

3.6 Adaptive Management

EIS Reference: Volume IV, Chapter 3, Section 3.5 and Volume VII, Chapter 11,
Section 11.0.1

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WP 1431 - Joint Panel Review

The term adaptive management and its application to this project must be clarified.

Define the term adaptive management.

Why is the concept embodied in the term appropriate for use in the Whites Point Quarry Project?

Explain how the adaptive management concept will be implemented.

Given that it is necessary for all stakeholders in adaptive management to cooperate, describe the intention concerning the establishment of a community liaison committee in the Whites Point Quarry case.

RESPONSE

Bilcon's commitment to the precautionary approach and an adaptive management procedure is presented in Volume IV, Chapter 3.5, page 6 of the EIS.

A. Definition

Adaptive management is a systematic approach for improving environmental management and building knowledge by learning from management outcomes. For the purpose of the WPQ EIS, adaptive management is defined as "an approach to environmental effects management that:

- accommodates uncertainty with respect to the effectiveness of measures to prevent or minimize an adverse effect;
- involves monitoring to provide feedback on the Project's performance;
- permits early intervention through adjustment of mitigation measures, implementation of additional mitigation, or application of avoidance strategies to prevent a potential adverse effect from developing;
- ensures that the Project benefits as knowledge of the site and of quarry operations and techniques advance."

B. Appropriateness of its Use

As described in the EIS, Vol. VII, Chapters 11.3, 1.4 and 11.5, a number of environmental management, mitigation, monitoring, inspection, and auditing mechanisms will be in place to review the accuracy of the effects predictions, the effectiveness of the environmental controls and the compliance with applicable Project objectives, standards, guidelines, and policies (see also Bilcon response to Panel IR-2 on Follow-up Programs).

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The adaptive management process guarantees that corrective action will be taken when deficiencies in the Project implementation are identified. It also ensures that the environmental management benefits from experience and advances in knowledge of the site and of the quarry operations. As such the adaptive management approach is considered appropriate in that it:

- supports the application of the precautionary principle during all phases of the Project realization; and
- provides mechanisms to ensure long-term sustainability.

Both, the application of the precautionary principle and the aim for long-term sustainability are explicitly supported by the Project's approach to environmental management. Adaptive management is a suitable tool to support and implement this approach.

Further, environmental assessments and effects management typically involves some degree of uncertainty due to the complex and dynamic nature of ecosystems and human environments. This uncertainty includes the effectiveness of some mitigation. In such cases, monitoring and the timely intervention of adaptive management measures are appropriate.

C. Implementation

Adaptive management will be applied throughout all phases of the Project and in particular with regard to the mitigation measures. As soon as monitoring identifies that mitigation measures are not performing satisfactorily, the adaptive management process will guide the improvement or replacement of those measures in conjunction with adaptive management practices in the Project Operations Plan. Key steps in the process encompass:

- identification of non compliance/ underperforming mitigation measure;
- evaluation of significance;
- analysis of cause;
- identification and evaluation of possible corrective actions;
- implementation of corrective action(s); and
- monitoring of effectiveness of corrective action(s).

Adaptive management will allow Bilcon to intervene in a timely manner to control any mitigation inefficiencies or adverse effects that may arise from project construction and operation. This control would be accomplished through the use of additional mitigation or effects avoidance techniques.

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Reports of monitoring results will be submitted to the appropriate regulatory agency as indicated in the EIS. If there were a legitimate concern that existing or new performance based standards or thresholds, including any thresholds specified in the permit terms and conditions, may be exceeded, then adaptive management techniques would be implemented in consultation with the regulatory agencies to ensure that this does not occur.

Criteria and parameters applied in the identification of non-compliance will be established in consultation with regulatory agencies and will be documented in the Monitoring Plans.

D. Adaptive Management and Community Liaison Committee

As indicated in the EIS, Bilcon is committed to re-establishing the Community Liaison Committee (CLC). In the context of adaptive management, the CLC is expected to contribute to each of the steps listed above (Item C.). It is envisaged that Terms of Reference will be developed in consultation with the CLC to ensure that the CLC works efficiently during the Project implementation and provides meaningful input to the adaptive management process. However, it is ultimately Bilcon's responsibility to ensure that their actions do not compromise the ecological integrity of the environment. In this regard, Bilcon intends to work with the appropriate regulatory agencies to make adaptive management effective.

