

# **When projects change after assessment: The Ship of Theseus, creeping baseline and cumulative baseline**

**Alan Ehrlich**

Manager of Environmental Impact Assessment  
Mackenzie Valley Environmental Impact Review Board  
Canada

## **Introduction**

Projects often change after their environmental impact assessments. Amendments may be proposed for major industrial projects for many reasons, even after those projects have been assessed, constructed and operated for years. These amendments might be new developments to extend the existing projects over space or time. New types of activities may be proposed. Some amendments are in the immediate vicinity of the existing project and may share existing access or processing infrastructure. They may be new phases of previously assessed projects or extensions of the same activity over longer periods of time. Amendments may be proposed in response to:

- engineering realities are recognized after the assessment, or unexpected construction challenges
- unexpected impacts
- unexpected scenarios such as infrequent (but increasingly frequent) extreme climate events
- changes in processing or mitigation technologies
- the discovery of additional resources, such as mineral deposits, at an existing project
- increased market value of a mineral leading to more investment capital
- deliberately phased development

Proposed amendments pose a challenge for those conducting environmental assessments (EAs) because they raise fundamental questions:

- When does a project change so much that it is no longer the same project overall?
- Can we assume that impacts from an expanded project would have been acceptable to participants and decision makers in the assessment of the original project? Do we need to?
- If the context is now different from the original EA, how can the impacts of the whole project (original plus amendment) be evaluated, when background conditions may have changed drastically? What is the right frame of reference to apply as a baseline?

This paper will explore the ideas behind these questions and provide practical approaches to help address them.

### **After amendment, is it still the same project?**

A previously assessed project can grow and change over time, sometimes incrementally by a series of small amendments, and sometimes in leaps and bounds by the addition of a large development. If a project keeps being amended, at some point, taken as a whole, the assumptions, assessment conclusions and social licence of the original assessment may have little to do with what has become, effectively, a different project. This is a philosophical question with practical implications.

Consider the analogy of the Ship of Theseus, described by the pre-Socratic philosopher Plutarch in the *Vita Thesei*. The Greeks vowed to preserve the ship that Theseus had sailed when he vanquished the minotaur and founded Athens. As each plank decayed over time, the Athenians promptly replaced it. At some point, no part of the original ship remains. Plutarch asks: Is it still the same ship? (Cohen 2004). The same parable has been retold as the story of George Washington's axe in the United States, Jean Jeanneau's knife in France, and John Locke's socks in England.

Similarly, if a mine is approved with a certain footprint, energy system, waste system, and in a certain environmental and socio-economic setting, and then a series of amendments incrementally raise waste containment structures, change the mining methods and power generation, and expand the footprint to include new areas, *is it still the same mine?*

When project such as a mine is accepted and granted approval in an EA and social acceptance by EA participants, including Indigenous groups, they are likely indicating that, at the time of the assessment, the impacts at a certain scale and duration are acceptable. Is it reasonable to assume that the total amount of impact of a mine that has expanded over time and space, possibly interacting with new valued components in what may be a very different existing environment, would have been acceptable at the time of the original assessment? If not, would approving the amendment (which is possible because of the existing project, which is based on the original assessment) reflect or subvert the values and decisions of the original EA and its participants, which provided the basis for originally allowing the mine to proceed? How does this affect the adequacy of the original scope of consultation? Would it be reasonable, in such a case, to use the original project as a foundation to build a larger overall development that the original EA decision makers and participants would have found unacceptable *if it was proposed in its entirety*? If it is not still the same mine, then shouldn't the EA examine the impacts of the entire development, including the original project and the amendment?

Suddenly the question "how much change is too much" becomes central. In Canada, legal decisions (such as *Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council 2010*; *Louis v. British Columbia 2013*; and *Thames First Nation v. Enbridge, Pipelines Inc. 2017*) have established that the original scope of Indigenous consultations is an important factor when considering amendments to projects. Incremental changes reduce trust, both in the proponents and in EIA in general. To consult on one project and then

amend it into something else is unacceptable. At what point is the essential nature of the original project altered beyond what the EIA determined to be acceptable (*i.e.* not causing significant impacts)?<sup>1</sup>

If a developer had originally applied for such a project in small increments, it could be rightly accused of project splitting- the undesirable strategy of avoiding appropriately rigorous assessment by proposing parts small enough to ‘fly under the radar’ (Ehrlich, 2021). This may not be the intent for amendments that occur years after, but the result may be similar. Assessing the parts individually risks missing the bigger picture, by failing to recognize impacts related to scale and combined effects of the separate changes.

