmental Assessment Agency 2012; World

Bank 2013). With respect to the word 'likely', we interpret the term to mean more likely than not (i.e. greater than 50% probability of occurrence; MVEIRB 2006). Haug et al. (1984, p. 24) interpret the term similarly when applying it in significance determinations. We believe that this is a part of predicting the impact, and should be done separately from determining the acceptability of the impact. We further note that for worst-case-type scenarios (meaning low-probability high-consequence events), even an unlikely impact may be unacceptable if it is severe enough; likelihood should be understood in the context of risk when determining significance (see MVEIRB [2013 p. 18–19] for further discussion).

In determining whether a proposed impact is significant, the EIA decision-maker must decide where to establish the threshold of significance – where to draw the line (Ehrlich 2009). This threshold could occur anywhere along the significance spectrum, and how far along it is drawn depends on the informed subjective judgement of significance determiners.

This threshold separates the realm of the acceptable from the realm of the unacceptable (Figure 2). It considers any relevant evidence in the EIA and reflects the significance determiner's (and society's) values. For example, for a wildlife species, if the species is determined to be an endangered species, or is highly valued by society, it would be expected to have a more stringent significance threshold than a similar wildlife species in the same area without those characteristics. The arguments of the parties may play a role in this step.

In deciding where to set the threshold of significance, the idea is to separate the setting of a threshold for a valued component from the determination of justifiability. The former is the setting of a significance threshold for a particular valued component and is not dependent on the project. It depends only on the societal values for the valued component. The latter is a different societal value judgement that does deal with the merits of the proposed project, and should not be confused with the impact significance determinations made in EIA.

It is worth noting that, since the acceptability of adverse effects to a valued component reflects how society feels about the valued component, the significance threshold will be the same whether the impact is caused by a single human activity or by multiple human activities. That is, the significance threshold for given valued component will be the same for project assessment as it would be for cumulative effects assessment.

The decision-maker must weigh the evidence (the impact predictions) and consider the arguments of parties

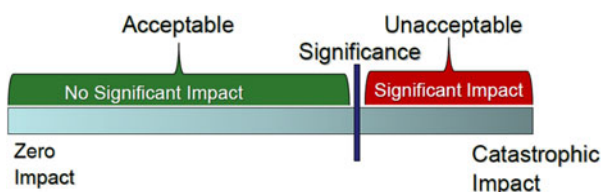


Figure 2. The realm of the acceptable and the realm of the unacceptable.

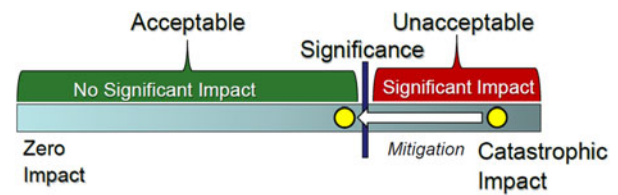


Figure 3. Impact significance and mitigation. The significance determiner decides where on the spectrum a predicted impact (shown as the yellow circle) falls, and weighs the effect of mitigation measures (shown as the arrow) on impact significance.

participating in the EIA. This may include carefully judging between the conflicting predictions of different participants, who may have (deliberately or otherwise) introduced their own values into predictions and who also may have competing views in where the threshold of significance should be for a given valued component. Public participation in the EIA provides a potentially valuable source of input on parties' views on the latter, for decision-maker's consideration in this step.

The significance determiner must then decide where any predicted adverse impact will fall on the spectrum, it falls whether on the side of the acceptable (and therefore is not a significant impact) or on the side of the unacceptable (and is therefore a significant impact) (Figure 3). If the impact falls on the unacceptable side, and is therefore significant, the significance determiner must consider whether mitigation measures are sufficient to shift it across the threshold of significance, so that the residual impact is not significant.

Even though this depends on the values of the significance determiner, the subjective element of significance determination does not make it arbitrary. The significance determiner's judgement should be informed by a reasonable weighing of the evidence, and by the values of society, and, for social and cultural impacts, should particularly consider the rights of, and impacts to, the affected public. For cultural impacts, the cultural context should be considered in significance determinations (Canadian Environmental Assessment Agency 1996). For transparency, the rationale should be reported in a manner that makes clear the reasoning and judgements that led to the significance determination, in language understandable to EIA participants.

In short, the four steps to significance determination using this model are:

- (1) Decide where on the spectrum of potential impacts to place the threshold of significance for that particular valued component.
- (2) Weigh the evidence (impact predictions).
- (3) Decide which side of the threshold the predicted adverse impact falls on.
- (4) If the impact falls on the unacceptable side, decide if additional mitigation measures will shift the predicted impact to the acceptable side.

