GOWLING WLG

IN THE MATTER OF AN ARBITRATION UNDER CHAPTER 11 OF THE NORTH AMERICAN FREE TRADE AGREEMENT AND THE UNCITRAL ARBITRATION RULES

BETWEEN:

WILLIAM RALPH CLAYTON, WILLIAM RICHARD CLAYTON, DOUGLAS CLAYTON, DANIEL CLAYTON AND BILCON OF DELAWARE, INC.

Claimants

- and -

GOVERNMENT OF CANADA

Respondent

Compensation Phase

Approvability of Whites Point Quarry & Marine Terminal under Federal Canada and Nova Scotia Environmental Laws, Policies and Practice an Analysis and Opinion

EXPERT REPORT OF DAVID ESTRIN
Certified Environmental Law Specialist

March 8, 2017

APPENDICES

Note: Appendix A is found at page 30 of this Expert Report. The other Appendices are separate documents.

Appendix A	Clarification of terms “environmental assessment” or “EA” used in this Expert Report *[found at page 30 of this Expert Report]*
Appendix B	David Estrin’s detailed Curriculum Vitae
Appendix C	Complete EA Applications Approved 2000-2016 for Nova Scotia Quarries, Mines, Sand Pits and Marine Terminals
Appendix D	Comparison of Valued Environmental Components, Potential Environmental Effects and Residual Environmental Effects for 5 Comparator Projects

EXPERT QUALIFICATIONS

(Summary)

My detailed curriculum vitae is found as Appendix B to this report. Briefly, I have exclusively practiced as an environmental lawyer since 1971 and am an environmental law specialist certified as such by the Law Society of Upper Canada. Since 1973, the year in which environmental assessment was first introduced to the Canadian environmental regulatory scheme, I have been actively involved with EA in various ways, including:

- drafting proposed EA policy initiatives and legislative provisions;
- appearing as counsel at many lengthy (12 months or more) and complex environmental assessment hearings before the Ontario Environmental Assessment and Joint Boards, at different times for opponents and proponents;
- lecturing and writing about EA as part of the overall Canadian environmental law regime in my capacity as Associate Professor (part-time) for 13 years with the Faculty of Environmental Studies at the University of Waterloo as well as in full term law school (University of Ottawa) and environmental engineering (University of Western Ontario) programs;
- advising the federal, Ontario and Alberta governments on EA issues and the Ontario Minister of Environment on EA reforms;
- being counsel in the last several years to proponents and opponents of major infrastructure projects subject to EA under CEAA and under provincial EA laws, these projects being in various provinces and territories, such as Ontario, Nova Scotia, Newfoundland, Yukon, British Columbia and Alberta.

Currently, I am Counsel to Gowling WLG, a leading Canadian law firm, and a council member of the International Bar Association Section on Energy, Environment, Natural Resources and Infrastructure Law (SEERIL). I am a former Chair of the IBA Environment Committee.

Note: Please see Appendix A (page 30) for clarification of terms "environmental assessment" and "EA" as used in this Expert Report

Introduction

1. This Expert Report provides my professional opinion for the Compensation Phase of the Bilcon and related Investors' NAFTA claim regarding an issue I was asked to address by counsel for the Investors, having regard to my experience in environmental law and in particular, environmental assessment and environmental project permitting. As this Arbitration Tribunal is aware, I previously provided expert testimony in relation to environmental assessment and permitting issues for the Jurisdiction and Liability phase of this matter.

2. My professional opinion in this Expert Report is focussed on the following:

> Assuming standard federal and provincial environmental assessment evaluation criteria and related practice had been objectively applied to the Whites Point Quarry and Marine Terminal (WPQ) Project, was there any reasonable basis in the circumstances for the federal and provincial governments to lawfully deny approval of the WPQ?

3. In considering this question, the answers appears clear. *Prima facie*, the WPQ Project should have been approved because, as noted by this Arbitration Tribunal,

> *"The [JRP] Report expressly identifies only one effect of the project as both significant and adverse, namely 'inconsistency with community core values'. With respect to other impacts of the project, the Panel allowed that 'with the effective application of appropriate mitigation measures, competent project management and appropriate regulatory oversight, most project effects should not be judged 'significant'".*[1]

This Tribunal also found that CCV is not an "environmental effect" within the ambit of either the Federal or Nova Scotia statutes on which the JRP could refuse to recommend approval of WPQ (see below paragraphs 116-118).

4. The JRP's admission or conclusion quoted in paragraph 3 is indeed appropriate, for many reasons, as elaborated below, not least of which is that none of the many federal and provincial officials who made submissions to the JRP stated that the project was likely to cause any significant adverse environmental effects (SAEE) that could not be mitigated; neither did any conclude or recommend that the WPQ should not be approved.

5. Nevertheless, in order to more broadly address the issue set out in paragraph 2, I took the following steps:

   a. compared the key components and findings of the WPQ Environmental Impact Statement (EIS) with the EAs and findings of other similar projects;

   b. reviewed the written and oral submissions of officials from Canada and Nova Scotia provided to the JRP hearing to confirm that no government officials told the JRP that the WPQ would likely result in SAEE that could not be mitigated; and also to confirm that there were no submissions by such officials or their governments to the effect that WPQ should not be approved;

[1] NAFTA Arbitration Award on Jurisdiction and Liability at para 503; JRP Report, dated October 2007, p. 84, **Exhibit R-212.**

c. reviewed the Black Point Quarry and Marine Terminal (BPQ) Project, the BPQ being a project with similar features but which is much larger and to be more intensively operated compared to WPQ, that was approved in 2016 by both Nova Scotia and Canada in a joint EA review process that culminated in an Environmental Assessment Report (EAR) prepared by the Canadian Environmental Assessment Agency (CEA Agency). I focussed my review on such matters as:

   i. how potential environmental effects in BPQ were addressed by the CEA Agency;
   ii. whether public comments made in the BPQ EIS review were similar to those raised in WPQ, and if so, how these were or were not considered relevant by the CEA Agency;
   iii. whether the mitigation measures proposed in the BPQ EIS and accepted by the CEA Agency were similar to those identified and proposed by WPQ's EIS; and
   iv. whether the terms and conditions in the formal approvals issued by Canada and Nova Scotia for BPQ dealt with issues that the WPQ EIS had anticipated and in respect of which Bilcon had made commitments to act on.

Summary Opinion

6. It is my professional opinion that the WPQ Project was approvable, and would be approved, if standard federal Canada and Nova Scotia environmental assessment evaluation criteria and practices were fairly and objectively applied to the project. There was no reasonable basis for Canada and Nova Scotia to deny EA approval of WPQ.

Summary of Key Factors on which I base my opinion:

7. First, it is standard practice in maritime Canada, and Nova Scotia in particular, for quarry and marine terminal environmental assessments to be approved, and not be rejected. Many such projects have been evaluated and the appropriate mitigation measures required to prevent likely SAEE are well known. In the period 2000-2016, no complete quarry or marine terminal EA application in Nova Scotia has been rejected, other than WPQ. All were approved with the use of essentially standard types of terms and conditions – including BPQ, a project much larger than WPQ. BPQ features an active quarry area more than twice the size of WPQ; has 4 times WPQ's rock reserves; will generate 4 times WPQ's annual aggregate production; will require blasting at full production on average about 4 days a week, compared to WPQ's full production blasting average of less than one blast every two weeks; and requires the use of nearly twice as many aggregate ships per year passing through commercial and indigenous fishery areas as WPQ. Also notable is that BPQ will require the irreversible destruction of a large area of wetland habitat, approximately 33 hectares (81 acres), an undoubtedly significant adverse environmental effect.

8. Second, no federal or provincial government agency or official took the position before the JRP that the WPQ should not be approved, nor did any assert that, considering mitigation, it would cause likely significant adverse environmental effects. The WPQ's predicted environmental effects were typical of similar projects which were approved. There was no reasonable basis to determine that WPQ would have different or more significant environmental effects with mitigation than other comparator projects.

9. Third, the 2016 approval of the BPQ under CEAA and the Nova Scotia Environment Act (NSEA), importantly substantiates that even a mega quarry is approvable under the standard EA approach by Nova Scotia and Canada to these projects. The BPQ approval especially supports the conclusion that there would be no reasonable basis for the WPQ not to have been accepted. The WPQ EIS used similar EA methodology as that applied in BPQ and was even broader in content than the BPQ EIS. The types of potential environmental effects considered

were similar in each case, although for BPQ, some effects would be more intensive and affect larger areas (e.g. noise, destruction of significant wetland areas and fish habitat). Strikingly, despite the differences in magnitude of effects, the EIS for each project predicted that residual effects on valued environmental components (VECs) after mitigation would be "not significant", and in some cases positive. The BPQ EIS arrived at its findings by applying similar mitigation measures as those proposed in the WPQ EIS.

10. Fourth, the JRP had no legitimate basis to recommend the project not proceed. The JRP did not find any residual SAEE likely to result within the definition and proper ambit of the CEAA. As this Arbitral Tribunal has found, community values and beliefs – CCV to the JRP – are not an "environmental effect" under NSEA or CEAA.