Just as repairs to the Ship of Theseus would follow the form of the original ship, the regulatory authorizations that follow the EIA should stay within the scope of the project (also known as the scope of development) that was assessed. In practice, results may vary:

- Although EAs typically describe the scope of the project being assessed, the description and limits of the scope of development typically lack detail.
- The scope of the assessed project may describe the proposed project, but usually does not include maximum acceptable limits or extent of development or impact.
- Various realities on the ground may demand some practical flexibility that was not explicitly addressed in the EA.

After the assessment, it can be difficult in practice for regulatory authorities to understand and stay within the scope of development, particularly for small amendments for projects assessed decades earlier. In this way, little by little, many projects change over time.

This is further complicated because amendments are often spread out over longer periods (which is, of course, the purpose of some amendments intended to extend project operations). Context changes over time. Environmental conditions, such as wildlife populations or climate, may change considerably over decades. The values that led to the significance conclusions in the original assessment can also change over time, in response to broader socio-economic or cultural changes. This matters because societal values are an important part of assessing the significance of predicted impacts (Ehrlich and Ross, 2015). Even the laws concerning what must be considered in environmental assessments may have changed between the original assessment and the assessment of the amendment, as was the case for the Diavik mine described below.

### **Creeping baseline and landscape amnesia**

Although some changing of values can be expected over time, one particularly subtle form is more likely to arise when assessing an amendment than an original project. It is based on a shifting and narrowing frame of reference that is sometimes called “creeping baseline”.

---

<sup>1</sup> The Nunavut Impact Review Board’s recent rejection of a major proposed expansion of the Mary River Iron Mine is an example. After approving amendments in 2014, 2018 and 2020, it rejected a major amendment in 2022 (following Inuit community protests). The rejection was partly on the basis of the potential cumulative impacts of the proposed amendment in combination with the impacts of the existing project (NIRB 2022).

Consider the Diavik Diamond Mine, a large mine in the arctic tundra of Canada's Northwest Territories. This was assessed by the Canadian Environmental Assessment Agency (CEAA 1999). In the original hearings in 1998, Indigenous Elders spoke first-hand of their lived experiences on the pristine culturally-important island where the mine was proposed. In 2018, a major amendment to the Diavik Diamond Mine was proposed, which was assessed by the Mackenzie Valley Environmental Impact Review Board (the Review Board) (MVEIRB 2020). By then, the Elders who had been at the original 1999 hearings had passed away. By 2018, an entire generation had seen that island for decades as an area with massive industrial development, and had no direct experience conducting traditional activities there in the 20 years between the assessment of the original project and the assessment of the amendment. The amendment was likely viewed through a somewhat different lens. Some things that were controversial in the original project were less so by the time the amendment was proposed, partially because of an altered frame of reference.

The Indigenous participants in other environmental assessments (such as Fortune Minerals Limited's NICO project, also in Canada's Northwest Territories) describe concerns about places that had been used in the past for traditional purposes gradually fading from living memory as people avoid an industrialized site, along with the loss of Indigenous Traditional Knowledge (much of which is localized and rooted in place) (MVEIRB 2013).

This is arguably a form of shifting baseline syndrome (Pauly 1995), also called "creeping normality" or "landscape amnesia" (Diamond 2005). This occurs when an entire frame of reference gradually fades from people's psyches and is replaced by a more recent one that minimizes relative change. Gradual incremental shifts over time result in evaluations over a narrow period, using the inappropriate and narrower reference points of more recent times that don't reflect earlier conditions (Pauly 1995; Olsen 2002). Norms of acceptability morph over time and societal standards slide as a degraded environment becomes increasingly familiar, and the pristine one is gradually forgotten.