### The role of the EIA versus later regulation

The significance spectrum illustrates a particular relationship between EIA decision-making and the later

regulatory authorization process that usually follows it. A question the authors have encountered is ‘Why do people conducting EIAs bother to consider the significance of impacts that will eventually be regulated by conditions in licenses?’ In most jurisdictions, there are regulators who set specific limits in authorizations. Regulators also have enforcement mechanisms. As well, national standards may apply to the specific valued components. Why, then, is it necessary for EIAs to examine significance of impacts on these? Why not simply leave these for the regulators to take care of during the later licensing stage?

As an analogy, consider the role of the driving examiner, whose job it is to decide whether the applicant who wants a driver’s license is an acceptable driver. Note that the examiner does not need to decide if the applicant is a perfect driver, but only if the driver is good enough to be allowed on the road with others. Clearly, there are regulations, such as specific speed limits and defined traffic rules, that would apply to the driver. There is also a system of enforcement that penalizes drivers who exceed limits. Does this mean that examiners do not need to apply the test?

Obviously not, because despite regulation, an unacceptable driver may still hurt other people, or cause other unintended damage. The question of acceptability must be decided before relying on speed limits and traffic police. The same holds true in EIA. The significance (i.e. acceptability) of potential impacts needs to be established in EIAs before relying on regulation or enforcement.

One reason for this is because regulations are primarily designed to deal with impacts that are not significant. The regulators who issue authorizations such as water licenses are primarily legally able to do so for projects that do not have significant impacts. These authorizations typically define specific limits. The range of these, on the significance spectrum, would appear as an area within the ‘no significant impact’ range (shown as the green oval in Figure 4). Regulators are able to choose the final limits of their authorizations only if the EIA significance determiner *first* decides that the residual impacts are acceptable (i.e. not significant). As shown on the significance spectrum, the regulators select an appropriate range in the realm of the acceptable once the EIA has determined which side of the significance threshold the impact (with mitigations if necessary) falls on. For matters of potential significance, a responsible significance determiner will determine the significance of

potential impacts rather than relying purely on eventual regulatory authorizations.

### Ecological significance versus EIA significance

In different processes under the two regimes described here, each of us has encountered developers confusing ecological significance with significance as used in EIA determinations. In each case, the developers used regional population persistence as an assessment endpoint in their examinations of potential impacts of proposed mines on wildlife. They asserted that if the population persists, the impact on that valued component could not be ecologically significant, and therefore there should be a finding of no significance by the EIA significance determiner.

Our view is that this position is not reasonable because it excludes the societal values that a local human population may place on the species or biological community. In the significance spectrum model, these values would be applied to determine the threshold of significance. While ecological significance must play an important role in determining significance of an impact on wildlife, we believe it must not be the only determinant, as societal values should also play an important role in determining what is significant in the overall assessment of a project, for the reasons described above.

The same participants have explicitly rejected using compliance with legislation (the *Species at Risk Act* in particular) as being a relevant consideration in determining significance of effect on a listed species. This is not consistent with the best practice approach or the theoretical approach as determined above because it explicitly rejects the very kinds of societal values that others, including ourselves, insist should be used in determining significance.

So, does this mean that the determinant for a significant adverse effect for a specific population of wildlife should be that the regional population is not persistent? Certainly, if the regional population of a species is not persistent, this would (by most reasonable interpretations) be a significant adverse effect (i.e. population of that species would decline until extirpated). But whether a population that persists regionally would ensure the effect is insignificant is another matter entirely. It may be that the population has other targets set by responsible regulators. Failure to meet these requirements would, by any reasonable interpretation of the word ‘significance’, mean the effect was significant and adverse.

The example one of us (Bill Ross) has used in his capacity as a regulator (temporary appointment for the purpose of hearing the application for an oil sands mine by Alberta’s Energy Resources Conservation Board in 2011) is the determination made that the effect on threatened or endangered species would be significant and adverse if it violated the federal *Species at Risk Act*. This Act has a prohibition against harming an individual of a threatened or endangered species, its residence or its critical habitat. Violating this prohibition, it was determined, would be a significant adverse effect even if the regional population

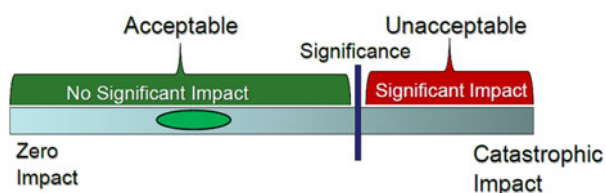


Figure 4. An example of a range of impacts that regulators can allow. Regulators can only authorize activities if the proposed projects are first determined to be acceptable (i.e. do not cause a significant adverse impact).



persisted. Another example of 'other targets' is where regulators (e.g. fish and wildlife management agencies) set targets for sustainable harvest (e.g. elk, furbearers, grizzly bears). Is it a significant effect where a target for sustainable harvest (for example, as identified by surplus yield models) has to be reduced because of 'takings' by the mine? We would often say 'yes'.