11. Fifth, there was no reasonable basis for either government to lawfully deny approval of WPQ.

Considering:

(i) that no federal or provincial official or agency took the position that WPQ should not be approved;

(ii) that no federal or provincial official or agency told the JRP that the WPQ would likely cause significant adverse "environmental effects" as defined in CEAA that could not be mitigated; nor did any of these officials state that WPQ would cause "adverse effects" or "environmental effects" as defined by the Nova Scotia Environment Act (NSEA) that cannot be mitigated;

(iii) that the sole basis on which WPQ was referred by Canada to a JRP was potential environmental effects (i.e., fisheries), not public concern;

(iv) the unequivocal standard Nova Scotia EA practice since at least 2000, being to issue approval under the NSEA for every complete EA application for a quarry or marine terminal; and

(v) the unequivocal standard practice of the Governor General in Council (GIC) under CEAA in the period 2000-2013, being to approve every project that had received a positive recommendation from a CEAA or Joint Review Panel,

the 2007 decisions by the GIC and Nova Scotia to deny approval of WPQ in these circumstances were unreasonable, arbitrary and discriminatory.

Analysis and Discussion

A. WPQ in the Context of Previous or Contemporaneous Comparator Projects Considered Under CEAA

12. WPQ was not the first large quarry and marine terminal to have been proposed and considered under CEAA. Both prior to WPQ being considered under CEAA and during the same time period as WPQ was being considered by the JRP, federal officials processed two comparator quarry and marine terminal projects in Newfoundland: the Belleoram Crushed Rock Quarry and Marine Terminal Project, and the Aguathuna (Mid-Atlantic Minerals) Quarry and Marine Terminal Projects.

13. Accordingly, by the time WPQ was being processed for EA approval, quarries and marine terminals were known types of undertakings from an environmental assessment perspective. Typical environmental effects and means to mitigate these to acceptable levels were known, considered and used in EAs prior to WPQ.

14. I considered that an appropriate starting point for my analysis would be to examine the WPQ approach to environmental assessment with that applied in previous or contemporaneous comparable or comparator projects in order to determine if there were similarities in methodologies and results. To the extent such similarities were found I considered this would be relevant to reaching a conclusion as to the likelihood of the WPQ project being approved with the use of similar EA methodologies and review practices, and whether a subsequent denial of WPQ approval in the circumstances was unreasonable.

15. In preparing this section, I noted from the Jurisdiction and Liability Award (Liability Award) in the first phase of this hearing that this Tribunal determined that the Belleoram, Aguathuna as well as the Tiverton Harbour Projects were comparable to WPQ in terms of the type of environmental assessment analysis applied.[2]

16. The Tribunal noted the following about the Belleoram project at paragraph 697:

> *"Many of the issues considered in the review were similar to those at Whites Point. Indeed, federal officials recognized early on in the Bilcon process that "many of the environmental concerns will be similar" to Belleoram. … The report identified a variety of likely significant adverse effects and considered that all of them would be mitigated to a satisfactory extent by the adoption of mitigation measures that could reasonably be applied."*

17. At paragraph 698, the Tribunal stated the following about Aguathuna:

> *"The Tribunal would adopt a similar analysis with respect to another quarry and marine terminal project in Newfoundland and Labrador, the Aguathuna Quarry and Marine Terminal."*

18. At paragraph 700, the Tribunal also acknowledged that Tiverton was a comparable project for the purposes of determining the EA approach under CEAA:

> *"The Tiverton Harbor project was subjected, at the federal Canada level, only to a screening and not a comprehensive study or panel review, which took about a year. Potential adverse effects were identified and addressed, to the satisfaction of authorities in Canada, by various mitigation measures, including the replacement of fish habitat."*

<u>Aguathuna Quarry and Marine Terminal (1999)</u>

19. As part of my First Report I carried out a case comparison of the Aguathuna project (see Appendix F to my First Expert Report), which was processed under CEAA and approved in 1999. The Aguathuna Quarry and Marine Terminal project consisted of the development of a quarry to produce 500,000 tons per year of aggregate for a 20 year period, and the establishment of a deep-water marine terminal for accommodating Panama Canal-sized vessels (up to 54,446 DWT) with the specific objective of exporting aggregate on these ocean-going vessels.[3] This project cleared the CEAA EA process in 15 months using the comprehensive study report (CSR) EA method.

20. Despite the proximity of the Aguathuna project to communities and a commercial fishery, the CEA Agency found that the project, with mitigation, was not likely to cause significant adverse

[2] NAFTA Arbitration Award on Jurisdiction and Liability (hereafter, "Liability Award) at para 696
[3] Estrin First Expert Report, Liability Phase, at para 48.

environmental effects. The Agency undertook an extensive review of the CSR for the project and it prepared a chart analyzing issues, consisting of 39 questions, answers and comments, plus supplementary questions as to environmental effects.[4] This allowed the Agency to confirm that mitigation measures and commitments to implement these were sufficient for EA acceptability. On October 21, 1999, a memo from the President of the CEA Agency to Federal Environment Minister, David Anderson, recommended that the project could proceed as "the project, as described with mitigation, is not likely to cause significant, adverse environmental effects" on the condition that the Responsible Authority (RA),

a. ensure that all mitigation measures described in the CSR are implemented;

b. ensure that a follow-up program is developed that can determine the effectiveness of measures taken to mitigate any adverse environmental effects of the project and can verify the accuracy of the environmental assessment; and that the CEA Agency "will follow up with the Responsible Authority to ensure that the mitigation measure as described are undertaken and that the prediction of environmental effects was accurate".

The Federal Environment Minister accepted the CEA Agency findings and signed the memo, concurring with the recommendations.[5] Specifically, both the CEA Agency and the Federal Environment Minister agreed that the CSR EA appropriately assessed the environmental effects of that project; and also agreed that with appropriate mitigation conditions and subsequent follow up oversight by the CEA Agency, this similar project to the WPQ, with mitigation, was not likely to cause SAEE. With that finding, the Atlantic Canada Opportunities Agency was authorized to take actions or steps for that project to proceed.

Belleoram Quarry and Marine Terminal (2006-2007)

21. The Belleoram (Continental Stone) project was another crushed rock quarry and marine terminal proposed on the coast of the Atlantic Ocean for the purpose of exporting the crushed rock to foreign markets.[6] A CSR EA was processed under CEAA in 2006-2007. Just as in WPQ, the Belleoram project was to be located close to coastal/marine environments and located about one kilometer away from a community. A Canadian government official noted that the WPQ and Belleoram were very similar, a fact highlighted by this Arbitral Tribunal in its Award.[7] One major difference was that the Belleoram Project was to be much larger than WPQ, covering six times the area and producing up to 300% more rock annually than WPQ. See Appendix E of my First Expert Report for details.

22. Nevertheless, the Federal Environment Minister, in an Environmental Assessment Decision Statement issued on November 22, 2007, indicated that, having reviewed the CSR EA report, he was of the opinion that "no additional information is necessary" and that "The project, taking into account the mitigation measures described in the Comprehensive Study Report, is not likely to cause significant adverse environmental effects"; and that the mitigation measures and follow up program described in the Comprehensive Study Report "are appropriate for the proposed project." Based on these findings the Minister referred the project back to the responsible authorities so they could take "appropriate action" under CEAA s. 37. i.e., issue any required federal authorizations or approvals. In doing so the Minister required that the RAs ensure implementation of the mitigation and follow up measures described in the CSR .[8]

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[4] Agency Review of the Comprehensive Study Report and Related Documents, apparently dated July 1, 1999, **Exhibit C-932**
[5] October 21, 1999 memo from CEA Agency President Sid Gershberg to David Anderson, **Exhibit C-935**
[6] Estrin First Report, at paras 34-36.
[7] NAFTA Liability Award, at para 697; Internal Environment Canada E-mail from Kevin Blair to Jeanette Goulet, **Exhibit C-189**
[8] Canadian Environmental Assessment Agency, Archived – Environmental Assessment Decision Statement: Belleoram

Tiverton Harbour Project (2004)

23. The Tiverton Harbour Project is another relevant comparator that was processed under CEAA.

24. As referenced in my First Expert Report in Appendix G, Tiverton was a proposal of the Government of Canada (the federal Department of Fisheries and Oceans) to develop a new harbour facility at Tiverton, Nova Scotia, "just down the road" from the proposed location of the WPQ.

25. The Tiverton Harbour Project required blasting of rock at the bottom of the harbour and depositing approximately 65,000 tonnes of rock and stone to create a new breakwater. The area of the harbour to be covered was approximately 9,500 square metres and the length of the proposed breakwater was approximately 220 metres. Additional infill of rock was to occur along the shoreline for a length of approximately 120 metres.[9] In addition to covering these areas of the bottom of the harbour with rock, the project involved the installation of floating docks to allow berthing of up to 20 vessels with these docks being anchored to the breakwater with concrete anchors. Another phase of the project required dredging of the harbour, installing steel pipe piles and the construction of an adjacent marginal wharf.

26. The site, being not far from Whites Cove, was also populated with marine species (including fish and whales) similar to those found at WPQ. Indeed, the potential for disruption and destruction of fish habit was greater at Tiverton because of the blasting to occur in the ocean and the deposit of a large volume of rock on the harbour floor. Due to the similarity in the WPQ and Tiverton marine environment, government officials were concerned the Tiverton blasting would affect "valued ecosystem components" (VECs), such as a loss of fish habitat and direct impacts to fish. Indeed, a number of project-related effects to VECs were recognized in Tiverton as having the potential to cause significant impacts before mitigation – yet federal officials judged these could proceed premised on mitigation measures and procedures being implemented.

27. More specifically, it was acknowledged by the proponent (the Small Craft Harbours Branch of the Department of Fisheries and Oceans) that fish/fish habitat could be affected by the project activities, including through the release of deleterious substances, suspended solids that could affect fish, and the blasting effects on fish.

