



December 6, 2016

Reference No. 11102994

Nash Johnston LLP
Attention: Greg Nash
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Opinion – Bilcon White’s Point Quarry Permitting

Introduction

GHD Limited (GHD) was retained by Nash Johnston LLP to provide an independent expert opinion regarding the White’s Point Quarry and Marine Terminal project (the “WPQ Project”). My opinions are based on my professional experience conducting environmental permitting work for aggregate and related projects, such as surface mines for industrial minerals and base metals in Nova Scotia in particular and elsewhere in Canada.

Credentials

I am a registered professional geoscientist in the Province of Nova Scotia and have worked in the environmental consulting industry since September, 1988 in various roles for mine and aggregate projects, environmental impact assessment, hydrogeological investigations, permitting and environmental site assessments.

I have been involved in the permitting of aggregate quarries and mines in Nova Scotia since the early 1990’s, and since the late 1990’s as the project manager of over 20 such projects. I have been routinely asked by Nova Scotia Environment (NSE) and Nova Scotia Natural Resources (NSDNR) to review draft legislation, and have had input to numerous regulatory guidance documents associated with quarry and mine developments.

I served as President of the Chamber of Mineral Resources of Nova Scotia, and President of the Mining Association of Nova Scotia, and have held volunteer positions with the Canadian Land Reclamation Association and Association of Professional Geoscientists of Nova Scotia.



I have guest lectured at Dalhousie University and the Nova Scotia Community College on topics such as environmental impact assessment (EIA) and environmental site assessments (ESA), and have been a sessional instructor for Third/Fourth Year level courses at Dalhousie University and Saint Mary's University for Environmental Impact Assessment courses.

I hold a bachelor's degree in Geology/Geography and a minor in Biology from Mount Allison University and have supplemented this Bachelor's degree with Masters Level courses in groundwater chemistry and hydrogeology and many technical courses through my 28 year career in environmental consulting.

I consulted on aggregate and mining projects being permitted in Nova Scotia during the same period as the WPQ Project, including Touquoy Gold Project, Pioneer Coal Point Aconi Project and CGC Windsor Gypsum Mine Expansion, and I am therefore familiar with the prevailing thoughts and regulatory atmosphere as well as the guidance documents used at the time, such as the *Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia*,¹ the *Citizens Guide to Environmental Assessment*,² and the *Proponents Guide to Environmental Assessment*³ that the Province and project proponents relied on through the WPQ Project period.

Opinion Summary

If the WPQ Project received environmental assessment (EA) approval, I have no doubt it would have obtained Industrial Approval (IA), which would have taken 6 to 12 months. The IA Application and Support Document would have cost in the range of \$170,000 to 200,000.⁴ Monitoring costs to meet the ordinary EA and IA Conditions would have been approximately \$100,000 per year for EA Conditions and \$80,000 per year for IA Conditions. In my opinion a typical EA for the WPQ Project would have cost approximately \$600,000.

¹ R 81

² R 164

³ R 163

⁴ All figures are expressed in Canadian dollars.



1. Scope of Opinion

I was asked to give my opinion on the following questions:

- I. What is an Industrial Approval?
- II. If the WPQ Project received EA approval, would Bilcon have been able to secure all of the industrial permits needed to operate the quarry?
- III. How long would it take Bilcon to secure the industrial permits?
- IV. What conditions would have likely attached to the EA approval?
- V. How much would it ordinarily cost to secure the industrial permits?
- VI. How much would it likely cost to maintain annual compliance with the EA and IA conditions?
- VII. What would an ordinary EA process cost for a quarry and marine terminal in Nova Scotia?

I. What is an Industrial Approval?

An IA is granted by NSE pursuant to the *Environment Act, Part V*.⁵ It is granted for operations that have either already secured EA Approval (from the Provincial and/or Federal government) or do not require EA Approval but have regulatory requirements for their type of operation.

The IA typically details the regulatory requirements associated with monitoring key aspects of a project's operations such as liquid effluent from settling ponds, air emissions and groundwater and surface water quality. For aggregate operations, an IA will also typically specify requirements associated with blast monitoring, air quality, species at risk monitoring, and other components of the project identified through an EA process as needing monitoring.

⁵ C 258



II. If the WPQ Project received EA approval, would Bilcon have been able to secure all of the industrial permits needed to operate the quarry?

If the WPQ Project received EA Approval, I have no doubt it would have been able to secure all the industrial permits necessary to operate the quarry.

Several other analogous projects were permitted in a timely manner in Nova Scotia through this period, which are set out in a table below. These projects secured the approvals to operate within approximately two years from initiating baseline studies and design of the project infrastructure.

I have also reviewed Bilcon's Environmental Impact Statement (EIS) and note that it already included much of the information required to obtain Industrial Approval. In Appendix 1, I set out the additional work required to fill information gaps needed for successfully securing an IA, all of which could be easily obtained. I did not identify any impediments to the WPQ Project obtaining an Industrial Approval.

Local NSE offices have trained staff mandated to help project proponents understand the regulatory regime. Typically these Regional Offices provide input during the IA process to help fill gaps in the detail required by the regulatory agencies involved. Environmental Assessment Registration Documents (EARD's) are often provided to NSE in draft, and are reviewed with the project proponent to provide ways in which the document can be improved and completed and areas where more technical detail is needed. As a result, very few EARD's were submitted that did not meet the expectations of NSE and other regulatory agencies involved through the WPQ Project period.



Undertaking 45 from the EA process supports this, and confirms that the Nova Scotia Department of Environment and Labour (NSDEL) was not aware of any EA-approved project that did not obtain all industrial permits:

“Undertaking 45 To advise on the number of projects approved through the environmental assessment process but subsequently refused a Part V authorization.

The Department has no record of any project that has received an Environmental Assessment approval, but was subsequently denied approval under Part V of the Environment Act. A number of projects have received EA approval, but never received Part V approvals for other reasons, including decisions by proponents not to proceed.”⁶

The WPQ Project would also likely be able to expand production levels in the future. This would ordinarily require technical information and the rationale for the change, which the Provincial and/or Federal Minister would review to determine if it constituted a modification to the original EA.

If so, then additional information may be required in regard to impacts, mitigation and monitoring. If not, the proposed change would be handled through an Amendment to the Industrial Approval. This would typically involve minor modifications to the monitoring programs, such as frequency and parameters.

Production level increases are commonplace in Nova Scotia. For example, the Seabrook Quarry on Digby Neck, increased capacity in 2015.⁷ Likewise, Martin Marietta Materials received approval to expand its capacity at the Auld’s Cove quarry from 2 million to 4 million tons a year, which began in 2000, required only an Amendment to its Industrial Approval.

⁶ Responses to Undertakings, Undertaking 45 (Tab C 918)

⁷ Letter from Margaret Miller to Gary Rudolph, dated April 20, 2016 (Exhibit 1)



III. How long would it take Bilcon to the secure industrial permits?

In my opinion it would take approximately 6 – 12 months to secure IA permits following EA approval. The Activities Designation Regulations⁸ prescribe timeframes of 60 days for the review of applications for completeness and for approval, rejection or requests for additional information. My time estimate to secure IA permits accounts for the possibility that NSE would likely have requested additional information or required additional time to review the application. It also accounts for the time to prepare the IA application and including supporting information, including additional studies, such as settling pond design, which are noted in Appendix 2.

The table below outlines typical timelines for securing EA Approvals and IA for projects of a similar nature to the WPQ Project.

Proponent	Project	EA Issuance	IA Issuance
Ressources Appalaches	Dufferin Gold Mine – underground gold mine operation	EA transfer November 2013	January 2014
Gallant Aggregates Limited	Cooks Brook Pit - sand & gravel pit extension	January 2013	February 2014
ScoZinc Limited	ScoZinc Operations Southwest Expansion – surface lead/zinc mine	October 2011	May 2012
Pioneer Coal Ltd.	Prince Mine Site - surface coal mine and reclamation project –	December 2005	September 2006
Pioneer Coal Ltd.	Stellarton - surface coal mine project	February 2004	September 2004

⁸ Activities Designation Regulations, NS Reg 47/95 (C 998)



IV. What conditions would have likely attached to the EA approval?

In my opinion the typical conditions of EA Approval for the WPQ Project would have been those listed below, together with what Bilcon committed to in its EIS and the EA process which are primarily set out in the EIS's Commitments, Mitigation and Monitoring Tables.⁹

The general conditions would likely provide:

1.1 The Environmental Assessment Approval for the project is limited to the project as described in the registration document. Any proposal by the Proponent for expansion, modification or relocation of any aspect of the project from that proposed in the registration document must be submitted to the Environmental Assessment Branch for review and may require an environmental assessment.

1.2 The Proponent must, within two years of the date of issuance of this approval, commence work on the undertaking unless granted a written extension by the Minister.

1.3 The Proponent must not transfer, sell, lease, assign or otherwise dispose of this approval without the written consent of the Minister. The sale of a controlling interest of a business or a transfer of an approval from a parent company to a subsidiary or an affiliate is deemed to be a transfer requiring consent.

1.4 The Proponent must implement all mitigation and commitments in the Registration Document, unless approved otherwise by Nova Scotia Environment (NSE).

The EA Approval would also have likely included conditions typical for aggregate operations at the time. These related to groundwater; surface water; blasting; noise; vibration; and dust. Based on my review of the WPQ Project as proposed, it would have been able to easily comply with all EA conditions typical of quarries at the time.

⁹ Exhibit 2



IV. How much would it ordinarily cost to secure the industrial permits?

In my opinion it would have cost roughly \$170,000 to 200,000 to secure IA permits. Appendix 1 (IA Information Requirement Summary) summarizes the supporting materials that would have been required in addition to Bilcon's EIS for the IA application.

This estimate is based on completing the additional component studies identified, fees for filing and review, reproduction costs, and all needed additional permits (surface water withdrawal, septic system, and consulting fees for the preparation of the IA Application and Support Document.)

The *Environment Act* requires a similar level of detail information for all greater than 4 hectare operations, so it is possible to make inferences regarding the timeframe and expected costs for Bilcon to begin full operation, had it gone through a typical provincial EA process with federal involvement for the marine aspects of the WPQ Project.

V. How much would it likely cost to maintain annual compliance with the EA and IA conditions?

It would cost approximately \$100,000 per year to comply with EA Conditions and \$80,000 per year for IA Conditions as outlined in Appendix 2 (Anticipated IA Requirements). The Approvals also typically note the applicable Acts and Regulations. Year One of the project would have been more expensive, as some programs are needed up-front (prior to construction) such as a Pre-blast Survey.

VI. What would an ordinary EA process cost for a quarry and marine terminal in Nova Scotia?

In my opinion, an ordinary EA process for the WPQ Project would have cost approximately \$600,000 for the baseline studies, public consultation, EARD preparation and associated



regulatory filing and review fees. Several analogous projects that I was involved in at the time of the WPQ Project were assessed for costs and scaled to make this cost estimate.

GHD

A handwritten signature in blue ink, appearing to read "Peter Oram", is written over the printed name.

Peter Oram, P. Geo.