Bilcon's approach to the precautionary principle and the application of an adaptive management approach has been outlined in the EIS, Volume IV, Chapter 3.5 (page 6). For further information on Bilcon's definition and implementation of the adaptive management approach please refer to Bilcon's response to the Panel's IR-1 (Adaptive Management). In response to EC's particular comment on the considerations for an adaptive management framework please refer to Table 1 (presented on following page). The table provides examples on how the considerations proposed by EC have been addressed in the EIS.

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Table 1: Adaptive Management and Whites Point Quarry Project

Adaptive Management Framework	Bilcon Whites Point Project Proposal
Monitoring is scheduled to match most sensitive time periods for specific VECs	<p>Bilcon's proposed monitoring activities are presented in the EIS, Vol.VII, Chapter 11.6 and Table BCM-2. Further details on the programs and the finalization are presented in Bilcon's response to the Panel's IR-2 (11.6 Follow-up Program). The Table 1 that is presented in Bilcon's response to IR-2 states the proposed monitoring frequency. Where appropriate information on the general timing of the monitoring is included. The timing of the monitoring is intended to match the most sensitive time periods for the VECs that is monitored, coincide with particular Project-related activities/effects, or is conducted year round. Examples include:</p> <p><u>Schedule adjusted to VEC sensitivity:</u></p> <ul style="list-style-type: none"> • Surface Water Little River water levels and flow are monitored twice a year; once during low flow season (most sensitive time period) and once during spring run off (for comparative purposes). <p><u>Schedule adjusted to time of activity/effect:</u> Some monitoring activities have been scheduled to coincide with a particular effect and therefore will provide the best results on potential effects. Examples:</p> <ul style="list-style-type: none"> • Noise and Vibration Measurements of concussion and ground vibration levels (blasting-land) will be undertaken during every blasting activity (i.e., about every two weeks) • Aquatic Ecology – Marine - Marine Species at Risk (Whales) The number of whales observed near the Bilcon terminal will be recorded every time a vessel approaches or departs from the Bilcon marine terminal. <p><u>Year-round monitoring:</u> A number of parameters are monitored throughout the year on a daily/weekly or monthly basis; with this frequency it is expected that periods of highest sensitivity are captured. Examples:</p> <ul style="list-style-type: none"> • Air Quality (Particulate Matter) To be monitored daily. • Noise and Vibration To be monitored daily. <p>It is of note that the monitoring plans, including monitoring frequency and schedule will be finalized in consultation with provincial and federal regulators.</p>

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<p>Monitoring results are reviewed on a regular and on-going basis not solely linked to regulatory reporting requirements;</p>	<p>Bilcon's approach to the management of the information gathered through monitoring is addressed in Bilcon's response to IR-2 (11.6 Follow-up Program). Reporting mechanisms for the public will be designed to allow easy access to this information, and will ensure that it is presented in an appropriate manner. Examples of the types of reporting mechanisms that may be used are web-based portals and web-cams, and regular newsletter. Further, it is envisaged that the Community Liaison Committee (CLC) will also review and discuss the monitoring reports. The frequency of reviews will be determined in consultation with CLC members. Independent from regulator and public requirements, Bilcon will also conduct a yearly auditing of its environmental performance, the results of which will be published as part of Bilcon's corporate performance reporting.</p>
<p>Criteria and threshold values for initiating responses are set below regulatory or permitting requirements;</p>	<p>Threshold values for initiating responses have been established for a number of parameters below regulatory guidelines or standards (e.g.,</p> <p><u>Sound pressure levels</u> Below 100kPa recommended guideline: 100kPa</p> <p><u>Copper:</u> for copper concentrations in detection pond effluent: 4.8 ug/L trigger level; no Canadian guideline for saltwater</p> <p><u>Turbidity</u> within 8 NTUs from background under clear conditions for short-term exposure [e.g., 24 hr period</p> <p><u>Noise:</u> Below 65dBA during the day, below 60 dBA during the evening and below 55 dBA at night. All as measured at the property boundary. NSDEL guidelines specify 65 dBA, 60 dBA and 55 dBA for the same time periods</p> <p>See also Bilcon's response to IR-2 (Precautionary Principle).</p>
<p>Appropriate stakeholders are involved in the review of monitoring results and discussion of adjustments to mitigation."</p>	<p>As mentioned above, Bilcon anticipates that monitoring results and the need for management adjustments will be reviewed by the Community Liaison Committee (CLC). The frequency of reviews will be determined in consultation with CLC members. It is envisaged that the CLC will include a wide representation of local interest and stakeholder groups (e.g., representatives from the local fishing community, tour boat operators, residents, First Nations).</p>

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WP 1541 - Fisheries and Oceans Canada

Volume IV – Chapter 3

Page 6 – The document states, “Where there is uncertainty with respect to the effectiveness of measures that are used to prevent serious or irreversible environmental damage, Bileon will take an adaptive management approach”. Given the uncertainty surrounding potential behavioural impacts on marine mammals from blasting and impacts on lobster from blasting, what potential adaptive management strategies could be applied if the project was shown to have an adverse effect, behavioural or otherwise, on an endangered marine mammal or lobster population?