28. However, the DFO CEAA EA screening report for the project determined that with the use of mitigation measures, conditions and procedures set out in the EA screening report, including adherence to an Environmental Management Plan, "the project as presented can proceed" in that "adverse environmental effects are unlikely or mitigable".[10]

29. These comparator projects and their similar EA approaches are relevant in considering the appropriateness of the EA methodology used in the WPQ EIS and its results. Although none of these other comparator EAs were as substantial as the WPQ EIS, each of these comparator projects used similar EA methodology which

    a. identified generally similar potential environmental effects; and these were similar to those identified and considered in the WPQ EIS;

    b. considered and evaluated the use of generally similar mitigation measures and procedures to those in the WPQ EIS for preventing significant adverse environmental effects; and

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Marine Terminal Project (22 November 2007), online: http://www.ceaa.gc.ca/052/document-html-eng.cfm?did=24387

[9] Estrin First Report, Appendix G at 1-2.

[10] DFO, "Environmental Screening for Harbour Development (Breakwater, Floating Docks, Dredging and Service Area) at Tiverton, Digby County, Nova Scotia, May 2004, pp. 30-35, **Exhibit R-342**

c. concluded that after mitigation, there would be no likely significant adverse environmental effects on VECs; indeed in all comparator projects, the residual effects (after mitigation) were evaluated as "not-significant" or "non-significant" – the same conclusions reached in the WPQ EIS. These findings for the comparator projects are found in **Appendix D "Comparison of Valued Environmental Components, Potential Environmental Effects and Residual Environmental Effects for 5 Comparator Projects".**

30. Overall, this comparison of the WPQ EIS methodology to that used and accepted by the Federal Environment Minister and DFO in the three comparator projects set out above confirms the appropriateness of the WPQ EIS in that it used similar EA methodology. This assists in reaching my conclusion that there would be no reasonable basis to doubt the appropriateness of the WPQ EIS.

31. Further, this comparison also shows that the WPQ EIS essential conclusion – that there would be no likely SAEE from the project after mitigation – was consistent with similar conclusions reached in the comparator projects using similar EA evaluation techniques. This finding is relevant to my conclusion that if standard EA evaluation practices were fairly and objectively applied to the WPQ there would be no reasonable basis for the project not to have been approved.

B. Standard EA Practice in Nova Scotia for Quarries and Marine Terminals

32. A review of Nova Scotia EA practice in the approval of quarries and marine terminals prior to and since the WPQ is highly relevant in appreciating Nova Scotia's standard EA practice and whether approval of WPQ under this process would be likely if Nova Scotia standard practice was used.

33. Since at least 2000 Nova Scotia never met a quarry or marine terminal project it did not like and approve.

34. Between 2000 and 2016 the Nova Scotia Environment web site indicates there were 50 quarry, mine, sand pit and marine terminal applications for EA approval under the NSEA. (One quarry application was not acted on by the Minister as he determined there was insufficient information to make a decision.)[11] All of the other 49 applications, except for WPQ, were approved. Of the 49 projects, 44 were for quarries, pits, and mines. Five applications were for major marine terminals: Point Tupper Marine Coal Terminal (2003); Bear Head Terminal for unloading LNG ships (2004); Keltic Petrochemical and LNG facility 2007;[12] Melford International Terminal Project (involving the creation of a new deep water port and intermodal rail container terminal) (2008); and Sydney Harbour Access Channel Deepening and Sydport Container Terminal (2009). **See Appendix C, "Complete EA Applications Approved 2000-2016 for Nova Scotia Quarries, Mines, Sand Pits and Marine Terminals".**

35. These statistics demonstrate that Nova Scotia's unequivocal standard EA practice under the NSEA before, during and since consideration of the WPQ is to approve every complete EA application for such projects.[13]

36. Another component of standard Nova Scotia EA practice was to approve such projects with

[11] Point Aconi Phase 3 Surface Coal Mine - the Minister indicated he could not make a decision without the proponent providing further information, which apparently was not provided; in that case pursuant to s. 34(2) of the NSEA the application can be deemed withdrawn.

[12] Information about the Keltic project is elaborated at pargs. 386-406 of my First Expert Report filed in the Liability Phase of the Arbitration.

[13] https://www.novascotia.ca/nse/ea/projects.asp?display=complete&x=71&y=12

terms and conditions attached. This standard practice was applied to the BPQ Project, approved without a hearing by both the federal GIC and provincial Minister of Environment on April 26, 2016 under CEAA 2012 and NSEA.[14]

37. These EA project approvals by Nova Scotia for all quarries and marine terminals in about the same time period as the WPQ was being processed, indicates and emphasizes that by the time WPQ was under EA review, the generic potential environmental effects of quarries and marine terminal projects were well known to Nova Scotia Environment officials. Many consultants as well as federal and Nova Scotia officials were experienced and familiar with the potential environmental effects as well as mitigation techniques that could be applied to such projects. They knew as a result of their involvement and review of these EAs that the predicted and acceptable result of applying mitigation measures was that there would be "non-significant" effects after mitigation for such projects. In practice, the typical effects were "standard practice" and the mitigation measures usually prescribed for these projects were almost "boiler plate" both for consultants and for the federal and provincial agencies who reviewed and approved environmental assessments then being carried on. It did not require the rigour of "rocket science" to identify generic potential impacts of quarries and marine terminals and the mitigation measures that could be applied to their approval to achieve "no significant effects".

C. The WPQ EIS in Context

38. The WPQ EIS was in 2007 (and remains today) a state-of-the-art EA. In comparison with EAs being prepared at that time for similar types of projects that were given EA approval, the WPQ EIS was more than sufficient to satisfy EA requirements under both federal and Nova Scotia laws, policies and practices and for the project to obtain approval. In fact, the WPQ EIS far exceeded the scope and depth of EAs relied on for approval of similar projects.

39. As noted by this Arbitration Tribunal:

> *"Bilcon submitted a 17-volume, 3,000-page EIS, which had been compiled over three and a half years, and included 48 experts' reports and 35 studies commissioned for the proposed project. In a least one respect, its analysis of impacts on biological organisms, a Nova Scotia official described the Statement as "among the best I've seen".*[15]

40. In my review I found that the WPQ EIS was at least as rigorous and comprehensive in scope as the BPQ EIS and was clearly more comprehensive and rigorous than the other comparator projects.

41. The WPQ EIS used similar EA methodologies as those used in EAs for previously approved comparator projects, but was much more comprehensive in scope and depth than the CEAA CSRs for Aguathuna and Belleoram, and the screening EA used for Tiverton. Nevertheless the WPQ EIS evaluation of net potential impacts after mitigation was the same: "non-significant". That this conclusion was reached for WPQ even after much deeper study of potential effects provides a basis for confidence that there would be no reasonable basis to reject the adequacy of the WPQ EIS or to doubt the WPQ EIS conclusion that after mitigation there would be no likely SAEE.

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[14] Minister of Environment and Climate Change, *Black Point Quarry Environmental Assessment Decision Statement* (26 April 2016), online: http://ceaa.gc.ca/050/document-eng.cfm?document=114133; [BPQ Canada Approval] Minister of Environment, *Black Point Quarry Environmental Assessment Decision* (26 April 2016), online: http://www.novascotia.ca/nse/ea/black-point-quarry/Decision.pdf [BPQ Nova Scotia Approval].

[15] NAFTA Liability Award, at para 552; citing First Expert Report of David Estrin at para 361 referring to testimony of Mark Elderkin, Species-at-Risk Biologist from the Nova Scotia Department of Natural Resources.

42. The substantive and wide scope of the WPQ EIS, supplementary information provided by Bilcon experts to the JRP and the information/studies provided by Bilcon in response to undertakings to the JRP compellingly indicate for the WPQ, all plausible adverse environmental effects were identified and evaluated, as were means to prevent, mitigate or otherwise deal with potentially significant effects, including adaptive management and follow- up measures. Achieving compliance with such measures would be assured, as was done in the BPQ approvals, by making these requirements terms and conditions of the EA approval. By that means, avoidance of SAEE would be clearly achieved.

43. I prepared a table, **Appendix D "Comparison of Valued Environmental Components, Potential Environmental Effects and Residual Environmental Effects for 5 Comparator Projects".** This table compares the WPQ EIS and the EAs for the then contemporaneous comparator projects (Belleoram, Aguathuna, Tiverton Harbour), as well as the 2016 BPQ EIS, focussing on the following key EA aspects:

- Valued Ecosystem Components (VECs) [or Valued Components] (VCs) considered
- potential environmental effects on VECs/VCs
- predicted residual environmental effects after mitigation

44. Appendix D demonstrates that there is significant similarity amongst these projects as to all three key EA aspects. Most notably, this comparison shows that after consideration of similar types of mitigation measures, residual impacts after mitigation would in each case be "not significant" or "non-significant".

45. This comparison demonstrates that the conclusions reached in the WPQ EIS, that potential environmental effects on VECs would be "not significant", is not a unique conclusion but rather one that is consistent with the evaluation reached by consultants in four other projects, which had similar attributes and potential effects.

46. Based on Appendix D, it is apparent that the potential effects of WPQ were typical for a quarry and marine terminal project and that the WPQ project effects, like the environmental effects in the other comparator projects, could be mitigated, especially since similar environmental effects were observed in the other projects which were all approved.

47. Based on the similarity of factors involved in EA consideration of these projects and that all of them arrived at a similar conclusion that environmental effects could be satisfactorily mitigated, it is clear in my opinion that had the WPQ been reviewed in an objective manner that applied standard EA practice, there is virtually no doubt that WPQ would be approved.