PG/tj/1

Attachments: Appendix 1 IA Information Requirements Overview
 Appendix 2 Anticipated IA Requirements
 Exhibit 1
 Exhibit 2

Bilcon of Delaware - Overview of Requirements Associated with Industrial Approval (IA) Application - Appendix 1

Item	Industrial Approval Requirements	Bilcon Commitment or Information in EA Documents	Completeness of Information for IA Needs at time of EA Decision	Estimated or Actual Timeline and Cost to Complete Item to fulfill IA Application Requirements
1	Copy of Property Deed, lease or letter proving the applicants' legal right to conduct activity in the site	The property is owned by Jason and Lida Linberger and John and Joan Johnson, all of North Carolina, USA and was subject to a 2002 lease agreement for aggregate quarrying with Nova Stone Exporters. A 2004 lease for aggregate quarrying was with Bilcon of Nova Scotia for a term of 90 yrs.	Information was complete and would have been placed into IA Support Document	This item had all the required information prepared for the EIS or Panel and would have been edited for context (the IA application) and placed in the IA application. No additional costs would have been anticipated and the timeframe for preparation less than one week.
2	Copy of Registry of Joint Stocks printout showing the official company name, President & CEO, its agent, and verifying that the company is registered in good standing.	Bilcon of Nova Scotia, Corporation is a registered limited liability company incorporated on April 24 2002 in Nova Scotia (NS Registry of Joint Stock Companies - Registry ID 3066358)	Information was complete and would have been placed into IA Support Document	See Line 1.
3	Copies of all existing approvals relating to the the activity that have been issued by agencies	No approvals were found to have been granted, however, Bilcon had an understanding of the required approvals as outlined in EIS Section 6.5. A commitment to meet the requirements of typical terms of an IA are stated in EIS Table CI-1	Information was complete and would have been placed into IA Support Document	See Line 1.
4	A process description for the activity including (but not limited to): type of industry, size & capacity, raw materials & water used, discharge point, quantities of dangerous goods anticipated for use and material safety data sheets	Process Description fully outlined in EIS Section 7, discharge points (Section 9)	Information was complete and would have been placed into IA Support Document	See Line 1.
5	If applicable, a description of blasting methods and schedule	Described briefly in EIS Section 7	Information upgrades would have been needed to meet IA requirements specific to blasting schedule and blasting plan and possible EA Approval Conditions specific to blasting outlined by DFO or other agencies. . This information would have been prepared by a qualified blasting specialist and submitted with the IA application.	Estimated timeline for specialist sub-consultant would have been 2 months and \$10,000. The upgrades would have primarily been associated with a review of the EA Conditions and revisions to the details associated with blasting in the EIS. It should be noted that blasting specifics were not allowed to be presented by Bilcon during the Panel Hearings.
6	Security (bond, cheque, etc.) for the proposed operation (if applicable).	Bilcon was aware of the requirements and had completed research on other operations within Nova Scotia to get a general sense of the requirements. NSE and DNR have Guidance Documents that were current at the time that Bilcon was aware of and had read to gin an appreciation of the requirements of the Reclamation Plan for the facility.	As required by the IA Terms and Conditions on a per hectare fee for reclamation to be typically paid, prior to issuance of the IA.	See Item 7 below.

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Item	Industrial Approval Requirements	Bilcon Commitment or Information in EA Documents	Completeness of Information for IA Needs at time of EA Decision	Estimated or Actual Timeline and Cost to Complete Item to fulfill IA Application Requirements
7	Preliminary development, abandonment or rehabilitation Plan	Provided in EIS Section 7 Conceptual Plans OP1 - 8	Information upgrades would have been needed to meet IA requirements.	The reclamation bond would have been calculated by NSDNR with NSE as they have an MOU on reclamation bonding.
8	Site Plan (scaled drawing, minimum scale 1 :2,000) including (but not limited to): property boundaries, contours of the site & adjacent properties, location of all relevant structures, location of nearby watercourses, wetlands, dwellings, wells, water supplies, public roads & highways	Provided throughout EIS Section 6, 7, 9	Information was complete and would have been placed into IA Support Document	See Line 1.
9	Scaled engineering drawings, plans, and specifications that are stamped by a N. S. Licensed professional engineer including (but not limited to:)	Information needed would have included Site Layout, Settling Ponds/Surface Drainage Control, Loading Structures (wharf, dolphins, etc....)	Detailed work would have been needed to provide final calculations on settling pond design, settling times and final details on flocculent use/need and building design. Effluents (liquid, solid and air) were known and mitigation strategies outlined in the EIS. Many of the mitigation strategies were already presented either in the EIS or Panel Sessions and would have been reviewed for level of detail needed for the IA application and then picked up and placed in the IA Application. A review of the mitigation strategies was completed by GHD and the vast majority were at a level of detail that was in line with IA requirements of the time and therefore limited additional costs would have been incurred to "upgrade" these before being placed in the IA document.	The Detailed Design would include design drawings for the settling pond system and would include the development of technical specifications, all stamped by Professional Engineer licensed to practice in NS. The cost to develop this would be approximately \$80,000.
10	Plans & drawings for structures & equipment used to obtain satisfactory treatment of wastes resulting from industrial processes.	This would have been primarily the settling pond/surface drainage system and if there was on-site septic systems those plans....all typical and easily designed plans	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.

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Item	Industrial Approval Requirements	Bilcon Commitment or Information in EA Documents	Completeness of Information for IA Needs at time of EA Decision	Estimated or Actual Timeline and Cost to Complete Item to fulfill IA Application Requirements
11	Sufficient data to demonstrate the feasibility of a process to supply satisfactory treatment	Mitigation and monitoring commentary throughout Section 9	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
12	Reports on the proposed treatment facilities indicating design capacities, flows, & concentrations of wastes expected to be emitted to the environment	This would have been primarily the settling pond/surface drainage system and if there was on-site septic systems those plans....all typical and easily designed plans	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
13	Calculations, factors, & parameters used in the design of waste control systems	These would have been included in the report accompanying the design drawings for settling pond/surface drainage control	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
14	Description of all liquid effluents discharged from the process/property including (but not limited to):		Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
15	Quality & quantity of all surface discharge waters that have contacted unstabilized areas prior to discharge	Water to be directed to settling ponds	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
16	Quality & quantity of each liquid effluent discharge before and after treatment	Water in closed system and being recycled for wash water, treated water would be released to environment.	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See 9 above.
17	Quality should include (if present) the concentration or levels of pH, temperature, chlorine residual, BODs, suspended solids, acute toxicity, heavy metals, total petroleum hydrocarbons, total oil & grease, total dissolved solids, ammonia & phosphorus, etc.	Commitments to monitoring EIS Table CI-1	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts. Additional design for on-site septic would have been needed.	Estimated timeline for specialist sub-consultant would have been two months and \$15,000.
18	Description of all air emissions discharged from the processes (stacks, vents, etc.), including (but not limited to):	description of greenhouse gas effects, emissions from truck, wood burning and ships. (Table ECM-2)	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
19	Stack height above base (metres), elevation at base (metres), stack top inside diameter (metres), flow velocity through the stack exit (metres/sec), temperature of stack gas at exit (°C)	Not applicable - no stack meeting criteria for evaluation	Not applicable based on planned site infrastructure.	Not applicable.
20	Maximum and average daily concentrations of total particulate, total suspended particulate, specific particulates, metals, gases (general and odorous), carbon monoxide, VOCs, carbon dioxide, oxygen, oxides of nitrogen, hydrogen sulphide, Sulphur dioxide and polyaromatic hydrocarbons before and after treatment	CO2 production is given in EIS Section 9.1.1.2 Table GHG-1, Dust and Particulate addressed in EIS Section 9.1.8 and 9.3	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.

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Item	Industrial Approval Requirements	Bilcon Commitment or Information in EA Documents	Completeness of Information for IA Needs at time of EA Decision	Estimated or Actual Timeline and Cost to Complete Item to fulfill IA Application Requirements
21	Capacity, type of fuel used, Sulphur content of fuel, higher heating value of the fuel, monitoring equipment to be employed and soot blowing schedule if the process is a boiler or heating plant	Final selection of equipment would have been needed and then a review of fuel needs (quantity, type, storage, etc....) would have been completed.	Information was practically complete and needed some refining and specificity with respect to designs based on final equipment selection..	See Line 1.
22	Description of all solid wastes that require disposal, including (but not limited to):	See Item 23 below.	Information was complete and would have been placed into IA Support Document	See Line 1.
23	Quantity and quality of all solid wastes with an indication of whether they are considered waste dangerous goods with applicable federal and provincial legislation. If necessary, leachate extraction procedure data should be submitted.	Solid waste disposal would be contracted by a private company - EIS 7.7.1, Waste oil to be recycled and burned as heating fuel for on-site buildings, Dangerous goods - Explosives to be dealt with by contractor - not stored on site; Diesel fuel stored as described in EIS 7.8	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
24	Location & method of solid wastes disposal	Solid waste disposal would be contracted by a private company - EIS 7.7.1	Information was complete and would have been placed into IA Support Document	See Line 1 and Lines 9 to 17
25	Storage quantities of all wastes prior to disposal with storage site capacity & schedule of disposal	Waste oil storage described in EIS 7.8 Administration and Maintenance	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
26	Supporting geotechnical & hydrological findings if waste is to be land filled	Not applicable - these activities were not part of the proposed undertaking	Not applicable	Not applicable
27	Contingency plan, including (but not limited to):	1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies. EIS Table CI-1	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
28	Scope of the plan (purpose, geographic area, and persons, groups, e.g., that have responsibility)	1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies. EIS Table CI-1	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
29	Notification procedures (what is to be reported, when, to whom, internal & external reporting procedures and a 24 hour telephone response number	1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies. EIS Table CI-1	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.
30	Notification list including names & telephone numbers for all key internal response team personnel, telephone number for reporting environmental emergencies in N. S., relevant municipal/local telephone numbers (fire, police, ambulance, medical/hospital, clean-up contractors, etc.) And government assistance services such as CANUTEC	1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies. EIS Table CI-1	Information was practically complete and needed some refining and specificity with respect to designs based on final layouts.	See Line 1.

Bilcon of Delaware - Overview of Requirements Associated with Industrial Approval (IA) Application - Appendix 1

Item	Industrial Approval Requirements	Bilcon Commitment or Information in EA Documents	Completeness of Information for IA Needs at time of EA Decision	Estimated or Actual Timeline and Cost to Complete Item to fulfill IA Application Requirements
31	Identification of a response team leader and the role of the response team leader respecting decision making, focal point, report preparation and submission, etc.	Several qualified staff were on the payroll at the time the EA was not issued that could have filled the role.	Not applicable	Not applicable
32	Proposed containment and clean-up procedures	This information was included in EIS and Panel information on Adaptive Management and mitigation strategies.	Minor information upgrades would have been needed to meet IA requirements	See Line 1.
33	Proposed transportation procedures	Material will be transported to the quarry and to the marine terminal by diesel truck. Material will move off site by ship(Table ECM-2)	Information was complete and would have been placed into IA Support Document	See Line 1.
34	Site restorations plan (in case of an accidental discharge) that will ensure that the area is rehabilitated to its pre-spill condition	This information was included in EIS and Panel information on Adaptive Management and mitigation strategies.	Information was complete and would have been placed into IA Support Document	See Line 1.
35	Proposed disposal procedures	This is for waste disposal and the information would have needed minor refinements based on final design and availability of local and regional suppliers/contractors and sites available at the time of the IA submission.	Minor information upgrades would have been needed to meet IA requirements. On-site septic was contemplated and there would have been a need to design the system and have that available to be submitted to NSE and information on the type of system would have needed to be put in the IA application but the Septic System application is a separate process.	See Lines 9 to 17.
36	Available resources including manpower, contractors, treatment materials, expertise, communications, countermeasure equipment, etc.	Construction Phase, 225.4 people-years of employment, skilled and unskilled labourers anticipated. Operation Phase 82.6 people-years of employment (7.6).	Information was complete and would have been placed into IA Support Document	See Line 1.
37	Public relations including the identification of an individual who can speak on behalf of the approval holder	Several qualified staff were on the payroll at the time the EA was not issued that could have filled the role.	Not applicable	Not applicable so no additional timeframe or costs.
38	Incident reporting procedures and investigative follow-up procedures	Several qualified staff were on the payroll at the time the EA was not issued that could have filled the role.	Not applicable	Not applicable so no additional timeframe or costs.
39	Additional Information			
40	Monitoring Plans	For items such as effluent, surface water and groundwater.	Required for IA	It would take one month and \$10,000 to complete a monitoring plan based on EA Conditions
41	NSE Application Fee	n/a	n/a	A fee of \$10,000 would have been applied.