### **Indigenous Traditional Knowledge vs landscape amnesia**

Taking Indigenous Traditional Knowledge (ITK) seriously in an EA can help counterbalance this problem of creeping baseline. ITK includes knowledge, values and beliefs (Berkes, 1999), and spans generations (not a narrow and recent time period that leads to creeping baselines as a frame of reference). Although ITK is dynamic and adaptive, it also preserves memories of pre-development conditions and reflects traditional values. In the 2018 Diavik EA, Indigenous parties still described the high cultural value of the general area on the basis of ITK, despite current industrialization and a lack of first-hand traditional land uses at the site over the past 20 years. In the Diavik EA, evidence based on ITK from parties was an important factor in Board's significance determinations (MVEIRB 2020).

Review Board EAs have resulted in measures to address the loss of areas near industrial projects from the living memory of the Indigenous people who value those places. In these cases, the Review Boards measures required the developers to support on-the-land cultural camps for the period of project construction and operation, to reduce cultural impacts (MVEIRB 2013; MVEIRB 2016). These camps enable continuous use of areas near industrial projects. These are used by harvesters, families and

Indigenous organizations to practice traditional land use activities, education and ITK research. This helps to prevent the area from disappearing from ITK, and resists the problem of gradual landscape amnesia described above. As described in the Mackenzie Valley Environmental Impact Review Board's Ekati Jay Report of EA, this is intended "to reduce the risk that Aboriginal use of the land, connection to the land, and knowledge of the land will fade over the lifetime of the Jay Project. This will help restore the cultural association and memory of individuals with the disturbed landscape by facilitating use of the land by Aboriginal groups, including Aboriginal harvesters and their families" (MVEIRB 2016).

### **Cumulative effects assessment vs creeping baseline**

Smaller amendments maybe considered adjustments to the original project, but large amendments may be framed and assessed as entirely separate projects (even if the same owner conducts the same types of activities as in the original project using the same infrastructure in an adjacent area). In these cases, the Review Board has used cumulative effects assessment as an appropriate tool to assess the totality of the impacts of the development(s), including the additive or synergistic effects of the amendment and the original project together.

Credible cumulative impact assessment examines the combined impacts of past, present and reasonably foreseeable future developments. If the amendment is treated as a separate project, then the original project can be included as a relevant past or present project for the cumulative assessment (using the probably correct assumption that both projects affect many of the same valued components).<sup>2</sup> This approach helps clarify what frame of reference should be used to compare against project impacts. For amendments, this requires a baseline for the cumulative effects assessment that is different than the baseline used to compare with project-specific impacts. Where creeping baseline involves using only an excessively narrow and recent frame of reference, cumulative effects assessment resists this by requiring a broader consideration that goes back further in time.

### **Baseline: Finding a meaningful frame of reference**

Using the terms "baseline" and "background" in a deliberate manner is one approach to finding a meaningful frame of reference when assessing amendments or phased developments. In the experiences of the Review Board, the terms have often been used in an inconsistent manner. For example, consider the following two separate assessments, each defined partly in relation to another project: In the Jay Diamond Project EA (an expansion of the existing Ekati Diamond Mine), the proponent specified that the term "baseline" meant conditions before all development in the area and conditions after the development of a large operating mine, but before the proposed expansion project (Dominion Diamond Corp., 2014, s. 12, pp12-14, 12-64). In the Giant Mine Remediation Project (a large remediation of a contaminated mine site), the proponent specified that the term "baseline" meant existing conditions (following the closure of the Giant Mine) but not before, while "background" meant reference conditions that were likely more similar to conditions before the mine (as they were intended to be beyond the effects of the mine) (INAC 2010 pp 3-10, 3-12, 7-1). Other environmental assessments show a similar variability in the meaning of the term "baseline".

---

<sup>2</sup> The Review Board has used the same approach for assessing remediation projects.

Using the same term in different ways is confusing and makes it less clear what frame of reference a predicted change is being evaluated against. In its *Report of Environmental Assessment* for the 2018 Diavik amendment, the Review Board addressed this explicitly, by defining “baseline” and “background” explicitly in a way that both clarifies the term and specifies the appropriate frame of reference for the assessment of project-specific effect and cumulative effects:

- It specified that “the term “baseline” referred to the situation before any cumulative effects from industrial activities; Because the cumulative impacts include those of the proposed amendment project plus impacts of past and existing other activities (such as the original mine), those impacts should be considered relative to what was there before all industrial activity in the area.
- The term “background” referred to the currently disturbed project setting, for comparing the impacts of the project to the current situation (the existing environment with the original mine and the activities the mine owner already had permission to do) (MVEIRB 2020 p. 18).