48. Also, this comparison substantiates my previously stated opinion above that if WPQ was treated consistently with other similar projects, neither the GIC nor the Nova Scotia Environment Minister would have a reasonable basis to deny approval of WPQ.

D. <u>No Federal or Provincial Government Agency or Official Took the Position Before the JRP that the WPQ Should not be Approved or that After Mitigation it Would Likely Have SAEE</u>

49. No federal or provincial government agency or official took the position before the JRP that the WPQ should not be approved or that after mitigation it would likely cause SAEE. Rather, from my review of their submissions to the JRP, these officials generally pointed out that while they appreciated what could be potential effects of such projects within their experience or their agency's mandates, they also were comfortable to indicate how such effects could be prevented or mitigated e.g., through adherence to strictures of existing laws and regulations; or by the use

of terms and conditions.

50. Federal departments that were "expert" agencies in the context of the issues before the JRP hearing made submissions to the Panel. Submissions were made by Environment Canada, Health Canada, Transport Canada and NRCan. None of these federal expert departments told the Panel the WPQ project should be rejected.

51. Similarly, Nova Scotia government officials also made submissions to the JRP but no Nova Scotia officials told the Panel that the WPQ project should not be approved or had to be stopped.

52. The Federal Department of Fisheries and Oceans was the sole Responsible Authority under CEAA in respect of the WPQ at the time of and after the JRP hearing. DFO was also the federal department responsible for marine species listed under the federal *Species at Risk Act.*[16]

53. DF*O* did not find WPQ was after mitigation likely to cause any SAEE to listed marine species. In particular, in DFO's response to Undertaking 31 to the JRP, DFO reviewed potential project effects, including blasting, and mitigation measures for marine species at risk and whethe*r SARA* permits would be issued in the future for these species. In no case did the DFO state that WPQ was likely to cause SAEE to the endangered or threatened marine species.[17] As another example, DFO told the JRP that in respect of a species over which there was much interest at the JRP hearing, Inner Bay of Fundy (iBoF) salmon, that "The amount of marine habitat that is expected to be destroyed by this project is small in relation to available marine habitat in the Bay of Fundy and is not considered critical salmon habitat. The proponent will be required to develop and implement an approved fish habitat mitigation plan. This is expected to effectively mitigate any negative effects that might occur as a result of habitat loss." [18]

54. That even impacts of blasting directly in the ocean clearly could be mitigated was also demonstrated in the comparative case study projects, such as the DFO Tiverton Harbour Protect.

55. Health Canada, in its submission to the JRP, concluded that Bilcon had successfully responded to Health Canada noise comments, such that Health Canada found that WPQ was protective of noise as a human health issue:

> *"The proponent has responded to Health Canada noise comments provided as part of the environmental impact statement review and subsequent follow-up on outstanding issues with the proponent.* ***Health Canada has no further comments on this issue. Based on review of the information provided, Health Canada finds that this project component, as described in the environmental impact statement, is protective of human health provided all applicable mitigative measures as presented in the environmental impact statement and subsequent proponent responses are undertaken*** *[emphasis*

[16] Although at the time the project was referred to the JRP both Transport Canada (TC) and the Federal Department of Fisheries and Oceans (DFO) were Responsible Authorities (RAs) for this project, TC ceased to be an RA following its letter and decision of January 10, 2006 that it had determined the WPQ marine terminal "will not substantially interfere with navigation provided it is built at the location specified and is placed and maintained" in accordance with plans that it approved in that decision. Since it was no longer necessary for TC to issue a permit that would authorize a work that could interfere with navigation (such a permit being a CEAA trigger), there was no basis for TC to remain an RA.

[17] Response to Undertaking #31 - Marine and Diadromous Fish - Species Listed on Schedule 1 - official list of wildlife specifies at risk in Canada (To provide a listing of the SARA protected species, the potential effects on each, whether or not effects are likely, adverse, mitigable, and whether or not a SARA permit will be required). **Exhibit C-417**

[18] *Ibid*, p. 1, **Exhibit C-417**.

added]."19

56. Health Canada also told the JRP that there would be minimal air quality impacts with mitigation measures:

> *"**Based on review of the air quality information provided, Health Canada finds that this project component, as described in the environmental impact statement, is protective of human health** provided all applicable mitigative measures as presented in the environmental impact statement and subsequent proponent responses are undertaken."*[20]

57. Even when questioned by the Panel on whether Health Canada's conclusion would remain the same despite Health Canada's indication that there were "gaps in the data provided about additional information on quantity of emissions, current air quality, sensitive populations, potential risk", the response of Sharon Chard from Health Canada was as follows:

> *"I think, as part of the assessment, we would have liked, and I think all scientific people like further information to make their decisions on, but **I think the recommendation was that it was, as the project goes forward, we needed that to maybe do a further evaluation and provide advice to the government parties on that. But we didn't see it as an immediate show-stopper."***[21]

58. Environment Canada's submission to the JRP also found that the WPQ project would have no significant adverse effects on air quality, leading the federal agency to support Bilcon on the issue of air quality as follows: "I think our submission has indicated that we don't necessarily see a large issue with respect to air quality."[22] In its written submission Environment Canada stated that:

> *"…the Proponent has satisfactorily addressed many of the Environment Canada information requests related to the assessment of potential effects on air quality, and the Department is prepared to support the provincial government in its authority to assure implementation of the identified mitigation and monitoring measures."*[23]

59. A response made to a question from the public during the JRP hearings by an Environment Canada Regional Director similarly confirmed that Environment Canada was confident the WPQ project would not result in likely SAEE.

60. The question from Ms. Judy Peach:

> *I understand that Environment Canada's boss and one of the people that*

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[19] Health Canada submission to JRP, p. 2, **Exhibit C-386** [emphasis added]; Note : this was reiterated by Health Canada officials at the JRP hearing: Whites Point JRP Hearing, Day 3, at 481:4-20, **Exhibit C-156** [Sharon Chard, Regional Director for the Healthy Environments and Consumer Safety Branch of Health Canada, the Atlantic Region].

[20] Health Canada Submission to JRP at 3. **Exhibit C-386** [emphasis added]

[21] Whites Point JRP Hearing, Day 3 at 487-3 to 487-15, **Exhibit C-156** [emphasis added] [Sharon Chard, Regional Director for the Healthy Environments and Consumer Safety Branch of Health Canada, the Atlantic Region]

[22] Environment Canada submissions at JRP hearing, vol.5, p.939:16-18. **Exhibit C-158** [Maria Dober, Regional Director for Environmental Protection Operations, Environment Canada].

[23] Environment Canada's Written Submission to Joint Review Panel for the Whites Point Quarry and Marine Terminal Project at p. 12, **Exhibit R-263**. Environment Canada did however indicate that pursuant to the EIS guidelines for the project certain matters remained outstanding and that Bilcon should identify all Project activities and components which would be sources of air emissions, and for each emission of concern, provide estimates including quantity, timing and duration.

> *the Panel would be making recommendations to would be the Environment Minister of Canada.*
>
> *If you were asked to make recommendations to your ultimate boss, the Environment Minister of Canada, on this project, sort of if you were doing the Panel's job just within the areas of expertise, you know, your own areas of expertise, do you feel confident in the amount of information provided by the Proponent in the EIS and their responses as well as the level of understanding you think the Proponent has of the site, the climactic conditions of the site, the sensitivity of the site?*
>
> *Would you feel confident that you could make a recommendation to approve the project with conditions that you felt could be enforced?* ***Would you feel confident in an approval recommendation****?*

61. In response, Ms. Maria Dober, Regional Director for Environmental Protection Operations, Environment Canada said:

> *I think it's important to understand that our role here within this particular process, we don't have a decision-making role with respect to this particular project. I think that* ***in our submission it's clear that, should the Proponent provide the additional analysis and information that we have asked for and commit to a monitoring, mitigation and follow-up program, that the position of the Department would be that any environmental impacts could be mitigated with that additional information and that monitoring program.***[24]

62. Similarly, Andrew McAllister, Senior Environmental Assessment Officer for NRCan, ended his oral submission to the JRP with the following statement:

> *In summary, NRCan believes that the issues we have presented to the Panel can largely be addressed through appropriate measures during the design stage of the Project, should it proceed.*[25]

63. Bilcon, in its Undertaking #4 response had provided extensive additional information about "worst case scenarios", and described, for example, how its proposed coastal bog preservation area and continued monitoring would help alleviate potential effects that could be associated with a rare, large storm.[26] On that topic, Kim MacNeil, Director of Environmental and Natural Areas, Management and Protection Division, Nova Scotia Environment and Labour (NSDEL), told the JRP that typically mitigation and monitoring measures are appropriate to mitigate siltation of watercourses and marine waters and reduce watercourse flows. [27]

64. These generally positive types of submissions by government officials to the JRP (that indicated on the one hand that expected environmental effects could be mitigated and on the other did not indicate that the project would likely cause SAEE) would, in my experience, provide comfort to a fair-minded EA review body acting within the ambit of the governing statutes to conclude it should provide a favourable recommendation that the WPQ Project proceed. Unfortunately, the JRP essentially ignored these positive government submissions. Instead the JRP used an evaluation criteria that none of the government submissions referenced - core community

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[24] JRP Hearing Transcripts, June 21, 2007 Vol. 5, pp 966:5 – 967:9. **Exhibit C-158** (emphasis added).
[25] *Ibid*, p. 1081:5-8, **Exhibit C-158**
[26] Undertaking #4 at p. 3, **Exhibit C-918**, p. 3; https://www.novascotia.ca/nse/ea/whitespointquarry.eis.asp
[27] NSDEL submission at JRP hearing, vol.5, p. 990:3-11. **Exhibit C-158** [Kim MacNeil, Director of Environmental and Natural Areas, Management and Protection Division, NSDEL.].

values and beliefs – a criteria that is not part of the relevant EA statutory provisions and practice. Given the positive evidence of government officials, existing regulatory regime provisions designed to prevent or lessen potential environmental effects, and the similarity of EAs of comparator projects being approved at that time, it would be unreasonable for a JRP or other EA approval body acting fairly to not recommend that WPQ be approved.