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
1.0 Project Design								
1.1 Bilcon of Nova Scotia Corporation will design, construct, operate and decommission the project as set out in the EIS including subsequent specific changes required in future permits or authorizations.	Construction Operation Closure	Bilcon	ECCC TC DFO NSE NSM MODD	Yes				N/A
1.2 Project construction, operation and closure will be in compliance with the terms and conditions set out in the Industrial Permit.	Construction Operation Closure	Bilcon	NSE	Yes				Construction (CAPEX) and Operation (OPEX) totals identified in this table and others.
1.3 Bilcon will complete the environmental monitoring plans set out in the EIS in consultation with regulatory agencies and implement the plans when appropriate.	Operation	Bilcon	All Agencies	Yes				Costs for individual monitoring plans (groundwater, surface water, air) are presented below.
1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies.	Operation	Bilcon	NSE TC	Yes	\$7,000		once	Time: \$4500 (assumes third party consultant develops Spill Prevention and Contingency Plan) Materials: estimate 5 spill kits @ \$500 ea (\$2500) TOTAL: \$7000
1.5 Training programs will be implemented for operations staff.	Construction Operation	Bilcon		Yes				Costs included in other training and on-boarding program therefore no separate cost.
1.6 Systems will be installed for the handling of domestic, sanitary and hazardous wastes.	Construction Operation	Bilcon	NSE ECCC	Yes				Covered in 1.5 above.
1.7 No quarried rock product will be trucked on local roads.	Operation	Bilcon		No				N/A
1.8 Bilcon will complete the reclamation plans and provide surety as required.	Operation	Bilcon	NSE	Yes				Determined through discussion with NSE and NSDNR.
2.0 Physical Environment								
2.1 No excavation will be carried out below sea level.	Operation	Bilcon		No				N/A
2.2 No excavation will be carried out below the upper basalt flow unit.	Operation	Bilcon		No				N/A
3.0 Groundwater								
3.1 Quarrying will not take place below the groundwater table.	Operation	Bilcon	NSE	Yes				N/A
3.2 Water for the wash cycle will be made up from surface water storage. No groundwater will be used for processing.	Operation	Bilcon	NSE	Yes				N/A
3.3 A pre-blast survey will be carried out on wells as required by NSE.	Operation	Bilcon	NSE	Yes		\$20,000	once	24 wells @ \$800 ea = \$19,200 (round-up to 20K)
3.4 Monitoring - groundwater levels will be monitored in the existing wells both on and off site.	Operation	Bilcon	NSE	Yes				This task would be done simultaneously with Item 3.5 below therefore no additional cost for this item
3.5 Monitoring - groundwater analysis for bacteriology, general chemistry and trace metals will be carried out once per year in the monitoring wells.	Operation	Bilcon	NSE	Yes		\$2,500	annually	Assumes sampling done by Bilcon trained staff, not third party consultant. Assumes 6 onsite monitor wells and 8 offsite monitor wells for bacteria (ie. MPN) @ \$25/ea and general chemistry + trace metals (ie. RCap MS - dissolved) @ \$140/ea 6 onsite monitor wells @ \$165 ea = \$990 8 offsite monitor wells @ \$165 ea = \$1320 (=\$2310, round up to \$2500)
3.6 Monitoring - adjacent property owners with wells will be invited to sit on the Community Liaison Committee.	Operation	Bilcon	NSE	Yes				N/A

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
4.0 Watershed								
4.1 No quarrying will take place in the Little River watershed.	Operation	Bilcon	NSE	Yes				N/A
5.0 Marine Water Quality								
5.1 Monitoring - water quality monitoring of all outflows from sediment retention ponds will be conducted weekly for Total Suspended Solids and pH and monthly for general chemistry.	Operation	Bilcon	NSE	Yes		\$5,000	annually	<p>Referred to EIS and associated figures and maps. There's a total of 6 sediment ponds (over the quarry life span - ref. OP-8), but could not find specific reference to the number of outfalls (ie. number of samples). Therefore, costs below are assumed for 2 samples based on 2 outfalls. Also assumes sampling is done by Bilcon trained staff, not third party consultant.</p> <p>Weekly Requirements: Total Suspended Solids (\$11) + pH (\$7) = \$18.00 x 2 samples = \$36</p> <p>Monthly Requirements: General chemistry (ie. RCap MS - total metals) = \$140 x 2 samples = \$280</p> <p>Annual Cost: Total Suspended Solids + pH = \$36 x 40 weeks * = \$1440 Annual Cost: General chemistry = \$280 x 12 months = \$3360 TOTAL ANNUAL COST: \$4800 (Round up to \$5000)</p> <p>* Note that Total Suspended Solids (TSS) and pH are included as individual parameters in the general chemistry suite, which will be tested every month (ie. roughly every 4 weeks) therefore, have only carried TSS and pH as separate analyses for 40 weeks instead of 52 weeks.</p>
5.2 Monitoring - turbidity levels during pile installation will be monitored and if necessary silt curtains will be employed.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
5.3 No bilge discharge or fuelling operations will be permitted at the marine terminal.	Operation	Bilcon						N/A
5.4 Bilcon will require its shippers to comply with TC Guidelines for ballast water management.	Operation	Bilcon	TC					N/A
5.5 Bilcon will install the necessary equipment to prevent spillage of product during loading operations.	Operation	Bilcon						Included as part of CAPEX.
6.0 Air Quality								
6.1 Bilcon will pave access roads from Hwy 217 to the quarry site.	Construction Operation	Bilcon						Likely would have been an EA or IA Condition, costs would have been determined and in overall CAPEX totals.
6.2 Bilcon will enclose processing equipment which will be located approximately 1000 m from the nearest residence.	Operation	Bilcon						Included as part of CAPEX.
6.3 All pit roadways will be watered during dry conditions to minimize dust.	Construction Operation	Bilcon						Included as part of OPEX.
6.4 Bilcon will chip remaining wood fibre following the harvesting of merchantable timber, rather than burning, to reduce emissions.	Construction Operation	Bilcon						Included as part of OPEX.
6.5 Heavy operational mobile equipment will be equipped with diesel engines meeting the US EPA Tier 3 Emission Standards and maintained in good operating condition.	Operation	Bilcon						Included as part of CAPEX.
6.6 Monitoring - Bilcon will monitor particulate emissions when requested.	Operation	Bilcon	ECCC NSE	Yes		\$15,000	contingency	Cost assumption based on 2 stations for noise and particulate. Note this is contingency as it is only "when requested".

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
7.0 Noise								
7.1 Monitoring - All blasts will be monitored for concussion and ground vibration in consultation with NSE.	Operation	Bilcon	NSE	Yes				Included as part of CAPEX.
7.2 Bilcon will enclose its crushing and screening operation.	Operation	Bilcon						Included as part of CAPEX.
7.3 Bilcon will employ quarry trucks with rubber lined boxes and rubberized screens.	Operation	Bilcon						Included as part of CAPEX.
7.4 Bilcon will employ alternate back up warning devices.	Operation	Bilcon						Included as part of CAPEX.
7.5 Bilcon will drill sockets in the bedrock for seating the piles rather than a continuous pile driving process.	Operation	Bilcon						Included as part of OPEX.
7.6 Preservation zones will be kept in a forested condition between the quarry and adjacent residences.	Operation	Bilcon						N/A
7.7 Monitoring - sound level monitoring stations will be established in consultation with NSE.	Operation	Bilcon	NSE	Yes				This task would be done simultaneously with Item 6.6 above therefore no additional cost for this item
8.0 Employment and Training								
8.1 Bilcon will engage staff whenever possible from the local area and will not recruit from existing businesses.	Operation	Bilcon						N/A
8.2 Bilcon will establish a training program for all staff. All training will be funded by Bilcon.	Operation	Bilcon						N/A
8.3 Bilcon will give preference to hiring women.	Operation	Bilcon						N/A
9.0 Archaeology								
9.1 Monitoring - if significant heritage resources are discovered an appropriate monitoring or recovery program will be developed in consultation with the NSM.	Operation	Bilcon	NSM					
9.2 All staff will be given special training in recognizing heritage resources and the procedures to be followed.	Operation	Bilcon			\$5,000			Costs included in other training and on-boarding program therefore no separate cost.
9.3 All contractors and sub contractors will be required to follow procedures set out by Bilcon with respect to recognizing heritage resources and the procedures to be followed.	Operation	Bilcon						N/A
9.4 Bilcon will conduct a program of archaeological investigation in the nearshore waters prior to pile installation. Professional divers trained in archaeological techniques will conduct the investigation.	Operation	Bilcon	NSM					
10.0 Marine Fish Habitat								
10.1 Bilcon has received approval in principal for a Compensation Plan under Section 35(2) of the Fisheries Act. Bilcon will further develop a monitoring plan in concert with DFO.	Construction	Bilcon	DFO					Marine item - not included in GHD's mandate
10.2 Commitments regarding sediment entering the marine habitat are detailed above under marine water quality.	Construction Operation	Bilcon	NSE DFO	Yes				Marine item - not included in GHD's mandate

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
11.0 Lobster Fishery								
11.1 Bilcon will advise lobster fishers using Whites Cove on the arrival and departure times of all bulk carriers during the lobster season.	Operation	Bilcon						Marine item - not included in GHD's mandate
11.2 Bilcon will ensure that all bulk carriers enter and leave Whites Cove, from and to the shipping lanes, on the same predetermined bearing.	Operation	Bilcon						Marine item - not included in GHD's mandate
11.3 Bilcon will provide compensation to a Committee of Whites Cove lobster fishers who will assess and compensate for loss of lobster gear due to ship movements. Compensation as a fixed sum will be paid on an annual basis.	Operation	Bilcon						Marine item - not included in GHD's mandate
12.0 Marine Species								
12.1 Bilcon will not carry out any blasting in marine waters.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.2 Bilcon will conduct on-land blasting in accordance with the "Guidelines for the Use of Explosives in or near Canadian Fisheries Waters".	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.3 Bilcon will triple the setback distances indicated in the "Guidelines for the Use of Explosives in or near Canadian Fisheries Waters" when iBoF Atlantic salmon may be present in nearshore waters.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.4 Bilcon will use experienced observers to identify the possible presence of marine mammals within safety radii as set out in the Blasting Protocol.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.5 Bilcon will monitor noise levels in the marine environment as set out in the EIS and will work with DFO to increase the knowledge base with respect to species at risk.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.6 Bilcon will visually monitor and measure noise levels at the seal colony at Crowells Cove during the initial blast in consultation with DFO.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.7 Bilcon will advise its shipper of any whale sightings in the area between the shipping lanes and the marine terminal.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.8 Bilcon will not permit a ship speed in excess of 12 kn/hour during the transit from shipping lanes to the marine terminal.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.9 Bilcon will work with other groups to provide better data to ships captains with respect to the location of marine mammals.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.10 Bilcon will maintain communications with local whale wath and seabird cruise operators operating in the Digby Neck area.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate
12.11 Bilcon will report sightings of marine reptiles during routine monitoring of the arrival and departure of the vessel at the marine terminal to the NS Leatherback Turtle Working Group and the NS Museum of Natural History.	Operation	Bilcon	DFO					Marine item - not included in GHD's mandate