The Review Board used these terms in this manner to avoid confusion and, more importantly, increase transparency by more clearly identifying the environmental conditions against which impacts were evaluated against during the assessment.

However, a recent search of the EIA literature revealed no broad agreement or consensus about this terminology. In a current EA, the Review Board simplified its approach, saying (MVEIRB 2021, p. 12):

*The baseline for cumulative impacts is not the same as the baseline for project-specific impacts. The baseline for cumulative impacts describes what would happen without the combined impacts of the Project with other developments and human activities. Cumulative impacts should be evaluated against conditions prior to these cumulative effects rather than against existing conditions.*

The common element is the recognition that the baseline for cumulative effects is not simply a snapshot of existing conditions. The cumulative impact *prediction* must *include* all the relevant cumulative impacts. To compare cumulative baseline against predicted combined impacts of all incremental amendments, the cumulative *baseline* must *not include* those impacts. A similar principle as supported by the Review Board’s distinction (above) between “background” and “baseline” in the Diavik Report of EA (MVEIRB 2020). A recent major decision from the Canadian courts (*Yahey v. British Columbia, 2021*) upholds this principle.

## **Conclusion**

As the cliché goes, “change is the only constant”. As a project morphs over time, deliberate decisions should be made about when more consultation and assessment are needed, because the overall impact of the projects is changing. In EIA, getting the right frame of reference is an important way to account for creeping baselines. Two tools for this are 1) properly considering Indigenous Traditional Knowledge and 2) using cumulative baselines that go well beyond a snapshot of existing conditions.

-----  
*Disclaimer: This paper describes the author's perspectives largely based on experiences with the Mackenzie Valley Environmental Impact Review Board, but the views within are not necessarily shared by the Review Board.*  
-----

## References

Berkes F. 1999. Sacred Ecology: Traditional Ecological Knowledge and Resource Managements. Philadelphia, PA: Taylor & Francis.

British Columbia Environmental Assessment Office. 2020. Conceptual Framework: Amendments. Victoria, BC. [accessed April 24, 2022]. [https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/environmental-assessments/guidance-documents/2018-act/eao\\_amendment\\_process\\_diagram\\_2020.pdf](https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/environmental-assessments/guidance-documents/2018-act/eao_amendment_process_diagram_2020.pdf)

Cohen, M. Identity, Persistence, and the Ship of Theseus. Published online. Nov. 2004. Washington. [accessed April 24 2022]. <https://faculty.washington.edu/smcohen/320/theseus.html>

Diamond J. 2005. Collapse: How Societies Choose to Fail or Succeed. Penguin Books. New York.

Dominion Diamond Corp. 2014. Developer's Assessment Report- Ekati Jay Project. Section 12: Barren-Ground Caribou. Yellowknife. [accessed April 24, 2022]. [https://reviewboard.ca/upload/project\\_document/EA1314-01\\_S\\_12\\_Barren-Ground\\_Caribou.PDF](https://reviewboard.ca/upload/project_document/EA1314-01_S_12_Barren-Ground_Caribou.PDF)

Ehrlich A. 2022. Collective impacts: using systems thinking in project-level assessment. Impact Assessment and Project Appraisal, 40(2) p.129-145. <https://doi.org/10.1080/14615517.2021.1996901>

Ehrlich A, Ross W A. 2015. The significance spectrum and EIA significance determinations. Impact Assessment and Project Appraisal, 33:2, 87-97, [https://DOI: 10.1080/14615517.2014.981023](https://doi.org/10.1080/14615517.2014.981023)

Indian and Northern Affairs Canada [INAC], 2010. Giant Mine Remediation Project: Developer's Assessment Report. Ottawa. [accessed May 6, 2021] [https://reviewboard.ca/upload/project\\_document/EA0809-001\\_Giant\\_DAR.PDF](https://reviewboard.ca/upload/project_document/EA0809-001_Giant_DAR.PDF)

*Louis v. British Columbia (Minister Of Energy, Mines And Petroleum Resources)*, 2013 BCCA 412.