E. Summary Comparison of WPQ and BPQ

65. As previously noted the BPQ and the WPQ are two similar quarry and marine terminal projects proposed in Nova Scotia in terms of purpose, scope, environmental setting and EA methodology. These two quarry and marine terminal projects were the only ones to have undergone a joint CEAA and Nova Scotia Environmental Act EA review. Because of those similarities I considered it relevant to compare key aspects of the projects and their EA processing to assist in my analysis and arrive at my opinion on the question set out in paragraph 2 of this expert report.

66. I particularly considered it would be relevant to examine:

i. whether similar VECs were considered for each project
ii. whether similar potential environmental effects were identified for each project and how they were addressed in BPQ
iii. whether the mitigation measures proposed in BPQ and accepted by the CEA Agency were similar to those identified and proposed by WPQ's EIS;
iv. whether the terms and conditions imposed on BPQ by Canada and Nova Scotia dealt with issues that the WPQ EIS had anticipated and in respect of which Bilcon had made commitments to act on
v. whether issues raised by the public and indigenous groups regarding BPQ were similar to those raised in WPQ, and whether the Agency considered these could be addressed by means such as compliance with federal/provincial regulations and guidelines or mitigation measures identified by the Agency.

67. At the outset, I noted that BPQ's EA process was much less onerous than that of WPQ, despite BPQ being significantly larger in area, scope and intensity of operations with potentially greater impacts than WPQ. The BPQ federal EA began in January 2013 and was completed just over three years later with the federal Minister of Environment's decision to approve the project on April 26, 2016. In contrast, WPQ took over five years and resulted in rejection.

Comparison of the Setting, Size and Operational Features

68. Both projects were to be located in coastal areas. The location for BPQ is in the District of Guysborough, which describes itself as being an area of "unspoiled natural beauty, rugged coast lines, fabulous sand beaches, pristine inland waterways".[28]

69. Both projects have private sector proponents who sought to develop a large quarry in Nova Scotia for the purpose of exporting rock to markets along the eastern and Gulf coast of the US to supply construction aggregate used in concrete and asphalt. [29] Like WPQ, BPQ was also a

[28] "District of Guysborough: Tourism", online: http://www.municipality.guysborough.ns.ca/business/resource-sectors/tourism, accessed 5 March 2017
[29] Vulcan Materials Company, "Black Point Quarry Environmental Impact Statement" (February 2015), online: http://ceaa.gc.ca/050/document-eng.cfm?document=101243, [BPQ EIS], Part 1, Section 1.2 at p. 7

50-year quarry.[30]

70. Both projects included plans to construct a marine terminal to transport aggregates to the US by bulk vessel,[31] and both projects were located in the vicinity of fishing areas. The BPQ project area has a commercial fishing industry that provides approximately 400 jobs in the form of small, independently owned businesses.[32] The project area is located in Lobster Fishing Area 31A and herring and Mackerel Fishing Areas 19.[33] Similarly, commercial fishing activities also took place in the vicinity of WPQ, which was located by the Bay of Fundy.[34] BPQ also shared similarities with WPQ with respect to the presence of marine species at risk, particularly, the presence of the North Atlantic Right Whale, Harbour Porpoise, Fin Whale and Leatherback Turtle.[35]

71. However, key differences can be observed in terms of the size and intensity of operation of the two projects. The BPQ is physically larger and to be a much more intensive operation than WPQ, thereby having the clear potential to cause similar, but even more intensive and broader scale environmental effects than WPQ. The BPQ Project property has a total surface area of 354.5 hectares of which the finished quarry will occupy approximately 180 hectares while the processing plant, administration and stockpile areas together will occupy approximately 28 hectares.[36] In contrast, the WPQ project was much smaller, occupying 152 hectares, of which land based infrastructure and activities will include the quarrying of approximately 120 hectares.[37] The plant area would occupy approximately 12 hectares of the 152 hectares site.[38]

72. A few comparative statistics:

Attribute	WPQ	BPQ
Size of site	152 ha	354.5 ha
Active quarry area	120 ha	180 ha
Rock Reserves	100 million tonnes	400 million tonnes[39]
Annual rock production	2 million tonnes/year[40]	7.5 million tonnes/year, peak production[41]
Frequency of blasting	Start up: once per week Full production: once every two weeks: 24 days per year[42]	Start up: 30 days/year Full production: 200 days per year[43]
Vessel rock shipments	52 ships per year	90-100 ships per year

[30] BPQ EIS, *ibid* at p. 6
[31] Morien Resources Corporation, "Black Point Quarry Project Description" (28 February 2014), online: http://www.ceaa-acee.gc.ca/050/documents/p80064/98478E.pdf [BPQ Project Description]
[32] BPQ EIS, Part 2, Section 6.10.3 at p. 180
[33] *Ibid* at pp. 180 & 188
[34] WPQ EIS, Chapter 9.3, online: https://www.novascotia.ca/nse/ea/whitespointquarry.eis.asp at p. 85 [WPQ EIS], **Exhibit C-001**
[35] WPQ JRP Report at p. 129, **Exhibit R-212**; Canadian Environmental Assessment Agency, Black Point Quarry - Environmental Assessment Report (April 2016), online: http://www.ceaa.gc.ca/050/documents/p80064/114132E.pdf [BPQ EAR] at p. 51
[36] BPQ EIS, *supra* note 29, Table of Concordance and Summary Report at p. 4
[37] Bilcon of Nova Scotia, Whites Point Quarry and Marine Terminal, Revised Project Description (November 2006), [WPQ Revised Project Description] at p. 6, **Exhibit C-640**
[38] *Ibid*, **Exhibit C-640**
[39] BPQ EIS, *supra* note 29, Table of Concordance and Summary Report at p. 4
[40] WPQ Revised Project Description at p. 6, **Exhibit C-640**
[41] BPQ EIS, *supra* note 29, Table of Concordance and Summary Report at p. 4
[42] WPQ EIS, Appendix Volume III, Tab 9 Blasting Plan (March 2006), **Exhibit C-001** at p. 1
[43] BPQ EIS, *supra* note 29, Table of Concordance and Summary Report at p. 22

73. In BPQ, there will be about double the number of ships providing aggregate transportation compared with similar shipping at WPQ. At BPQ it is estimated to take approximately 18 to 24 hours to load the largest ships and that approximately 90-100 ships will be loaded per year once the plant reaches peak production.[44] On the other hand, WPQ anticipated that shipments by water would take place once per week throughout the year (i.e. 52 times per year).[45]

Public Opinion Regarding Both Projects was Divided

74. WPQ was subject to divided public opinion, as noted by this Arbitration Tribunal.[46] BPQ was opposed by several environmental and community organisations, including the Atlantic Chapter of the Sierra Club, Ecology Action Centre and a group called "Fogarty's Cove area quarry environmental concerns". Officials from Kwilmu'kw Maw-klusuaqn, a Nova Scotia Mi'kmaq rights organization also had concerns about how the project will affect fish habitats.[47]

75. Furthermore, in BPQ, the expropriation of land for the proposed quarry was highly contentious, a concern that was not an issue in WPQ due to Bilcon's efforts to obtain voluntary leases. The expropriation in BPQ concerned Fogarty Cove, a beautiful 40 hectare area owned by the Fogarty family for 194 years. [48] The Fogartys had little to no warning of this expropriation. As the Globe & Mail reported the issue:

> *"He [James Fogarty] watched council, with two lightning-quick votes, legally wrest away land that had been in the Fogarty name for 155 years. In exchange, dozens of Joseph's Fogarty's heirs became eligible to split $140,000 for a site that could be developed for many, many millions."*[49]

When split between 53 grandchildren, 89 great-grandchildren and eight great-great-grandchildren,[50] the $140,000 will not amount to very much.

76. The Fogartys were especially concerned about non-monetary harm, such as the loss of family graves and historical foundations on the site as well as the cove's natural beauty. As such, the Fogartys fought to have the land declared a protected wilderness area.[51] The Fogartys and their supporters also opposed BPQ quarry throughout the provincial and federal EA process.[52]

Approach to EA Taken in BPQ and WPQ

77. In general, the approach to environmental assessment taken by the proponent in BPQ and Bilcon in WPQ were similar. In both projects, the proponents were required, by virtue of the respective EIS guidelines, to identify Valued Environmental Components (WPQ) / Valued

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[44] *Ibid* at p. 23
[45] WPQ EIS, Chapter 9.3.8., *supra* note 34 at p. 67, **Exhibit C-001**
[46] Liability Award, at para 509-510.
[47] Josh O'Kane, "Fogarty's Cove: Maritime legend, hard reality and a quarry that could change it all" (18 April 2016), online: *Globe & Mail* http://www.theglobeandmail.com/arts/music/fogartys-cove-maritime-legend-hard-reality-and-a-quarry-that-could-change-itall/article29641074/.
[48] Eva Hoare, "Special report: Family fights to save storied Fogarty's Cove" (25 June 2014), online: *The Chronicle Herald* http://thechronicleherald.ca/novascotia/1218315-special-report-family-fights-to-save-storied-fogarty-s-cove#.U6v4g2qAO0E.email
[49] O'Kane, *supra* note 47
[50] Aaron B.T. Bureau, "Descendants of Joseph Fogarty in court to settle claim to the folk-famed cove" (5 December 2014), *Chronicle Herald*, http://thechronicleherald.ca/novascotia/1255924-descendants-of-joseph-fogarty-in-court-to-settle-claim-to-the-folk-famed-cove
[51] Elizabeth Brubaker, "Corporate bullying: Expropriating for private purposes in Nova Scotia (September 18, 2014) Environment Probe
[52] Hoare, *supra*, note 48.