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
13.0 Terrestrial Species								
13.1 Bilcon will establish and maintain 78.9 acres of environmental preservation zone as set out in the EIS.	Construction Operation	Bilcon	NSE	Yes				
13.2 Monitoring - a breeding bird survey will be conducted every five years to document any change in species composition.	Operation	Bilcon	NSE	Yes		\$7,000	every 5 years	
13.3 Monitoring - an Odonata survey will be conducted every five years to document any change in species composition.	Operation	Bilcon	NSE	Yes		\$5,000	every 5 years	
13.4 Monitoring - a Lepidoptera survey will be conducted every five years to document any change in species composition.	Operation	Bilcon	NSE	Yes		\$5,000	every 5 years	
13.5 Monitoring - an invasive plant species survey will be conducted every five years to document the level of success of the program to detect and remove invasive plant species.	Operation	Bilcon	NSE	Yes		\$7,000	every 5 years	
13.6 Monitoring - Flora species at risk will be monitored as indicated in the EIS.	Operation	Bilcon	NSE	Yes				This task would be done simultaneously with Item 13.5 above therefore no additional cost for this item
13.7 Bilcon will store any toxic substances used during quarry operations (diesel fuel, gasoline, hydraulic fluids etc) in a safe manner such that they are not accessible to wildlife.	Operation	Bilcon	NSE	Yes				Included as part of OPEX.
13.8 During clearing operations Bilcon will comply with all relevant federal and provincial legislation protecting birds, nests and eggs.	Operation	Bilcon	NSE ECCC	Yes				
13.9 Bilcon will continue coordination and cooperation with CWS in monitoring waterfowl of special concern (harlequin duck and Barrow's goldeneye).	Operation	Bilcon	NSE CWS	Yes				Included as part of OPEX.
14.0 Light								
14.1 Bilcon will design lighting for operations, security and safety so as to minimize night glow.	Operation	Bilcon	NSE	Yes				Included as part of CAPEX.
14.2 Bilcon will employ minimal lighting on the ship loading structure commensurate with safe loading operations and navigation.	Operation	Bilcon	NSE TC	Yes				Included as part of CAPEX.
15.0 Vegetation								
15.1 Bilcon will monitor the health and integrity of trees in all preservation zones.	Operation	Bilcon	NSE	Yes		\$5,000		
15.2 Bilcon will carry out a silviculture program on lands owned by Bilcon adjacent to the quarry property.	Operation	Bilcon	NSE	Yes		\$5,000		

Bilcon Commitment	Project Phase	Responsibility	Approving Agency (if applicable)	Applicable to IA	CAPEX (\$ CDN)	OPEX (\$ CDN)	Cost Frequency (if applicable)	Comments/Assumptions
16.0 Reclamation								
16.1 Reclamation will be incremental throughout the life of the project.	Operation	Bilcon	NSE	Yes				Included as part of OPEX.
16.2 No top soil will be removed from the quarry site. All top soil and chipped material from the clearing and grubbing operation will be stored on site and mixed with the stored waste fines for reclamation.	Operation Closure	Bilcon	NSE	Yes				
16.3 All reclaimed areas will be reforested with native tree species under the direction of a professional forester.	Operation Closure	Bilcon	NSE	Yes				
16.4 Reclamation will be monitored by a professional forester to ensure the success of the program.	Operation Closure	Bilcon	NSE	Yes		\$5,000	annually	
16.5 The reclamation program will include a program for the control of invasive species.	Operation Closure	Bilcon	NSE	Yes		\$5,000	annually	
17.0 First Nations								
17.1 Bilcon will continue its efforts to involve the First Nations in the project.	Design Operation	Bilcon	NSE	No				
18.0 Land Values								
18.1 Bilcon will carry out an appraisal of residential properties within 800 m of the quarry prior to operations and after five years of operation. Compensation will be offered where property values have been diminished.	Operation	Bilcon	NSE	No		\$10,000	every 5 years	
19.0 Economy								
19.1 Bilcon will whenever possible, procure supplies in the local area and generally support local business both during construction and operation.	Construction Operation	Bilcon		No				

Abbreviations

- CWS: Canadian Wildlife Service
- DFO: Department of Fisheries and Oceans
- ECCC: Environment and Climate Change Canada (formerly Environment Canada)
- NSM: Nova Scotia Museum
- NSE: Nova Scotia Environment (formerly Nova Scotia Department of Environment and Labour - NSDEL)
- TC: Transport Canada
- MODD: Municipality of the District of Digby
- US EPA: United States Environmental Protection Agency

Exhibit 1



**Environment
Office of the Minister**

PO Box 442, Halifax, Nova Scotia, Canada B3J 2P8 • www.novascotia.ca/nse

Our File number:

40100-30-254
10700-40-49885

APR 20 2016

Gary Rudolph
Director of Aggregates
Municipal Enterprises Ltd.
927 Rocky Lake Drive
PO Box 48100
Bedford NS B4A 3Z2

Dear Mr. Rudolph:

Re: Environmental Assessment – Municipal Enterprises Limited
Seabrook Quarry Expansion Project, Digby County, NS

The environmental assessment of the proposed Seabrook Quarry Expansion Project in Digby County, Nova Scotia has been completed.

This is to advise that I have approved the above project in accordance with Section 40 of the Nova Scotia Environment Act, S.N.S., 1994-95 and subsection 13(1)(b) of the Environmental Assessment Regulations, N.S. Reg. 348/2008, made under the Act. Following a review of the information provided by Municipal Enterprises Limited, and the information provided during the government and public consultation of the environmental assessment, I am satisfied that any adverse effects or significant environmental effects of the undertaking can be adequately mitigated through compliance with the attached terms and conditions.

This approval is subject to any other approvals required by statute or regulation, including but not limited to, approval under Part V of the Environment Act (Approvals and Certificates section).

If you have any questions regarding the approval of this project, please contact Peter Geddes, Director, Policy and Planning, at (902) 424-6250 or via email at Peter.Geddes@novascotia.ca.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. Miller'.

Margaret Miller, MLA
Minister of Environment

Encl.

c: Peter Geddes

Environmental Assessment Approval

Approval Date: **APR 20 2016**

Seabrook Quarry Expansion
Municipal Enterprises Limited, Approval Holder
Digby County, Nova Scotia

The Seabrook Quarry Expansion (the "Undertaking"), proposed by Municipal Enterprises Limited (the "Approval Holder"), Digby County, Nova Scotia is approved pursuant to Section 40 of the *Environment Act* and Section 13(1)(b) of the *Environmental Assessment Regulations*. This Approval is subject to the following conditions and obtaining all other necessary approvals, permits or authorizations required by municipal, provincial and federal acts, regulations and by-laws before commencing work on the Undertaking. It is the responsibility of the Approval Holder to ensure that all such approvals, permits or authorizations are obtained before commencing work on the Undertaking.

This Environmental Assessment Approval is based upon the review of the conceptual design, environmental baseline information, impact predictions, and mitigation presented in the Registration Document.

Terms and Conditions for Environmental Assessment Approval

1.0 General Approval

- 1.1 The Environmental Assessment Approval for the project is limited to the project as described in the Registration Document. Any proposal by the Approval Holder for expansion, modification or relocation of any aspect of the project from that proposed in the Registration Document must be submitted to the Environmental Assessment Branch for review and may require an environmental assessment (EA).
- 1.2 The Approval Holder must, within two years of the date of issuance of this approval, commence work on the Undertaking unless granted a written extension by the Minister.

The Approval Holder must notify Nova Scotia Environment (NSE) the commencement date of the Undertaking, at a minimum 30 days prior to the commencement.
- 1.3 The Approval Holder must not transfer, sell, lease, assign or otherwise dispose of this approval without the written consent of the Minister. The sale of a controlling interest of a business or a transfer of an approval from a parent company to a subsidiary or an affiliate is deemed to be a transfer requiring consent.
- 1.4 The Approval Holder must implement all mitigation and commitments in the Registration Document, unless approved otherwise by Nova Scotia Environment.

2.0 Surface Water Resources

- 2.1 The Approval Holder must not undertake any quarry related activities within 30 metres of a watercourse unless otherwise approved by NSE. No development or removal of vegetation within this 30 metre buffer is permitted unless otherwise approved by NSE.
- 2.2 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must submit the following to NSE for review and approval, and must implement the plans following NSE's approval: a surface water monitoring plan including sampling locations and parameters. Based on the results of the monitoring programs as proposed, the Approval Holder must make necessary modifications to mitigation plans and/or operations as required by NSE;
- 2.3 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must submit to NSE an erosion and sediment control plan that meets NSE's Erosion and Sedimentation Control Handbook
- 2.4 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must submit to NSE a stormwater management plan including details regarding the plans for monitoring, maintenance and upgrading of the flow retention/siltation treatment areas. Design criteria must recognize increased likelihood of more intense precipitation events in coming decades; and
- 2.5 At the request of NSE, the Approval Holder must implement in consultation with NSE, a monitoring program to determine the potential for and extent of sulphide bearing material and plan to manage any exposed acid generating material and associated drainage.
- 2.6 All surface water protection and management programs must be updated/revised to reflect the progressive development of the quarry. This is to take place over the lifetime of the Undertaking, at a schedule acceptable to NSE, and revised as approved by NSE.

3.0 Wetlands

- 3.1 The Approval Holder must not undertake any quarry related activities within 30 metres of a wetland unless otherwise approved by NSE. No development or removal of vegetation within this 30 metre buffer is permitted unless otherwise approved by NSE.
- 3.2 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must develop and implement a wetland monitoring plan to monitor potential project impacts on the 4 wetlands within or near the project area (identified in the Registration Document).

- 3.3 If avoidance of wetlands is not possible during the development of the Project, any loss of wetland habitat through direct infilling or indirectly through alteration of wetland hydrology will require a wetland evaluation and application for alteration under the Activities Designation Regulations.

4.0 Groundwater Resources

- 4.1 The Approval Holder, as part of the application for amendments to the Part V Amendment under the *Environment Act*, must submit the following to NSE for review and approval, and must implement the program following NSE's approval: a groundwater monitoring program including location of monitoring wells and monitoring parameters. This program must be designed to evaluate potential impacts to both groundwater levels and groundwater quality. Based on the results of the monitoring programs, the Approval Holder must make necessary modifications to mitigation plans and/or quarry operations, if required, to prevent unacceptable environmental effects, to the satisfaction of NSE. This program must be updated upon application for amendments to the Part V approval or other frequency as determined by NSE; and
- 4.2 The Approval Holder must not excavate below the watertable, unless otherwise approved by NSE.
- 4.3 The Approval Holder must replace, at their expense, any water supply which has been lost or damaged as a result of project operations to the satisfaction of NSE.

5.0 Flora and Fauna

- 5.1 The Approval Holder must develop and implement a Wildlife Management Plan to include the following points in consultation with Nova Scotia Department of Natural Resources (DNR), Wildlife Division and the Canadian Wildlife Service, and notify NSE completion of the plan:
- a) a plan to protect common nighthawk and bank swallows during the breeding season;
 - b) a plan to manage non-native (alien invasive) plant species; and
 - c) a plan to manage and mitigate blasting related impacts on birds and mammals. The plan must include, but not be limited to identifying sensitive times and project locations for which blasting may impact wildlife.
- 5.2 The Approval Holder must clear vegetation outside of the breeding season for most bird species (April 15 to August 15), unless otherwise approved by NSE.

6.0 Noise and Dust

- 6.1 The Approval Holder, as part of the application for amendments to the Part V approval under the *Environment Act*, must provide for review and approval, an updated blasting plan. The plan must include an updated pre blast survey for structures and water supplies within 800 metres of the blast area, a detailed blast monitoring plan, and a full blast damage response policy .

- 6.2 At the request of NSE, the Approval Holder must develop and implement an air quality and/or dust monitoring plan. This plan must include but not be limited to sampling locations, parameters, monitoring methods, protocols and frequency. Based on the results of the monitoring programs as proposed, the Approval Holder must make necessary modifications to mitigation plans and/or operations as required by NSE.
- 6.3 At the request of NSE, the Approval Holder must monitor noise levels. Based on the results of monitoring program as proposed, the Approval Holder must make necessary modifications to mitigation plans and/or operations as required by NSE.

7.0 Archaeological and Heritage Resources

- 7.1 Prior to clearing within 30 m of the Henderson family homestead cellar identified at the project area, the Approval Holder must conduct an archaeological study in the form of shovel tests to investigate the significance of this cultural resources. The study must be developed in consultation with the Nova Scotia Department of Communities, Culture and Heritage (CCH), and the study results must be submitted to CCH for review. Necessary modifications to mitigation plans and/or project operations must also be made to the satisfaction of NSE, prior to the clearing.
- 7.2 The Approval Holder must cease work and contact the Coordinator, Heritage Division, CCH immediately upon discovery of an archaeological site or artifact unearthed during any phase of the Undertaking. If the find is of suspected or certain Mi'kmaq origin, the Approval Holder must also contact the Executive Director of the Kwilmu'kw Maw-klusuaqn Negotiation Office.