Similar problems would arise if other regulators set policy or regulatory conditions on regional populations (or sub-regional populations). For example, Parks Canada establishes targets for ecological conditions within national parks. These may go beyond the achievement of persistence of regional populations of species primarily because the legislation governing the Parks Canada mandate expects 'ecological integrity' as its first priority. Similar limits may be set for other protected areas.

For species at risk in Canada, recovery strategies or action plans may be determined. These are based on science but reflect social values. Recovery strategies or action plans set goals for the species that are by no means limited to only the persistence of regional populations. Proponents that assert that the persistence of regional populations means no significant impact in EIA could still conduct activities that violate such plans or policies. Doing so would seem to be a clear indication of a significant adverse effect.

But there is a higher principle involved. Proponents are entitled to include (almost) any material they see fit in their applications. Because of this principle, they may choose to define significance as they see fit and use of the ecological significance criterion suggested is acceptable, even if ill advised. For example, one could define a 'significant adverse effect' as 'the presence of purple pigs with no tails'. Then, if one makes the (almost certainly correct) prediction that the project would not cause the presence of purple pigs with no tails, one must conclude that the project would not cause significant adverse effects, by definition. Significance determiners should surely reject this definition (and hence the conclusion), thus nullifying a good deal of significance-related analysis. The consequence of developers using a peculiar definition of significance is that other parties involved in the decision-making process must exercise great care to point out the flaws in the definition to the significance determiners. Significance determiners should use a broader and more correct determination of significance – one that takes into consideration other properly determined societal goals.

As an aside, if the above arguments were rejected and the use of an ecological (not societal) determination of significance was found to be acceptable, we cannot understand how the use of 'persistence' of a regional population could possibly be upheld as the sole determination of significance. The simplest counterexample would be for a threatened or endangered species for which a recovery strategy or an action plan is in place. These would have been developed by experts for the species and must surely take precedence over the indicator of regional population persistence. The same argument would equally apply to many such regulations or local policies provided they had been properly developed by knowledgeable experts. Of course, such strategies, plans, policies, etc.,

are almost always required to undergo suitable public consultation. Does this requirement place them outside the limit of ecological significance even if they are initially based on the best ecological expertise? We think not.

## Conclusion

The steps described above for reaching significance determinations using the significance spectrum are systematic, clear and consistent with the goals of EIA. The significance spectrum appears to provide some of the additional clarity that Beanlands and Duinker (1983), Sippe (1999), Wood and Becker (2004), Lawrence (2005) and Lyhne and Kornov (2013) have found wanting. The steps provide a reasonable method to use subjective informed judgement to explicitly apply societal values to significance determinations, allowing for a systematic integration of values, as authors like Sippe (1999), Sadar (1996), Sadler (1996), Weston (2000), Gibson et al. (2005) and Rowan (2012) have recognized as essential. The order of the steps in the significance spectrum model conform to the two general steps described in Sadler et al. (2002), while providing a more specific and applicable method to the second step. The steps may help operationalize those described by Sippe (1999, p. 85) and provide a more clear process for how and when to apply values to impact predictions. Likewise, they further operationalize the concepts described by Haug et al. (1984). The steps we suggest are adaptable to a variety of world views and values (as they are not culture specific), and have broad applicability in virtually any EIA system, including international contexts, offering the sociopolitical flexibility that Sippe stated has allowed significance determinations to contribute to the 'wide international success EIA has achieved' (1999, p. 74).

In summary, there is a sound theoretical basis for applying societal values in significance determinations, and best practice includes doing so. The steps for applying the significance spectrum model to determine significance of impacts are as follows: (1) determine the threshold of significance for each valued component; (2) weigh the evidence and consider impact predictions; (3) decide which side of the threshold the predicted adverse impact falls on; and (4) for unacceptable impacts, decide if mitigation measures can make the residual impact acceptable. Hopefully, the specific steps prescribed help clarify this fundamental aspect that lies at the core of EIA decision-making.

## Acknowledgements

Roger Creasey, before his untimely passing, made helpful contributions to this paper. We gratefully acknowledge his input. Reviewers for the Journal of Impact Assessment and Project Appraisal also made many very helpful suggestions.

## Note

1. Noteworthy academic literature relating to values includes Rokeach (1973, 1979), Catton and Dunlap (1978), Dunlap

and Van Liere (1978) and Bengston (1994). We do not summarize these here, as this paper focuses primarily on the practical application of values in EIA, but suggest them to readers interested in further exploring the subject of values.

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