Components (BPQ)[53] and explain the methods used to predict and assess the adverse environmental effects of the project on these components.[54]

78. The WPQ EIS listed 17 Valued Environmental Components (VECs) while BPQ listed 17 Valued Components (VCs). Overall, many of the VECs identified in WPQ were also identified as VCs in BPQ. The comparison of the VECs/VCs set out in the following chart indicates that for all VCs identified in BPQ, the same issues were addressed in WPQ's VECs. However, not all VECs identified in WPQ were addressed in BPQ. Specifically, Transportation and Physical Oceanography were not addressed in BPQ.[55]

Whites Point Quarry VECs	Comparable Black Point Quarry VCs
Air Quality – Particulate Emissions	Air Quality and Climate Change
Climate Change – Greenhouse Gas	
Aquatic Ecology – Freshwater	Freshwater Species and Habitat
Geology & Hydrogeology	Groundwater Resources
Surficial Geology and Soils	Geology, Soil & Sediment Quality
Light	Ambient Light
Aquatic Ecology – Marine (includes Habitat & Marine Species at Risk)	Marine Species and Habitat
	Species at Risk
Terrestrial Ecology (includes Species at Risk & Wetlands)	Terrestrial Ecosystems, Habitat & Vegetation
	Terrestrial Wildlife
	Wetlands
Surface Water	Marine and Surface Water Resources
Aboriginal Land and Resource Use	Aboriginal Land and Resource Use
Heritage Resources	Archaeological and Heritage Resources
Economy (includes Fishery – Aquaculture, Intertidal & Nearshore & Tourism)	Local Economy, Land and Resource Use
	Commercial Fisheries
	Tourism
Transportation	
Human Health, Wellness and Socio-Cultural Environment which includes: - Drinking Water Quality - Marine Contaminants - Land Contaminants - Country Foods - Quality of Life - Social Capital - Commercial Patterns - Community Infrastructure; Institutional Capacity - Education, Training, Skills	(Not separate VC; but *Drinking Water Quality, Marine Contaminants, Land Contaminants* and *Terrestrial Spills* were considered under other VCs in BPQ)
Aesthetics	Not separate VC; but similar potential effect noted under *Local Economy, Land and Resource Use* and *Tourism*
Physical Oceanography	
Noise and Vibration	Noise

[53] WPQ EIS Guidelines at p. 23 **Exhibit R-210**; Canadian Environmental Assessment Agency, Guidelines for the preparation of an Environmental Impact Statement, Black Point Quarry, (9 June 2014), online: http://www.ceaa-acee.gc.ca/050/documents/p80064/99501E.pdf [BPQ EIS Guidelines] at p. 10

[54] WPQ EIS Guidelines at p. 22, **Exhibit R-210**; BPQ EIS Guidelines at p. 10

[55] As noted in the text above, VECs/VCs identified in both projects were highly similar overall but the nomenclature is not necessarily similar in all instances. For example, Species at Risk and Wetlands were identified as a VCs in BPQ and although they were considered in WPQ, that was under the more general VEC category, Terrestrial Ecology. The highlighting in the chart of Species at Risk and Wetlands in the BPQ column and WPQ column is to draw attention to the fact that although the name of the VECs/VCs were not always the same in both projects, the same matters were considered in the EIS of both projects. Other examples found in this chart are similarly highlighted in red.

Similar Potential Environmental Effects Identified and How These Effects were Addressed

79. Many of the same potential environmental effects were predicted to occur at both projects. Even though BPQ is a larger project with more intensive production, blasting, shipping and related activities, each of these effects were found to be mitigable in BPQ such that the project would not likely cause SAEE, leading to its eventual approval by the federal Minister of Environment and the Nova Scotia Minister of Environment.

80. For example, the effect of dust was considered in both projects. For BPQ, the potential dust issue would be mitigated by conditions to the Nova Scotia EA approval. In particular, a Nova Scotia EA approval condition required BPQ to develop and implement a dust plan as follows:

> *"The Approval Holder must develop and implement an air quality and/or dust monitoring plan, at the request of NSE. 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."*[56]

Since this type of condition is standard practice to mitigate dust effects in Nova Scotia quarries, WPQ would have also been able to similarly mitigate this effect. In any event the WPQ EIS committed to maintain dust emissions within regulatory standards.[57]

81. Bird species at risk, nesting birds and migratory birds were also considered in both projects.

82. The potential effect of bird collisions with lighting structures in BPQ was addressed by imposing Federal Condition 4.4:

> *"4.4 The Proponent shall control lighting required for the construction, operation and decommissioning of the Designated Project including direction, timing, and intensity to avoid effects on migratory birds, while meeting health and safety requirements."*[58]

83. In WPQ, Bilcon's mitigation measures to address bird collisions with lighting structures include shielding and directing conveyor system lighting onto the conveyor belts, conducting shiploading in daylight hours to avoid nightlight that could attract birds, keeping artificial lighting to a minimum, and using motion activated security lighting.[59] Bilcon's proposed mitigation measures are consistent with the requirement of Condition 4.4 above.

84. In BPQ, the federal approval also required as a condition that the proponent carries out "all phases of the Designated Project in a manner that protects migratory birds".[60] Condition 4.2 specifically dealt with not clearing vegetation within 30 metres of the coastal high water mark as follows:

> *The Proponent shall not clear vegetation within 30 metres of the coastal high water mark with the exception of the location where the ship loading conveyor and the marine terminal transect this area. The Proponent shall also not clear vegetation in the control zone between 30 and 75 metres from the coastal high water mark except where needed to install and*

[56] BPQ Nova Scotia Approval, *supra* note 14, Condition 6.2.
[57] WPQ Responses to Information Requests, Chapter 8.1, Table 3.6, at p. 18, **Exhibit C-634**
[58] BPQ Canada Approval, *supra* note 14, Condition 4.4
[59] WPQ Responses to Information Requests, Chapter 8.1 at p. 21- 22, **Exhibit C-634**
[60] BPQ Canada Approval, *supra* note 14, Condition 4.1.

> *maintain erosion and sediment discharge control measures, for the access road, the ship loading conveyor, and the marine terminal.*[61]

85. In the same way, Bilcon planned to maintain a buffer or preservation zone of 30 metres (eventually agreeing to 100 metres) to further mitigate impacts to birds.[62]

86. The Nova Scotia Minister of Environment's decision to approve BPQ was also conditional on "clearing and grubbing vegetation outside of the breeding season for most bird species (April 15 to August 15) [63] – a similar procedure proposed in the WPQ EIS.[64]

87. Given that Black Point Quarry also involved a marine terminal and a plan to ship aggregate to the eastern United States, the potential introduction of invasive species through ballast water was also a consideration for this project, as it was in WPQ. Like Bilcon, the BPQ proponent proposed to control ballast water release by following the *Ballast Water Control and Management Regulations* (as well as "requirements as per the International Convention for the Control and Management of Ship's Ballast Water and Sediments)."[65]

88. In its EAR, the CEA Agency indicated, contrary to the approach taken by the JRP in WPQ, that compliance with federal regulations was sufficient to deal with potential issues associated with invasive species:

> *"The Agency is of the view that the proponent, acting in accordance with Transport Canada's Regulations, would effectively mitigate potential effects and the likelihood of those effects, resulting from the release of non-compliant ballast water associated with the Project."*[66]

89. The potential for vessel-whale collisions was also considered in both projects. As mentioned above, the North Atlantic Right Whale, Harbour Porpoise, Fin Whale and Leatherback Turtle were observed in the ocean in the vicinity of both projects. [67]

90. In BPQ, Canada's approval of the project stipulated that vessel-whale collisions should be addressed as set out in Condition 3.6:[68]

> *3.6 For Designated Project-related vessels transiting between shipping lanes and the marine terminal, the Proponent shall implement measures to mitigate the risk of collisions with whales, Harbour Porpoise (Phocoena phocoena) and sea turtles taking into account the Notice for Mariners General Guidelines for Aquatic Species at Risk and Important Marine Mammal Areas. The measures shall include:*
>
> *3.6.1. conducting and recording observations for whales, Harbour Porpoise (Phocoena phocoena) and sea turtles;*
>
> *3.6.2 requiring that vessels respect speed profile applicable to the operation of the Designated Project subject to navigational safety, to prevent or reduce the risk of collisions between vessels and whales, Harbour Porpoise (Phocoena phocoena) and sea turtles; and*

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[61] *Ibid*, Condition 4.2
[62] WPQ EIS, Chapter 9.2.1, *supra* note 34, p.37, **Exhibit C-001**
[63] BPQ Nova Scotia Approval, *supra* note 14, Condition 5.4.
[64] WPQ Responses to Information Requests, Chapter 8.1, Table 3.9 at p. 23, **Exhibit C-634**
[65] BPQ EIS, *supra* note 29, Table of Concordance and Summary Report at p. 63.
[66] BPQ EAR, *supra* note 35 at p. 43
[67] WPQ JRP Report at p. 129, **Exhibit R-212**; BPQ EAR, *supra* note 35 at p. 50
[68] BPQ Canada Approval, *supra* note 14