8.0 Public Engagement

- 8.1 At the request of NSE, the Approval Holder must develop and submit to NSE, a complaint resolution program to address public concerns associated with the Undertaking. The complaint resolution program must include but not be limited to the appointment of a contact person designated to deal with concerns from the public.
- 8.2 The Approval Holder must appoint a contact person designated to deal with complaints from the public, and must provide the contact person information to NSE 30 days prior to the commencement of any work. Records of these complaints and associated actions must be made available to NSE upon request.
- 8.3 At the request of NSE, the Approval Holder must form a Community Liaison Committee (CLC). The NSE Guidelines for the Formation of a Community Liaison Committee should be used for guidance. The Approval Holder must operate the CLC for the duration of the Undertaking and until released in writing by NSE.

9.0 First Nation and Aboriginal Engagement

- 9.1 The Approval Holder must develop and implement a Mi'kmaq Communication Plan for the Undertaking, which will include a process for communicating project details and seeking input from the Mi'kmaq community.

10.0 Contingency Plans

- 10.1 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must submit to NSE a contingency plan that meets NSE's Contingency Planning Guidelines and addresses (including but not limited to):
- a) accidental occurrences, and includes the location of spill equipment kept on-site and emergency phone numbers;
 - b) training to be delivered to staff, including contractors;
 - c) procedures for responding to incidents occurring during times when the facility is not staffed (e.g. evenings, weekends, holidays);
 - d) impacts to watercourses and water resources and domestic water supplies;
 - e) releases of dangerous goods or waste dangerous goods;
 - f) potential fire at the facility (to be reviewed and approved by the local fire and emergency service providers);
 - g) petroleum and hazardous material spills and surface water control structure failure; and
 - h) such other information as required by NSE.
- 10.2 Contingency plans must be updated/revised to reflect the progressive development of the project. This is to take place over the lifetime of the project, at a schedule acceptable to NSE, and revised as approved by NSE.
- 10.3 Refuelling must not be conducted within 100 metres of any surface water resource, unless otherwise approved by NSE.

11.0 Project Development and Reclamation

- 11.1 The Approval Holder, as part of the application for amendments to the Part V Approval under the *Environment Act*, must provide for review and approval a preliminary reclamation plan that includes progressive reclamation, and details of future land use. The Approval Holder must also consult the preliminary reclamation plan with DNR, Wildlife Division.

- 11.2 Reclamation plans must be updated/revise to reflect the progressive development of the project. This is to take place over the lifetime of the project, at a schedule acceptable to NSE, and revised as approved by NSE.
- 11.3 Quarry expansion approval is subject to progressive reclamation at the existing site being completed to the satisfaction of NSE. Re-vegetation will be limited to the use of native species unless otherwise approved by NSE
- 11.4 Quarry operations must be completed and reclaimed to the satisfaction of NSE and other appropriate regulatory departments.



Margaret Miller, MLA
Minister of Environment

Exhibit 2

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
1) Project Design			
1.1 Bilcon of Nova Scotia Corporation will design, construct, operate and decommission the project as set out in the EIS including subsequent specific changes required in future permits or authorizations.	Construction Operation Closure	Bilcon	EC, TC, DFO, NSDEL, NSM Municipality of Digby
1.2 Project construction, operation and closure will be in compliance with the terms and conditions set out in the Industrial Permit.	Construction Operation Closure	Bilcon	NSDEL
1.3 Bilcon will complete the environmental monitoring plans set out in the EIS in consultation with regulatory agencies and implement the plans when appropriate.	Operation	Bilcon	All Agencies
1.4 Bilcon will complete environmental contingency plans and spill response plans in consultation with regulatory agencies.	Operation	Bilcon	NSDEL, TC
1.5 Training programs will be implemented for operations staff.	Construction Operation	Bilcon	
1.6 Systems will be installed for the handling of domestic, sanitary and hazardous wastes.	Construction Operation	Bilcon	NSDEL, EC
1.7 No quarried rock product will be trucked on local roads.	Operation	Bilcon	
1.8 Bilcon will complete the reclamation plans and provide surety as required.	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
2) Physical Environment			
2.1 No excavation will be carried out below sea level.	Operation	Bilcon	
2.2 No excavation will be carried out below the upper basalt flow unit.	Operation	Bilcon	
3) Groundwater			
3.1 Quarrying will not take place below the groundwater table.	Operation	Bilcon	NSDEL
3.2 Water for the wash cycle will be made up from surface water storage. No ground water will be used for processing.	Operation	Bilcon	NSDEL
3.3 A pre-blast survey will be carried out on wells as required by NSDEL.	Operation	Bilcon	NSDEL
3.4 Monitoring – groundwater levels will be monitored in the existing wells both on and off site.	Operation	Bilcon	NSDEL
3.5 Monitoring – groundwater analysis for bacteriology, general chemistry and trace metals will be carried out once per year in the monitoring wells	Operation	Bilcon	NSDEL
3.6 Monitoring – adjacent property owners with wells will be invited to sit on the Community Liaison Committee.	Operation	Bilcon	
4) Watershed			
4.1 No quarrying will take place in the Little River watershed.	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
5) Marine Water Quality			
5.1 Monitoring – water quality monitoring of all outflows from sediment retention ponds will be conducted weekly for Total Suspended Solids and pH and monthly for general chemistry.	Operation	Bilcon	NSDEL
5.2 Monitoring – turbidity levels during pile installation will be monitored and if necessary silt curtains will be employed.	Operation	Bilcon	DFO
5.3 No bilge discharge or fuelling operations will be permitted at the marine terminal.	Operation	Bilcon	
5.4 Bilcon will require its shippers to comply with Transport Canada Guidelines for ballast water management.	Operation	Bilcon	TC
5.5 Bilcon will install the necessary equipment to prevent spillage of product during loading operations.	Operation	Bilcon	
6) Air Quality			
6.1 Bilcon will pave access roads from Hwy #217 to the quarry site.	Construction Operation	Bilcon	
6.2 Bilcon will enclose processing equipment which will be located approximately 1000 m from the nearest residence.	Operation	Bilcon	
6.3 All pit roadways will be watered during dry conditions to minimize dust.	Construction Operation	Bilcon	
6.4 Bilcon will chip remaining wood fibre following the harvesting of merchantable timber, rather than burning, to reduce emissions.	Construction Operation	Bilcon	

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
6.5 Heavy operational mobile equipment will be equipped with diesel engines meeting the US EPA Tier 3 emission standards and maintained in good operating condition.	Operation	Bilcon	
6.6 Monitoring – Bilcon will monitor particulate emissions when requested.	Operation	Bilcon	EC, NSDEL
<p>7) Noise</p> <p>7.1 Monitoring – All blasts will be monitored for concussion and ground vibration in consultation with NSDEL</p>	Operation	Bilcon	NSDEL
7.2 Bilcon will enclose its crushing and screening operation.	Operation	Bilcon	
7.3 Bilcon will employ quarry trucks with rubber lined boxes and rubberized screens.	Operation	Bilcon	
7.4 Bilcon will employ alternate back up warning devices.	Operation	Bilcon	
7.5 Bilcon will drill sockets in the bedrock for seating the piles rather than a continuous pile driving process.	Operation	Bilcon	
7.6 Preservation zones will be kept in a forested condition between the quarry and adjacent residences.	Operation	Bilcon	
7.7 Monitoring – sound level monitoring stations will be established in consultation with NSDEL.	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
<p>8) Employment and Training</p> <p>8.1 Bilcon will engage staff whenever possible from the local area and will not recruit from existing businesses.</p> <p>8.2 Bilcon will establish a training program for all staff. All training will be funded by Bilcon.</p> <p>8.3 Bilcon will give preference to hiring women.</p>	<p>Operation</p> <p>Operation</p> <p>Operation</p>	<p>Bilcon</p> <p>Bilcon</p> <p>Bilcon</p>	
<p>9) Archaeology</p> <p>9.1 Monitoring – if significant heritage resources are discovered an appropriate monitoring or recovery program will be developed in consultation with the Nova Scotia Museum.</p> <p>9.2 All staff will be given special training in recognising heritage resources and the procedures to be followed.</p> <p>9.3 All contractors and sub contractors will be required to follow procedures set out by Bilcon with respect to recognising heritage resources and the procedures to be followed.</p>	<p>Operation</p> <p>Operation</p> <p>Operation</p>	<p>Bilcon</p> <p>Bilcon</p> <p>Bilcon</p>	<p>NSM</p>
<p>9.4 Bilcon will conduct a program of archeological investigation in the nearshore waters prior to pile installation. Professional divers trained in archaeological techniques will conduct the investigations.</p>	<p>Operation</p>	<p>Bilcon</p>	<p>NSM</p>

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
10) Marine Fish Habitat			
10.1 Bilcon has received approval in principal for a Compensation Plan under Section 35(2) Fisheries Act. Bilcon will further develop a monitoring plan in concert with DFO.	Construction	Bilcon	DFO
10.2 Commitments regarding sediment entering the marine habitat are detailed above under marine water quality.	Construction and operation	Bilcon	NSDEL, DFO
11) Lobster Fishery			
11.1 Bilcon will advise lobster fishers using Whites Cove on the arrival and departure times of all bulk carriers during the lobster season.	operation	Bilcon	
11.2 Bilcon will ensure that all bulk carriers enter and leave Whites Cove, from and to the shipping lanes, on the same predetermined bearing.	operation	Bilcon	
11.3 Bilcon will provide compensation to a Committee of Whites Cove lobster fishers who will assess and compensate for loss of lobster gear due to ship movements. Compensation as a fixed sum will be paid on an annual basis.	operation	Bilcon	
12) Marine Species			
12.1 Bilcon will not carry out any blasting in marine waters.	operation	Bilcon	DFO
12.2 Bilcon will conduct on land blasting in accordance with the “Guidelines for the Use of Explosives in or near Canadian Fisheries Waters”.	operation	Bilcon	DFO

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
12.3 Bilcon will triple the setback distances indicated in the “ Guidelines for the Use of Explosives in or near Canadian Fisheries Waters”when iBoF Atlantic salmon may be present in nearshore waters.	Operation	Bilcon	DFO
12.4 Bilcon will use experienced observers to identify the possible presence of marine mammals within safety radii as set out in the Blasting Protocol.	Operation	Bilcon	DFO
12.5 Bilcon will monitor noise levels in the marine environment as set out in the EIS and will work with DFO to increase the knowledge base with respect to species at risk.	Operation	Bilcon	DFO
12.6 Bilcon will visually monitor and measure noise levels at the seal colony at Crowells Cove during the initial blast in consultation with DFO.	Construction	Bilcon	DFO
12.7 Bilcon will advise its shipper of any whale sightings in the area between the shipping lanes and the marine terminal.	Operation	Bilcon	DFO
12.8 Bilcon will not permit a ship speed in excess of 12 kn/hour during the transit from shipping lanes to the marine terminal.	Operation	Bilcon	DFO
12.9 Bilcon will work with other groups to provide better data to ships captains with respect to the location of marine mammals.	Operation	Bilcon	DFO