RESPONSE

Adaptive management techniques do not replace mitigation measures that have been implemented in the course of routine environmental management to reduce the adverse effects of impacts to an acceptable level. Adaptive management techniques use options that are supplementary to existing mitigation in situations where there is uncertainty about the effectiveness of the standard mitigation used to prevent serious or irreversible environmental damage.

Adaptive management is a systemic process for continually improving environmental management practices by learning from the outcomes of operational monitoring programs. An adaptive management strategy is developed where appropriate monitoring identifies stress signals that indicate a level of reaction to the effects of impact that is unexpected and is of concern, but is not fully addressed by the original mitigation. Monitoring identifies the need to use adaptive management strategies and allows for timely intervention before more serious or irreversible environmental damage occurs. Continued effects monitoring then verifies if this increased level of protections is working.

Conclusive studies are lacking on the potential effects of blasting on marine mammals and lobsters. This is due, in large part, to the unavailability of complete suites of baseline data, which could lead to false assumptions about the effectiveness of mitigation. Typically, these effects can range from behavioural to physical and could be:

- General awareness: where a species might simply acknowledge an awareness, but not act on it
- Low-level effects: where a species may appear anxious, but shows no other reaction
- Higher-level effects: where more definitive actions are taken by the mammal, such as avoidance or flight from the apparent danger
- Low-level damage: which may be observable, or detectable on closer examination, but may not be incapacitating
- Higher-level damage: such as incapacitating injury
- Fatality

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In addition, these effects could vary in response to the same impact depending on:

- Seasonal variation or vulnerability at a particular life stage, such as the presence of young
- The specific mechanism of impact causing the effect, such as air, water, ground vibrations, noise, lights etc.

In general, a range of adaptive management options could be employed to mitigate these effects such as:

- Early warning of the pending impact, but at a lower, non-intrusive level than the actual impact. An example could be the use of an acoustic deterrence device (ADD) sounded prior to a blast
- Adjustment of the intensity or level of impact to a more appropriate level
- Adjustment of the limits to the safety zone to accommodate the increased concern
- Temporary cessation of the impact to avoid the undesired effects, such as not blasting when the species of concern has been identified as being in the area of effect, when young are present, etc.
- Timing of the impact to consider the presence or absence of a species of concern, life stage issues, such as avoiding an impact during certain times of the year when young may be present, migratory seasons, etc.
- Cessation of the impact if it is concluded that serious negative effects are unavoidable such as, the permanent presence of a species of concern and the inability to mitigate the effect to an acceptable level
- The use of an alternative to the preferred activity. These are typically a more costly means of achieving the same project result without effects to the species of concern. They may not be practical from a project point of view.

Specific adaptive management measures would have to be developed for individual species of concern to address the appropriate variables. Regardless of the species, effects monitoring is critical to the adaptive management process. As critical as monitoring, is the development of appropriate effects thresholds. These will permit the introduction of effective adaptive management techniques as the project advances that will allow for timely intervention to avoid or lessen impacts to marine mammals and lobsters.

**WP 1625 – Partnership for Sustainable Development
Deficiency Statement 82
EIS Guidelines**

12.4 – Monitoring – “Include a framework for compliance and monitoring of all effects throughout the life of the Project, including eventual abandonment. Provide information on all proposed monitoring activities and a framework for taking action to respond to monitoring results.” “Describe how the results of monitoring programs will be used to refine

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or modify the design and implementation of environmental protection and management plans.

EIS

11.4 – Monitoring - The EIS states, "If monitoring data indicates non-compliance with permit requirements, adaptive management procedures will be discussed with the appropriate regulatory authorities." This statement does not meet the requirements of section 12.4 of the EIS Guidelines to provide frameworks for compliance, monitoring and follow-up. There is no definition or detail provided on adaptive management. The EIS fails to address the response to regulatory non-compliance outside of permit requirements. In addition, how the results of monitoring will be used to refine or modify the design and implementation of environmental protection and management plans, strategies for enforcement, penalties for non-compliance have not been addressed.

RESPONSE

Please refer to Bilcon's response to the Panel in this section.