> *3.6.3 reporting collisions with whales, Harbour Porpoise (Phocoena phocoena) and sea turtles within 2 hours to the Canadian Coast Guard, and notifying Indigenous groups in writing.*

91. WPQ's EIS had anticipated the need for such measures and contained commitments to carry them out.[69] For example, Bilcon committed to reduce vessel speeds to avoid vessel-whale collisions. This measure was also proposed by the proponents in BPQ and Belleoram, and was indeed found to be an acceptable measure in both cases by DFO officials.[70]

92. While BPQ and WPQ had many similar potential environmental effects, some of these effects would be much greater in BPQ than in WPQ. For example, the marine terminal component of BPQ required a total seabed habitat loss of approximately 11,100 m^2 - almost 3 acres[71]. By comparison, the area of lost fish habitat to occur from the WPQ marine terminal was infinitesimal, about 40 m^2 – or about 0.009 acres.[72] Further, Paul Buxton told the JRP the WPQ marine terminal was designed to avoid it being founded directly on the ocean floor. Rather, it would instead be supported by a number of pipe piles which would allow currents to flow between the piles, resulting in minimum disturbance for current flows and minimum disturbance for fish habitat.[73]

93. Despite the much greater loss of fish habitat at BPQ, Canada approved that project with BPQ being required to develop a fish habitat offset plan in consultation with the DFO:

> *The Proponent shall develop and implement any required offsetting plan related to the loss of fish and fish habitat associated with the carrying out of the Designated Project in consultation with Fisheries and Oceans Canada, local commercial fishers and Indigenous groups. The Proponent shall develop the offsetting plan prior to construction. The plan shall identify the timelines for reporting the results of the offsetting activities to Indigenous groups and local commercial fishers.*[74]

94. Even though WPQ's marine terminal would affect a miniscule area of ocean habitat in comparison, Bilcon had anticipated the need to provide fish habitat compensation as a condition to the EA approval.[75]

95. While potential impact on wetlands was also considered in both projects, in the BPQ EIS the proponent conceded that there would be irreversible environmental impacts to wetlands.[76] Twenty-two wetlands areas, totalling approximately 57 hectares were delineated within and adjacent to the BPQ project site.[77] The BPQ EIS indicates that the directly and indirectly impacted wetland areas total 33 hectares; approximately 17.5 hectares will be partially infilled or removed and a further 16 hectares affected by indirect means.[78] Types of wetland features to be removed or fully or partially infilled during construction include treed swamp, riparian fen; and

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[69] WPQ Responses to Information Request, Chapter 8.1, Table 3.11 at p. 30, **Exhibit C-634**
[70] Estrin First Expert Report, Appendix E at 15; Belleoram August 23, 2007 CSR Report, Executive Summary, page V, **Exhibit C-190**; Fisheries and Oceans Canada letter to Micheline Savard (CEAA) dated May 11, 2015, DFO Comments on the Proponent's Responses to the Information Requests on the Black Point Quarry Project EIS
[71] BPQ EIS, *supra* note 29, Part 3, Section 7.11.4 at p. 104
[72], JRP Hearing Transcript, Volume 4, p. 646:9-14, **Exhibit C-157**
[73] Ibid, p. 778:3-10, **Exhibit C-157**
[74] BPQ Canada Approval, *supra* note 14, Condition 3.3.
[75] WPQ Responses to Information Requests, Chapter 8.1, Table 3.11 at p. 29, **Exhibit C-634**
[76] BPQ EIS, *supra* note 29, Part 3, Section 7, Table 7.8-2, at p. 72
[77] BPQ EAR, *supra* note 35 at p. 44
[78] BPQ EIS, *supra* note 29, Part 3, Section 7 at p. 65

fen/swamp/marsh complex/bogs.[79]

96. The Director of Nova Scotia Environment, Protected Areas & Ecosystems Branch commented on the BPQ EIS wetland impacts as follows:

> *"If this project proceeds as indicated in the registration documents, it would result in a significant loss of high functioning wetlands for Nova Scotia. … Wetlands are a dominant ecosystem type in the project and surrounding area and there are a variety of high functioning wetland types that will be lost. Along with that loss will be the loss of valuable, relatively undisturbed wildlife habitat, possibly including habitat for species of conservation concern."*[80]

97. In contrast, the WPQ EIS identified approximately just 1.73 hectares of wetland area within the WPQ project site. [81] Even considering the additional 1.5 hectares of coastal freshwater wetland noted in the JRP report,[82] the extent of wetlands potentially affected in WPQ were minimal compared to the effects on wetlands in BPQ.

98. Despite the significant loss of wetlands that would occur as a result of the BPQ project, the CEA Agency and Nova Scotia accepted that any unavoidable loss of wetlands could be addressed under a proposed wetland compensation plan.

99. In its EA approval of the BPQ Project, Nova Scotia stipulated that because of the complexity of working out an appropriate wetland compensation plan the proponent must work out its details well in advance of any wetland alteration application:[83]

> *"3.4 Prior to application for a wetland alteration approval, the Approval Holder must develop a Wetland Compensation Plan. The Wetland Compensation Plan and associated reporting requirements must be developed to the standards as defined by NSE and establish specific objectives intended to prevent the net loss of wetlands in accordance with the Nova Scotia Wetland Conservation Policy. Based on the results of the measures taken to offset losses of wetland and or wetland functions and services, the Approval Holder must make necessary modifications to compensation plans, and/or site operations, to the satisfaction of NSE."*

100. In contrast, as WPQ would involve only minimal potential wetland effects, there would almost certainly be no need for a similar, potentially problematic, wetland compensation plan as required at BPQ.

101. In each project, consideration was given to an appropriate buffer / preservation zone between the ocean and areas of project operation. In BPQ, a minimum buffer was 30 metres was stipulated for the plant operation areas and 75 metres generally in all other areas.[84]

102. In WPQ, although Bilcon had also proposed a 30 metre preservation zone initially, it also considered and was ultimately agreeable to maintain a much larger preservation zone of 100

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[79] BPQ EIS *supra* note 29, Part 3, Section 7, at p. 66
[80] Peter Labor, Nova Scotia Environment, Signed Memo titled "Re: Black Point Quarry Environmental Assessments Registration" (31 March 2015)
[81] WPQ EIS, *supra* note 34, Chapter 9.2 at p. 17, **Exhibit C-001**
[82] WPQ JRP Report at p. 7, **Exhibit R-212**
[83] BPQ Nova Scotia Approval, *supra* note 14
[84] *Ibid*, Condition 3.2

metres.[85]

103. In both projects, increased sound levels in the marine environment were considered.[86] However, in the CEA Agency's EAR for BPQ noted that "noise from operations of associated vessels during construction could reach up to 10 kilometres. During operations, noise from the ship loader could also be audible up to ten kilometres from the project."[87] There was no comparable significant area of noise emission effects identified for the WPQ.

104. Notwithstanding the CEA Agency's finding quoted above, the Agency did not conclude that noise would be a significant adverse environmental effect. Rather, potential concerns about noise in the BPQ Project were addressed by imposing conditions:[88]

> *5.6 The Proponent shall implement noise and dust reduction measures during all phases of the Designated Project …:*
>
> *5.7 The Proponent shall develop and implement a follow-up program to verify the accuracy of the environmental assessment as it pertains to dust and noise levels. The Proponent shall consider the methodologies described in the Nova Scotia Pit and Quarry Guidelines when developing and implementing the program.*

105. In its EIS, Bilcon committed to take similar measures, e.g. that noise and vibration from project would "meet the requirements set forth in the NSDEL 'Pit and Quarry Guidelines' at the quarry property line", to monitor noise levels at the property line and receptor locations and report to NSDEL[89] and in respect of dust that emissions would remain within regulatory standards.[90]

106. Finally, I also considered whether issues raised by the public and indigenous groups regarding BPQ were similar to those raised in WPQ, and how the Agency considered these in its final analysis. The Agency did not act on some of these, and for others the Agency's apparent response was to indicate they could be addressed by other means, such as compliance with federal/provincial regulations and guidelines or mitigation measures identified by the Agency. None of the matters raised by the public in BPQ that were similar matters to those considered by the JRP were considered by the CEA Agency as "showstoppers" to approval of BPQ.

Overall Results of this Summary Comparison

107. Overall, this summary comparison of BPQ and WPQ makes clear that many of the potential environmental effects identified in WPQ were also identified in BPQ. For some effects, potential environmental effects were greater in BPQ, given the larger and more intensive operations involved. However, in BPQ, the Agency did not find any likely significant adverse environmental effects. In arriving at these findings, the Agency often noted that (a) standard mitigation measures and procedures were available to prevent or mitigate such impacts; and (b) compliance with existing federal or provincial guidelines and policies could mitigate potential effects.

108. This summary comparison also shows that many of the mitigation measures proposed in the WPQ EIS were similar to mitigation and follow up measures imposed as conditions in the BPQ federal decision statement and provincial BPQ EA approval. This demonstrates the depth and

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[85] WPQ EIS, *supra* note 34 Chapter 9.2.1, p. 38, **Exhibit C-001**
[86] See Appendix D of this report, WPQ at p. 15
[87] BPQ EAR, *supra* note 35 at p. 71
[88] BPQ Canada Approval, Conditions 5.6 & 5.7
[89] WPQ Responses to Information Request, Chapter 8.1, Table 3.7 at p. 20, **Exhibit C-634**
[90] *Ibid*, Table 3.6, at p. 18.

level of consideration involved in Bilcon's EIS in that it not only considered similar effects but foresaw the need to focus on and commit to mitigate environmental effects that in BPQ were dealt with by conditions.