Mackenzie Valley Environmental Impact Review Board [MVEIRB]. 2004. Environmental Impact Assessment Guidelines. Yellowknife. [accessed May 6, 2021] <https://reviewboard.ca/file/614/download?token=3dz7s5gt>

Mackenzie Valley Environmental Impact Review Board [MVEIRB]. 2013. Report of Environmental Assessment and Reasons for Decision - Fortune Minerals Limited NICO Project (EA0809-004). Yellowknife. [accessed May 6, 2021] [https://reviewboard.ca/upload/project\\_document/EA0809-004\\_NICO\\_Report\\_of\\_EA\\_and\\_Reasons\\_for\\_Decision.PDF](https://reviewboard.ca/upload/project_document/EA0809-004_NICO_Report_of_EA_and_Reasons_for_Decision.PDF)

Mackenzie Valley Environmental Impact Review Board [MVEIRB]. 2016. Report of Environmental Assessment and Reasons for Decision- Dominion Diamond Ekati Corp. Jay Project (EA1314-01). Yellowknife. [accessed May 6, 2021] [https://reviewboard.ca/upload/project\\_document/EA1314-01\\_Report\\_of\\_Environmental\\_Assesment\\_and\\_Reasons\\_for\\_Decision.PDF](https://reviewboard.ca/upload/project_document/EA1314-01_Report_of_Environmental_Assesment_and_Reasons_for_Decision.PDF)

Mackenzie Valley Environmental Impact Review Board [MVEIRB]. 2020. Report of Environmental Assessment and Reasons for Decision- Diavik Diamond Mines Inc.- Depositing processed kimberlite into pits and underground (EA 0607-003). Yellowknife. [accessed May 6, 2021] [https://reviewboard.ca/upload/project\\_document/EA1819-01%20Diavik%20Report%20of%20Environmental%20Assessment\\_FINAL%20%281%29.pdf](https://reviewboard.ca/upload/project_document/EA1819-01%20Diavik%20Report%20of%20Environmental%20Assessment_FINAL%20%281%29.pdf)

Mackenzie Valley Environmental Impact Review Board [MVEIRB]. 2021. Terms of Reference- Pine Point Mining Limited- Pine Point Mine Project (EA2021-01) . Yellowknife. [accessed April 24, 2022]. [https://reviewboard.ca/upload/project\\_document/EA2021-01%20Terms%20of%20Reference%20Final%20\(2\).pdf](https://reviewboard.ca/upload/project_document/EA2021-01%20Terms%20of%20Reference%20Final%20(2).pdf)

Nunavut Impact Review Board [NIRB]. 2018. Nunavut Impact Review Board Guidance: Approaches to Assessment of Proposed Amendments to Approved Projects. Cambridge Bay. [accessed April 24, 2022]. [https://www.nirb.ca/portal/dms/script/dms\\_download.php?fileid=318382](https://www.nirb.ca/portal/dms/script/dms_download.php?fileid=318382)

Nunavut Impact Review Board [NIRB]. 2022. Highlights document for the Board’s reconsideration report and recommendations for Baffinland’s Phase 2 Development Proposal. Cambridge Bay. [accessed June 27, 2022]. [https://www.nirb.ca/portal/dms/script/dms\\_download.php?fileid=339559](https://www.nirb.ca/portal/dms/script/dms_download.php?fileid=339559)

Olson R. 2002. Slow-motion disaster below the waves. Los Angeles Times. Nov. 17, 2002. <https://www.latimes.com/archives/la-xpm-2002-nov-17-op-olson17-story.html>

Pauly D. 1995. Anecdotes and the shifting baseline syndrome of fisheries. Trends in Ecology & Evolution. 10(10) p. 430.

*Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council*, 2010 SCC 43

*Chippewas of the Thames First Nation v. Enbridge Pipelines Inc.* 2017 SCC 41

*Yahey v. British Columbia*, 2021 BCSC 1287