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
12.10 Bilcon will maintain communications with local whale watch and seabird cruise operators operating in the Digby Neck area.	Operation	Bilcon	DFO
12.11 Bilcon will report sightings of marine reptiles during routine monitoring of the arrival and departure of the vessel at the marine terminal to the Nova Scotia Leatherback Turtle Working Group and the Nova Scotia Museum of Natural History.	Operation	Bilcon	DFO
<p>13) Terrestrial Species</p> <p>13.1 Bilcon will establish and maintain 78.9 acres of environmental preservation zone as set out in the EIS.</p>	Construction Operation	Bilcon	NSDEL
13.2 Monitoring – a breeding bird survey will be conducted every five years to document any change in species composition.	Operation	Bilcon	NSDEL
13.3 Monitoring – an Odonata survey will be conducted every five years to document any changes in species composition.	Operation	Bilcon	NSDEL
13.4 Monitoring – a Lepidoptera survey will be conducted every five years to document any changes in species composition.	Operation	Bilcon	NSDEL
13.5 Monitoring – an invasive plant species survey will be conducted every five years to document the level of success of the program to detect and remove invasive plant species.	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
13.6 Monitoring – Flora species at risk will be monitored as indicated in the EIS.	Operation	Bilcon	NSDEL
13.7 Bilcon will store any toxic substances used during quarry operations (diesel fuel, gasoline, hydraulic fluids etc) in a safe manner such that they are not accessible to wildlife.	Operation	Bilcon	NSDEL
13.8 During clearing operations Bilcon will comply with all relevant federal and provincial legislation protecting birds, nests and eggs.	Operation	Bilcon	NSDEL, EC
13.9 Bilcon will continue coordination and cooperation with CWS in monitoring waterfowl of special concern (harlequin duck and Barrow’s goldeneye).	Operation	Bilcon	NSDEL, CWS
14) Light			
Bilcon will design lighting for operations, security and safety so as to minimize night glow.	Operation	Bilcon	NSDEL
Bilcon will employ minimal lighting on the ship loading structure commensurate with safe loading operations and navigation.	Operation	Bilcon	NSDEL, TC
15) Vegetation			
15.1 Bilcon will monitor the health and integrity of trees in all preservation zones.	Operation	Bilcon	NSDEL
15.2 Bilcon will carry out a silviculture program on lands owned by Bilcon adjacent to the quarry property.	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
16) Reclamation			
16.1 Reclamation will be incremental throughout the life of the project.	Operation	Bilcon	NSDEL
16.2 No top soil will be removed from the quarry site. All top soil and chipped material from the clearing and grubbing operation will be stored on site and mixed with the stored waste fines for reclamation.	Operation Closure	Bilcon	NSDEL
16.3 All reclaimed areas will be reforested with native tree species under the direction of a professional forester.	Operation Closure	Bilcon	NSDEL
16.4 Reclamation will be monitored by a professional forester to ensure the success of the program.	Operation Closure	Bilcon	NSDEL
16.5 The reclamation program will include a program for the control of invasive species.	Operation Closure	Bilcon	NSDEL
17) First Nations			
17.1 Bilcon will continue its efforts to involve the Design First Nations in the project.	Design Operation	Bilcon	NSDEL
18) Land Values			
18.1 Bilcon will carry out an appraisal of residential properties within 800 m of the quarry prior to operations and after five years of operation. Compensation will be offered where property values have been diminished	Operation	Bilcon	NSDEL

Bilcon Commitment	Project Phase	Responsibility	Approving Agency
<p><i>19) Economy</i></p> <p>19.1 Bilcon will wherever possible, procure supplies in the local area and generally support local business both during construction and operation.</p>	<p>Construction Operation</p>	<p>Bilcon</p>	

Abbreviations

CWS	Canadian Wildlife Service
DFO	Department of Fisheries and Oceans
EC	Environment Canada
NSM	Nova Scotia Museum
NSDEL	Nova Scotia Department of Environment and Labour
TC	Transport Canada

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Climate Greenhouse Gas	X	X	X		<ul style="list-style-type: none"> Creation of a permanent environmental preservation zone of approx. 80 acres Maintaining over 300 acres of land surrounding the quarry property in managed forest land Incremental forest clearing and reclamation procedures to maximize carbon dioxide uptake and oxygen production Reduction of greenhouse gas emissions by chipping and composting wood fibre from land clearing activities rather than burning Heavy operational equipment diesel engines meeting EPA Tier 3 emission specifications Recycling of waste oil and lubricants for heating buildings Stationary equipment using electrical energy Transport of quarry products directly by ship once per week rather than by ground transportation to port 	para. 9.1.1
	X	X	X			
		X	X			
	X	X	X			
		X	X			
		X	X			
		X		X		
Geology Basalt Rock		X	X		<ul style="list-style-type: none"> Production of high grade aggregate for value added construction industry products Rock extraction will not be carried out below sea level to eliminate the possibility of salt water intrusion 	para. 9.1.2
		X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Geology Basalt Rock (Cont'd)		X	X		<ul style="list-style-type: none"> Rock extraction will not be carried out below the contact of the middle and upper flow units Quarrying will be conducted to use surface water drainage and avoid dewatering by pumping A security fence will be installed along public property lines for public safety 	para. 9.1.2
		X	X			
	X	X	X			
Hydrogeology Groundwater		X	X		<ul style="list-style-type: none"> Quarrying and adjacent water wells will occur in different geological horizons or hydro-stratigraphic units Adjacent water wells will be located hydraulically down gradient of the quarry and/or on opposite sides of the ground water divide Recharge and discharge areas for the quarry and adjacent water wells will be located in different watersheds Quarrying will be carried out above the natural water table and will not require mine dewatering and pumping or associated ground-water withdrawal or drawdown Quarrying will be a non-consumptive water use as only water that enters the quarry watershed will be used Construction aggregate operations have been used to enhance aquifer recharge via artificial surface recharge of the local groundwater regime 	para. 9.1.3
		X	X			
		X	X			
		X	X			
		X	X			
		X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Hydrogeology Groundwater	X		X		<ul style="list-style-type: none"> Bilcon of Nova Scotia Corporation will conduct a pre-blast survey of adjacent water wells in the immediate area of the quarry in consultation with the NSDEL Bilcon of Nova Scotia Corporation will replace at their expense any existing water supply proven to be lost or damaged as a result of their quarrying operation 	para. 9.1.3
		X	X			
Surficial Geology & Soils Soils	X	X	X		<ul style="list-style-type: none"> Conserving soil resources with a permanent environmental preservation zone around the quarry site with approximately 80 acres in permanent vegetative cover to reduce runoff and potential soil loss from erosion Construction of an organic disposal area for clearing and grubbing materials before site construction begins Sediment and organic disposal areas will be dyked to control soil erosion and dykes will receive erosion control measures during construction Storage and recycling of waste materials (sediments and organics) for reclamation purposes Incremental forest clearing and reclamation to minimize potential soil loss from erosion Mixing of composted organics with mineral sediments for a healthy, productive, soil regime for reclamation 	para. 9.1.4
	X	X	X			
	X		X			
	X	X	X			
	X	X	X			
	X	X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph	
	Construction	Operation	Land	Marine			
<i>Physical Environment</i> Little River Watershed Drainage	X	X	X		<ul style="list-style-type: none"> All of the Little River watershed on the quarry property, approximately 21 acres, will be within an environmental preservation zone and no quarrying will take place in the Little River watershed Surface water drainage from the quarry compound area within the Little River watershed will be routed toward the active quarry area 	para 9.1.5	
		X	X				
On-site Surface Water Drainage	X	X	X		<ul style="list-style-type: none"> Prior to land construction, sediment retention ponds will be constructed to retain surface water runoff from disturbed land areas Berms for sediment retention ponds will receive erosion control measures during construction to reduce soil erosion Water overflows from the sediment retention ponds will drain into a constructed wetland to provide greater retention time before entering the Bay of Fundy Drainage channels will be constructed as required to direct surface water runoff to the sediment retention ponds 	para 9.1.6	
	X	X	X				
	X	X	X				
	X	X	X				
Wetlands	X	X	X		<ul style="list-style-type: none"> Wetlands on the quarry site identified by the NSDNR wetlands database will be included in the permanent environmental preservation zone Intermittent surface water flow will be maintained to the “coastal bog” and the environmental preservation zone expanded in the bog area to conserve this natural wetland habitat 	para 9.1.6	
	X	X	X				para 9.2.1

**Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation**

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Physical Oceanography Site Location		X		X	<ul style="list-style-type: none"> The location of the marine terminal will provide a short distance and direct route to and from the designated in bound/outbound shipping lanes with minimal shipping penetration into the outer Bay of Fundy The location of the marine terminal will be along a homogenous section of the coastline without islands or other physical navigational hazards The bathymetry of the marine terminal location provides adequate water depth without underwater blasting, dredging or dredge spoil disposal The location of the marine terminal will avoid the possible archaeological sensitive underwater ridge extending from Sandy Cove west during either construction or subsequent shipping activities The marine terminal will be located in an area of practically non-existent seismic activity Future effect of sea level rise on the marine terminal will be minimal, since this area of coastline has a “low sensitivity in dex” and will remain relatively stable even if sea level rises as predicted 	para. 9.1.7
	X	X		X		
	X	X		X		
	X	X		X		
	X	X		X		
			X			
Water Quality	X			X	<ul style="list-style-type: none"> The bottom of the Bay in the location of the marine terminal is mainly exposed bedrock affording good foundation conditions with little sediment deposits for resuspension during marine construction activities 	para. 9.1.7

Whites Point Quarry and Marine Table
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Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Physical Oceanography Water Quality	X			X	<ul style="list-style-type: none"> Bottom sediment contaminants including metals, PCBs, PAHs, and pesticides are within CCME Guidelines reducing the possibility of contaminate resuspension during marine construction activities 	para. 9.1.7
	X			X	<ul style="list-style-type: none"> If unexpected turbidity conditions develop during installation of the pipe piles for the marine terminal exceeding CCME Guidelines, controls such as silt curtains will be implemented 	
Tides and Currents		X		X	<ul style="list-style-type: none"> The pipe pile construction method for the marine terminal will have minimal effect on intertidal and nearshore tides and currents allowing practically unobstructed movement and flows with no infilling 	para 9.1.7
Air Quality Particulate Emissions		X	X		<ul style="list-style-type: none"> Quarry products will be transported by water, thereby eliminating heavy trucks travelling and raising dust on rural/residential roads 	para. 9.1.8
		X	X		<ul style="list-style-type: none"> A paved access road from Highway 217 to the quarry site will be constructed thereby practically eliminating dust generated by employee and delivery vehicles commonly associated with gravel access roads 	
		X	X		<ul style="list-style-type: none"> Water sprays will be used to control dust on quarry roads and work areas caused by quarry mobile equipment and on stockpiles 	

Whites Point Quarry and Marine Table
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Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Air Quality Particulate Emissions (cont'd)		X	X		<ul style="list-style-type: none"> The processing plant will be located 1000m from the nearest residence with processing equipment enclosed whenever feasible to control fugitive dust Vertical separation and vegetative buffer zones will further separate the processing plant from adjacent residences Quarry products will be washed during processing with state of the art mist systems Load out tunnels will be used to reduce product handling and associated dust generation; conveyors will be hooded to reduce fugitive dust 	para. 9.1.8
		X	X			
		X	X			
		X	X			
Noise and Vibration Blasting		X	X		<ul style="list-style-type: none"> Infrequent blasting is proposed to be once every two weeks during production for a duration of less than one second per blast event Blasting will not be conducted on cloudy or overcast days to minimize sound propagation No blasting will be conducted within 800 m of residential structures not located on quarry property without written permission of the property owner An environmental preservation zone will be maintained around the perimeter of the quarry to further reduce sound levels by absorption from blasting activities Noise and vibration from blasting will meet the requirements set forth in the NSDEL "Pit and Quarry Guidelines" 	para. 9.1.9, para. 9.1.10, para. 9.1.11
		X	X			
		X	X			
		X	X			
		X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Noise and Vibration Processing Plant		X	X		<ul style="list-style-type: none"> The processing plant will be located 1000m from the nearest residence with processing equipment enclosed whenever feasible to buffer sound levels at the source & by attenuation A minimum 30m wide environmental preservation zone will be maintained around the perimeter of the quarry property to further reduce sound levels by absorption A vertical separation of approximately 60m will be maintained between the processing plant and the nearest residence to dissipate sound waves upward Equipment such as truck bodies and screens will be rubberized to reduce sound levels when loading and screening rock products Noise and vibration from the quarry will meet the requirements set forth in the NSDEL “Pit and Quarry Guidelines” at the quarry property line 	para. 9.1.9, para. 9.1.10, para. 9.1.11
		X	X			
		X	X			
		X	X			
		X	X			
Ship Loading		X	X		<ul style="list-style-type: none"> A horizontal separation distance of over 1.5km will be maintained between the ship loading activity and the nearest residence with vegetative buffer zones to further reduce sound levels by attenuation and absorption Infrequent ship loading is proposed once per week during production for a duration of approximately 8 hours using double-hulled vessels to minimize noise during loading 	
		X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Physical Environment</i> Light Artificial	X	X	X	X	<ul style="list-style-type: none"> Adjacent residences will receive no direct light from quarry lighting infrastructure due to horizontal and vertical separation and visual buffers Quarry production will be concentrated during seasons of longer daylight hours, thereby reducing requirements for artificial light and for energy savings Except for regulatory navigational lighting, quarry lighting will be placed in buildings or be shielded whenever feasible to reduce “light spill” 	para. 9.1.12
<i>Biological Environment</i> Terrestrial Ecology Habitat	X	X	X		<ul style="list-style-type: none"> Approximately 80 acres of quarry land is proposed to be conserved and managed as a permanent environmental preservation zone Over 300 acres of non-quarry land within the same ecosystem is proposed to be managed as forest/wildlife resource land for the 50 year life of the quarry project Incremental forest clearing and reclamation will be carried out during the 50 year life of the quarry project to maintain habitat stability Construction of sediment retention ponds and associated constructed wetlands will create habitat diversity In accordance with the Migratory Bird Protection Act, habitat alteration from clearing activities will generally take place during late fall and winter to avoid nesting periods and spring and fall migrations 	para. 9.2.1
	X	X	X			
	X	X	X			
	X	X	X			

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i> Terrestrial Ecology Habitat (cont'd)		X	X		<ul style="list-style-type: none"> To reduce the possibility of migratory bird collisions with lighted structures, night lighting will be kept to a minimum and shielded whenever possible to direct light downward 	para. 9.2.1
Species at Risk	X	X	X		<ul style="list-style-type: none"> Three provincially designated Flora species at risk will be permanently preserved in an environmental preservation zone for the 50 year life of the quarry project No federal or provincial designated vertebrate species at risk are expected to breed on the quarry site - no mitigation proposed Preservation and creation of wetland habitats will provide potential habitat for some Odonata species at risk Maintaining early successional stages of vegetation on dykelands will provide potential habitat for some Lepidoptera species at risk All toxic substances will be stored appropriately and not be accessible to wildlife 	para. 9.2.1
Aquatic Ecology On-site Freshwater	X	X	X		<ul style="list-style-type: none"> The two watercourses at the north and south property lines of the quarry will be included in the environmental preservation zone The watercourse in the active quarry was determined to be not suitable fish habitat by DFO, however, surface water flow to the coastal bog will be maintained All outflows from the sediment retention ponds and/or constructed wetlands into the Bay of Fundy will meet the NSDEL "Pit and Quarry Guidelines" for Total Suspended Solids and pH 	para. 9.2.2

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i> Aquatic Ecology Marine Intertidal Zone	X	X		X	<ul style="list-style-type: none"> The conveyor system for ship loading quarry products will be designed to span the majority of the intertidal zone with only one group of pipe piles installed directly in the intertidal zone affecting .001 acres of intertidal bottom habitat A fish habitat compensation plan has been approved in principle by DFO at three times the loss of bottom habitat in the intertidal zone Installation of the pipe piles will be conducted from the shore at low tide by socket drilling, producing aggregate size waste material with minimal fines The conveyor over the intertidal zone will be hooded to control dust and equipped with spill containment to catch any product from entering the intertidal zone The surface of selected pipe piles will be equipped with wire cages to enhance pelagic fish food sources 	para. 9.2.2
		X		X		
	X			X		
		X		X		
		X		X		
Coastal/Nearshore Marine Habitat	X	X		X	<ul style="list-style-type: none"> The foundation system selected for the ship loader and mooring dolphins in nearshore waters will be pipe piles anchored to the bedrock bottom resulting in minimal effect on bottom habitat of approximately .008 acres A fish habitat compensation plan has been approved in principle by DFO at three times the loss of bottom habitat in the nearshore waters and with pelagic fish food enhancements Installation of the marine terminal infrastructure will be done from shore and floating platforms to minimize disturbance to the nearshore bottom habitat 	para. 9.2.3
		X		X		
	X			X		

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i> Coastal/Nearshore Marine Habitat (cont'd)	X			X	<ul style="list-style-type: none"> • Socket drilling for anchoring the pipe piles will be done to produce aggregate size waste material with minimal fines and turbidity • During the infrequent, once per week, vessel arrival and departure, a trained observer will be stationed on the ship loader and if marine mammals or waterbirds are sighted, their location will be communicated to the ship's captain • The loading of vessels at night will be avoided whenever possible to minimize the possibility of lights attracting coastal migrant waterbirds and subsequent collisions 	para. 9.2.3
		X		X		
		X		X		
Species at Risk	X	X		X	<ul style="list-style-type: none"> • Three federally designated fish species at risk may frequent nearshore waters at the marine terminal: Bilcon of Nova Scotia Corporation will work with the appropriate Recovery Teams in their efforts to re-establish fish species at risk populations such as the inner Bay of Fundy Atlantic salmon, Atlantic cod, and striped bass • A fish habitat compensation plan has been approved in principal by DFO for intertidal and nearshore bottom habitat at three times the direct loss and for alteration of pelagic fish habitat • Two federally designated waterfowl species at risk may occur in nearshore waters at the marine terminal: Bilcon of Nova Scotia Corporation will continue to coordinate with the Canadian Wildlife Service in their efforts to re-establish waterfowl species at risk populations such as the Harlequin duck and Barrow's goldeneye 	para. 9.2.5, para.. 9.2.6
		X		X		
			X			X

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Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i> Species at Risk (cont'd)		X		X	<ul style="list-style-type: none"> One federally designated marine reptile species at risk could occur in nearshore waters at the marine terminal: Bilcon of Nova Scotia Corporation will coordinate any sightings of leatherback turtles to the Nova Scotia Leatherback Turtle Working Group 	para. 9.2.8
Blasting Fish Habitat	X	X		X	<ul style="list-style-type: none"> Blasting will be guided by “Bilcon of Nova Scotia Corporation’s ‘Blasting Protocol’” and adhere to the Department of Fisheries and Oceans “Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters” 	para. 9.2.9 para. 9.2.10
		X		X	<ul style="list-style-type: none"> Blasting will be conducted infrequently, once every two weeks during production, with a duration of each blast event of less than one second, blasts will be conducted when no atmospheric inversions are present and as close to low tide as feasible to maximize setback distances from the blast and fish habitat 	
		X		X	<ul style="list-style-type: none"> An additional mitigative measure will be adopted of three times the designated setback indicated in the “Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters” from the blast to fish habitat during times of the year when inner Bay of Fundy Atlantic salmon could be present in these coastal waters 	

Whites Point Quarry and Marine Table
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Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i>						
Blasting Marine Mammals	X	X		X	<ul style="list-style-type: none"> Blasting will not be conducted if marine mammals (whales, porpoises, or dolphins) are observed within 500m of the detonation site or if seals are within 170m of the detonation site 	para. 9.2.11
	X	X		X	<ul style="list-style-type: none"> Blasting will not be conducted if marine mammal species at risk (fin, blue or North Atlantic right whales) are observed within 2500m of the detonation site 	
		X		X	<ul style="list-style-type: none"> An experienced marine mammal observer will be employed to verify any marine mammals present within the safety radii and will communicate with the blast coordinator an “all clear” signal if no marine mammals are observed 	
	X			X	<ul style="list-style-type: none"> Monitoring of an initial blast is proposed to verify modeling procedures with results from this initial blast being used to further define mitigative setback distances from the detonation to a marine mammal 	
Blasting Waterbirds		X		X	<ul style="list-style-type: none"> An experienced waterbird observer will be employed to verify any waterbirds present within the 170m safety radii and will communicate with the blast coordinator an “all clear” signal if no waterbirds are observed 	para. 9.2.12

Whites Point Quarry and Marine Table
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Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
Ship Interactions Marine Mammals		X		X	<ul style="list-style-type: none"> Vessels transporting quarry products will not have to pass through the North Atlantic right whale conservation area 	para. 9.2.13
		X		X	<ul style="list-style-type: none"> The proposed ship route to and from the marine terminal and the shipping lanes will pass through an area of low sightings of North Atlantic right whales per unit of effort 	
		X		X	<ul style="list-style-type: none"> The proposed ship route to and from the marine terminal and the shipping lanes will pass through an area of low sightings of humpback, fin and minke whale, and harbour porpoises 	
		X		X	<ul style="list-style-type: none"> The speed of the vessel in waters between the shipping lanes and the marine terminal will be less than 12 knots/hour, i.e., significantly less than the speed of most severe and lethal ship strikes 	
		X		X	<ul style="list-style-type: none"> Coordination with whale and seabird cruises operating in the waters of the Bay of Fundy between the shipping lanes and the marine terminal will be maintained on days when vessels are due to arrive and depart for reports of marine mammal sightings 	
Ballast Water		X		X	<ul style="list-style-type: none"> Compliance with ballast water management guidelines and pending regulations are the responsibility of the shipping industry: Bilcon of Nova Scotia Corporation will contract reputable shipping companies 	para. 9.2.14

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Biological Environment</i> Noise and Vibration Marine					<ul style="list-style-type: none"> Large vessel traffic is minimal in waters between the shipping lanes and marine terminal and cumulative noise from the quarry vessel is not expected to be as great as presently experienced in the North Atlantic right whale conservation area - no mitigation proposed 	para. 9.2.15
<i>Human Environment</i> Heritage Resources Marine Archaeology	X			X	<ul style="list-style-type: none"> Prior to marine construction, Bilcon of Nova Scotia Corporation will have the appropriate archaeological investigations conducted under permit with the Nova Scotia Museum: if archaeological resources are discovered as a result of this investigation, appropriate mitigation actions will be taken in consultation with the Nova Scotia Museum 	para. 9.3.1
Heritage Resources Land Archaeology	X	X	X		<ul style="list-style-type: none"> Archaeological recording and limited testing of the Hersey House foundation will be conducted under permit with the Nova Scotia Museum if the foundation cannot be avoided during quarry construction or operations 	para. 9.3.2
	X	X	X		<ul style="list-style-type: none"> Before construction and operation of the quarry, an educational briefing concerning archaeological and historical resources will be conducted for all quarry employees 	para. 9.3.3

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Aboriginal Land and Resource Use	X	X	X	X	<ul style="list-style-type: none"> Bilcon of Nova Scotia Corporation will continue its efforts to consult with First Nations and address their concerns. 	para. 9.3.3
Heritage Resources History	X	X	X		<ul style="list-style-type: none"> As part of the educational briefing concerning archaeological and historical resources, training with respect to the requirements of the Cemeteries Protection Act will be conducted for all quarry employees 	para. 9.3.4
Heritage Resources Heritage Properties	X	X	X		<ul style="list-style-type: none"> Registered or designated heritage properties are not located within view planes of the quarry - no mitigation proposed 	para. 9.3.5
Aesthetics	X	X	X		<ul style="list-style-type: none"> The quarry will not be visible in a view plane from the land along Highway 217 - no mitigation proposed 	para. 9.3.6
	X	X		X	<ul style="list-style-type: none"> A minimum 30m wide environmental preservation zone will be maintained along the coastline of the quarry as a buffer to enhance visual qualities when viewed from the Bay of Fundy with incremental forest clearing and incremental reclamation 	
Community Profile					<ul style="list-style-type: none"> The community profile presents historical background data - no mitigation proposed 	para. 9.3.7

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Transportation		X	X	X	<ul style="list-style-type: none"> Shipping quarry products directly by water will eliminate heavy truck traffic on rural, two-lane highways, truck traffic inconveniences for residents and tourists, and associated noise and vibration for those residents and school along Highway 217 Upgrading of the intersection of the quarry entrance road and Highway 217 will be done to meet Nova Scotia Department of Transportation and Public Works standards 	para. 9.3.8
	X	X	X			
Economy - Whites Point Quarry and Marine Terminal	X	X	X	X	<ul style="list-style-type: none"> The construction and operation of the quarry and marine terminal will provide positive aspects for local employment, community development through economic spin-off, and municipal tax revenues - no mitigation proposed 	para. 9.3.9
Economy - Fishery / Aquaculture		X	X	X	<ul style="list-style-type: none"> Blasting in proximity to land and water based aquaculture will be subject to the same setbacks as outlined in DFO's "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" 	para. 9.3.10, para. 9.3.11
Economy - Fishery / Intertidal	X	X		X	<ul style="list-style-type: none"> Continued access through quarry property to the beach for harvesting will be provided for beach harvesters upon appropriate arrangements with quarry management 	para. 9.3.12

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Economy - Fishery / Nearshore		X		X	<ul style="list-style-type: none"> • Coordination of a designated ship route to and from the marine terminal to the inbound / outbound shipping lanes in the Bay of Fundy is proposed with all stakeholders • Coordination of the approach / departure area for the vessel at the marine terminal is proposed with local fishers • Re-establishment of the Community Liaison Committee with a local fisherman representative is proposed to maintain lines of communication between the quarry and fishing industries • To minimize possible inconvenience to local fishers, advance notice of shipping schedules will be made available • A “lobster trap fund” will be established and funded by Bilcon of Nova Scotia Corporation and administered by a designated fisher group to compensate for fishing gear destroyed as a result of the vessel transporting quarry products 	para. 9.3.13
		X		X		
		X		X		
		X		X		
		X		X		
Economy - Tourism		X	X		<ul style="list-style-type: none"> • Re-establishment of the Community Liaison Committee with a local tourism representative is proposed to maintain lines of communication between the quarry and tourism industries 	para. 9.3.14
Economy - Land Value		X	X		<ul style="list-style-type: none"> • Compensation will be paid to adjacent property owners within 800m of the active quarry if property values are shown to be diminished 	para. 9.3.15

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Recreation		X	X		<ul style="list-style-type: none"> Continued access through quarry property to the beach will be provided for non-motorized recreation users upon appropriate arrangements with quarry management 	para. 9.3.16
Human Health and Community Wellness					<ul style="list-style-type: none"> Human health and community wellness presents back ground data - see noise, dust, water quality, etc. 	para. 9.3.17
Human Health Drinking Water Quality	X		X		<ul style="list-style-type: none"> All wells constructed on-site for domestic water supply will meet the NSDEL requirements for the construction of water wells - no mitigation proposed 	para. 9.3.18
Human Health Marine Contaminates	X	X		X	<ul style="list-style-type: none"> On-land environmental control structures and quarry operating procedures will be designed to control any on-site contaminants from entering the marine environment 	para. 9.3.19
		X		X	<ul style="list-style-type: none"> The risk of spills in the marine environment will be minimal since ships will not be fueled at the marine terminal 	
		X		X	<ul style="list-style-type: none"> Electrical motors for the conveyor systems will be used over the intertidal and nearshore waters which require minimal lubricants and will be equipped with drip pans and maintained 	
Human Health Land Contaminates	X	X	X		<ul style="list-style-type: none"> Only pesticides, herbicides, and other chemical agents registered for their particular use and application by licensed persons will be used on-site 	para. 9.3.20

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Human Health Land Contaminates (cont'd)	X	X		X	<ul style="list-style-type: none"> Explosives will not be stored on-site and will be delivered and handled by qualified persons in accordance with provincial and federal regulations Fuels, oils, lubricants, and coolants will be stored on-site in spill containment areas and vehicle fueling will be done using closed systems with dry break disconnect couplings Sewage disposal will be by on-site sewage disposal systems designed and maintained in accordance with NSDEL guidelines 	para. 9.3.20
	X	X		X		
Human Health Country Foods	X	X	X	X	<ul style="list-style-type: none"> Mitigation measures regarding potential pathways (air, water, and soil) for country food contaminants are presented in previous paragraphs 	para. 9.3.21
Socio-economic Patterns	X	X	X	X	<ul style="list-style-type: none"> Communication and community involvement of the pre-project environmental assessment and pre-project engineering will be continued by Bilcon of Nova Scotia Corporation through open houses, newsletters, and with interested individuals Bilcon of Nova Scotia Corporation intends to re-establish the Community Liaison Committee and invite an adjacent property owners to be members of the Committee 	para. 9.3.22
	X	X	X	X		

Whites Point Quarry and Marine Table
Table ECM - 1 Summary Table
Environmental Component Mitigation

Environmental Component	Project Phase		Project Component		Proposed Mitigation	Reference Paragraph
	Construction	Operation	Land	Marine		
<i>Human Environment</i> Socio-economic Patterns (cont'd)	X	X	X	X	<ul style="list-style-type: none"> A complaint process will be established by Bilcon of Nova Scotia Corporation to address environmental matters and any quality of life issues 	para. 9.3.22
Education, Training, and Skills		X	X	X	<ul style="list-style-type: none"> Training for quarry employees will be provided by Bilcon of Nova Scotia Corporation at the Company's expense 	para. 9.3.23
		X	X	X	<ul style="list-style-type: none"> Hiring priority will be given to Digby Neck residents with emphasis on education and skill development to introduce and maintain women in the workforce 	
Infrastructure and Institutional Capacity	X	X	X	X	<ul style="list-style-type: none"> No burden on existing infrastructure or institutional capacity is anticipated and no mitigation is proposed 	para. 9.3.24

Whites Point Quarry and Marine Terminal
Table ECM - 2 SUMMARY TABLE
Environmental Component Follow-up Monitoring

Environmental Component	Project Phase		Frequency	Description/EIS Paragraph	Regulatory Requirement
	Construction	Operation			
<i>Physical Environment</i>					
Climate Precipitation	Yes	Yes	Monthly	•On-site precipitation measurement (para. 9.1.1.4)	No
Geology Basalt Rock	No	No	NA		N/A
Hydrogeology Groundwater Quality Groundwater Level	Yes Yes	Yes Yes	Annually Monthly	•Bacteriology, chemistry, trace metals (para. 9.1.3.4) •Groundwater level measurement at 6 monitoring well locations (para. 9.1.3.4)	Yes-NSDEL No
Surficial Geology & Soils Soil	No	Yes	5 Years	•Soil testing for reclamation (para. 9.1.4.4)	No
Little River Watershed Drainage	Yes	Yes	Annually	•Off-site surface water drainage (para. 9.1.5.4)	No
On-Site Surface Water Drainage Water Quality Water Quantity	Yes Yes	Yes Yes	Weekly Monthly	•Total suspended solids and pH from sediment pond outfalls (para. 9.1.6.4) •General chemistry (para. 9.1.6.4) and flow when measurable (para. 9.2.2.4)	Yes-NSDEL No
Physical Oceanography Water Quality	Yes	No	Monthly	•Turbidity measurements if required during marine construction (para. 9.1.7.4)	No
Air Quality Particulate Emissions	Yes	Yes	Daily	•Suspended particulate matter measurements if required at quarry property line (para. 9.1.8.4)	Yes-NSDEL

Whites Point Quarry and Marine Terminal
Table ECM - 2 SUMMARY TABLE
Environmental Component Follow-up Monitoring

Environmental Component	Project Phase		Frequency	Description/EIS Paragraph	Regulatory Requirement
	Construction	Operation			
Noise & Vibration Blasting - Land	Yes	Yes	Weekly	•Concussion and ground vibration measurements at 3 land monitoring stations (para. 9.1.9.4)	Yes-NSDEL
Plant Operations - Land	No	Yes	Daily	•Sound level measurements at property line (para. 9.1.10.4)	Yes-NSDEL
Light Night Light	Yes	Yes	Monthly	•Visual observations by a CLC member (para. 9.1.12.4)	No
Biological Environment					
Terrestrial Ecology					
Flora Species at Risk					
<i>Glaucous Rattle-snake Root</i>	Yes	Yes	Annually	•Visual population appraisal and photographic documentation (para. 9.2.1.4)	No
<i>Mountain Sandwort</i>	Yes	Yes	Annually	•Visual population appraisal and photographic documentation (para. 9.2.1.4)	No
<i>Hemlock Parsley</i>	Yes	Yes	5 Years	•Visual population appraisal and photographic documentation (para. 9.2.1.4)	No
Invasive Plants	No	Yes	5 Years	•Visual population appraisal and photographic documentation (para. 9.2.1.4)	No
Vertebrate Fauna	No	Yes	5 Years	•On-site vertebrate survey including a breeding bird survey (para. 9.2.1.4)	No
Odonata/Wetlands	No	Yes	5 Years	•Visual odonata population appraisal and wetland habitat appraisal (para. 9.2.1.4)	No
Lepidoptera	No	Yes	5 Years	•Visual lepidoptera and host plant appraisal (para. 9.2.1.4)	No
Aquatic Ecology					
Marine Intertidal Zone	Yes	No	Monthly	•Visual monitoring and turbidity measurements if required during marine construction (para. 9.2.3.4)	No
Coastal-Nearshore	Yes	No	Daily	•Visual monitoring and turbidity measurements if required during marine construction (para. 9.2.4.4)	No
Fish Habitat Compensation	No	Yes	Annually - 5 yrs	•Video documentation of pre & post compensation conditions, biological sampling (para. 9.2.4.4)	Yes-DFO
Fish and Fish Habitat-Blasting	Yes	No	Initial Blast	•Peak pressure and ground vibration at 3 stations in marine environment (para. 9.2.9.4)	Yes-DFO
Marine Mammals-Blasting	Yes	No	Initial Blast	•Peak pressure & ground vibration at 3 stations in marine environment (para. 9.2.11.4)	No
Marine Mammals-Blasting	Yes	Yes	Initial Blast	•Noise measurement and video documentation of seal colony at Crowells Cove (para. 9.2.11.4)	No
Noise and Vibration-Marine	Yes	Yes	Weekly	•Noise and vibration in water column at marine terminal (para. 9.2.15.4)	No

Whites Point Quarry and Marine Terminal
Table ECM - 2 SUMMARY TABLE
Environmental Component Follow-up Monitoring

Environmental Component	Project Phase		Frequency	Description/EIS Paragraph	Regulatory Requirement
	Construction	Operation			
<i>Human Environment</i>					
Heritage Resources Land Archaeology	Yes	Yes	NA	•Visual investigation if land disturbances within 250m of Hersey house foundation (para. 9.3.2.4)	Yes - NS Museum
Aesthetics Reclamation	Yes	Yes	5 years	•Inspection of environmental preservation zone and reclamation procedures (para. 9.3.6.4)	No
Transportation Marine	Yes	Yes	Annually	•Lobster fishermen monitor trap or gear loss resulting from shipping activities (para. 9.3.8.4)	No
Fishery Intertidal	Yes	Yes	Daily	•Registration at the quarry office when harvesting in the coastal zone (para. 9.3.12.4)	No
Nearshore	Yes	Yes	Daily	•Recording of frequency and duration of vessels at marine terminal (para 9.3.13.4)	No
Tourism Bay of Fundy	Yes	Yes	Monthly	•Tourism representative to participate on Community Liaison Committee (para. 9.3.14.4)	No
Recreation Outdoor	Yes	Yes	Daily	•Registration at the quarry office when accessing the coastal zone (para. 9.3.16.4)	No
Human Health Drinking Water Quality Country Foods	Yes No	Yes Yes	Annually 5 years	•Chemical, physical, and bacteriaology parameters (para. 9.3.18.4) •Metal content in periwinkles and wild raspberries (para. 9.3.21.4)	Yes - HC No