109. Even where there were uncertainties arsing from the BPQ EIS, or no information on certain topics, the CEA Agency's approach in BPQ was to recommend follow up measures or that the proponent develop a monitoring plan or conduct further studies to verify impact predictions. These measures and processes were not unique to BPQ but were relatively standard for other quarries or industrial projects undergoing EA approval.

110. As such, the analysis comparing the two projects supports the conclusion that to the extent similar matters arose in BPQ they could have also been addressed in WPQ in a similar manner, with terms and conditions to require, where necessary in the view of the federal and provincial regulators, more information, studies, more detailed plans as well as commitment to monitoring and follow up measures.

111. At the beginning of this section I indicated I would particularly focus my comparison on the following:

i. whether similar VECs were considered for each project
ii. whether similar potential environmental effects were identified for each project and how they were addressed in BPQ
iii. whether the mitigation measures proposed in BPQ and accepted by the CEA Agency were similar to those identified and proposed by WPQ's EIS;
iv. whether the terms and conditions imposed on BPQ by Canada and Nova Scotia dealt with issues that the WPQ EIS had anticipated and in respect of which Bilcon had made commitments to act on
v. whether issues raised by the public and indigenous groups regarding BPQ were similar to those raised in WPQ, and whether the Agency considered these could be addressed by means such as compliance with federal/provincial regulations and guidelines or mitigation measures identified by the Agency.

112. From my analysis and findings set out above in this part of my report I conclude that the various aspects of comparison were generally similar, i.e., the answer to these questions is "Yes". (Note that in addition to the table included in this section as to the similarity of VECs considered, **Appendix D** to this report compares the potential environmental effects identified for each project and the residual environmental effects after mitigation.

113. These finding importantly support my summary opinion in paragraph 6 that the WPQ Project was approvable, and would be approved, if standard federal and Nova Scotia environmental assessment evaluation criteria and practices were fairly and objectively applied to the project; and that there was no reasonable basis for Canada and Nova Scotia to deny EA approval of the WPQ.

F. There Was No Legally Valid Basis for the GIC or Nova Scotia to Deny Approval of the WPQ Project

114. The JRP had no legitimate basis to recommend the project not proceed. The JRP did not find that, after mitigation, WPQ would likely cause SAEE using the definition or ambit of "environmental effects" under CEAA or under the NSEA. As this Arbitral Tribunal has found, community values and beliefs – CCV to the JRP – are not an "environmental effect" under these statutes.

115. Moreover, considering:

(i) that no federal or provincial official or agency took the position that WPQ should not be approved;

(ii) that no federal or provincial official or agency told the JRP that the WPQ would, after mitigation, likely cause significant adverse "environmental effects" as defined in CEAA; nor did any of these officials state that WPQ would cause "adverse effects" or "environmental effects" as defined by the Nova Scotia Environment Act (NSEA) that cannot be mitigated;

(iii) that the sole basis on which WPQ was referred by Canada to a JRP was potential environmental effects (i.e., fisheries), not public concern;

(iv) the unequivocal standard Nova Scotia EA practice since at least 2000 never denied EA approval of an EA application for a quarry or marine terminal; and

(v) the unequivocal standard Federal EA practice under CEAA in the period 1995-2015 that the Governor in Council (GIC) never refused to allow a project to proceed that has received a positive recommendation from a CEAA or Joint Review Panel,

there was no reasonable basis for either government to deny approval of WPQ. The 2007 decisions by the GIC and Nova Scotia made to the contrary in these circumstances were unreasonable, arbitrary and discriminatory.

116. In its Arbitration Award on Liability, this Arbitral Tribunal referenced in paragraph 528 that both Mr. Rankin and I testified that "core community values" as used by the JRP were not within the scope of environmental assessment contemplated by Nova Scotia as well as the federal statute. They were matters of philosophical belief, not effects that could be assessed and mitigated. The Tribunal then confirmed,

> *"Although the point about Nova Scotia's statute is not decisive in the present case, the Tribunal agrees. The statutes are concerned with effects on actual biophysical and socioeconomic conditions rather than with matters of political or philosophical belief, such as that a local community should have a veto over a project even if the law does not so provide".*

117. Further, as noted at paragraph 508 of the Tribunal's award:

> *"The JRP Report would later conclude that '[t]he proposal is not consistent with core values and community visions of the future as expressed in documents, by community leaders and by the majority of community members appearing before the Panel.' To the extent that the*

> *notion of "community core values" is construed as representing the level of local support for a project, the Tribunal concludes that there is no mandate in federal Canada's environmental assessment system or the Nova Scotia regime for a review panel to make recommendations on such a basis. The function of a review panel is to gather and evaluate scientific information and input from the community and to assess a project in accordance with the standards prescribed by law, not to conduct a plebiscite. On this point, all the experts, including Mr. Smith, concurred."*

118. It was simply not open to the JRP to find that the project would cause significant adverse "environmental effects" on the basis of inconsistency with community core values and to recommend that the Project be rejected on this basis. As this Arbitral Tribunal confirmed:

> *"A general observation on "community core values", no matter which interpretation is adopted of the JRP's approach to them, concerns the compatibility of the concept with the CEAA requirement that there be a biophysical pathway to effects that are assessed. The Tribunal agrees with Mr. Estrin's analysis that incompatibility with "community core values" absent some ecological impact is not within the scope of what is assessable under the terms of the CEAA".*[91]

119. On the same point the Tribunal observed that "*...the Tribunal's respectful view is that the "community core values" approach actually went beyond being just problematic and that on any of its plausible interpretations it does not warrant a finding of "likely significant adverse effects after mitigation.*"[92]

120. Moreover, as this Tribunal also found, "The task of assessing the existence of likely significant adverse effects after mitigation cannot, under federal law, be obviated by wider considerations of the public interest that might weigh for or against the project."[93]

121. Since the JRP did not find the WPQ would cause likely significant adverse "environmental effects" as defined by CEAA, there was no legitimate basis for either DFO, as the RA that had requested the Review Panel to better assess environmental effects on fisheries, or the GIC, to accept the JRP recommendation that approval for the project be refused based on CCV. An RA must, pursuant to CEAA s. 37, base its decision following a Panel Review on significant adverse "environmental effects" within the meaning of CEAA.

122. It was clearly unreasonable for DFO as the only remaining Responsible Authority for the project, and the GIC, to accept the Panel's recommendation, as they both knew that recommendation was founded on an alleged effect that was not one legitimately within the ambit of CEAA.

123. DFO had recommended that the WPQ be referred to a JRP because of environmental i.e. fisheries) concerns, not public concerns. As I explained in my First Expert Report, CEAA provides for two grounds for referring a project to a panel. In order to request the Environment Minister to refer a project, the Responsible Authority must be of the opinion: (a) the project "may cause significant adverse environmental effects" or that (b) "public concerns warrant a reference". [94]

124. In the case of the WPQ, it was factor (a), environmental effects, not (b), public concerns, which

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[91] Tribunal Decision, parg. 525.
[92] Ibid, parg. 535, emphasis added.
[93] Ibid, parg. 478.
[94] *Canadian Environmental Assessment Act,* SC 1992, c. 37, s. 25, **Exhibit R-001**

were DFO's official reason for requesting the referral. In its Liability Award, this Tribunal referred to the federal Fisheries Minister's letter to the Minister of the Environment requesting a referral to a JRP, in which "Minister Thibault notes potential environmental impacts...." The Tribunal continues: "Under the CEAA, a responsible authority could request a Review Panel on two possible bases, that a project may cause significant adverse environmental effects after mitigation, or public concern. The referral letter mentions only the former, environmental impact."[95]

125. Moreover, DFO knew, as the federal department that had perhaps the most experience with carrying out CEAA EA reviews, that effects on values and beliefs not resulting from a physical or biophysical project effect were not within the CEAA definition of "environmental effect". Yet in a highly unreasonable and arbitrary manner, DFO failed to act on that knowledge as well as failed to act in accordance with its own analysis that the WPQ would not have SAEE on fish or marine species or habitats, evidenced by the fact no DFO official told the JRP that such effects would result from the project; nor did DFO recommend that the JRP reject the project.

126. If DFO had acted within its mandate and applied its knowledge and extensive experience of using CEAA on many other occasions, it could not have reasonably reached the conclusion that there would be any likely "significant adverse environmental effects" within the actual meaning of CEAA.

127. Further, there is also a standard GIC practice in respect of a CEAA panel or JRP positive recommendation that a project proceed. In the period 2000 to 2013 there have been at least 18 such projects with positive panel recommendations; and in all such instances the GIC has accepted the positive panel recommendation and authorized the project to proceed.

128. Given this federal GIC standard practice, had the JRP Panel recommended approving WPQ (as was the only reasonable course of action given the EIS, views of government officials and the extensive availability of standard mitigation measures), there is no basis in past practice for the GIC to not have approved the WPQ Project.

129. Putting this another way, assuming the JRP review had been carried out in an objective and fair manner consistent with accepted EA practice, in my opinion the GIC would have had no reasonable basis to reject the project under CEAA, in which case DFO would undoubtedly issue the Fisheries Act authorization.

130. Similarly, given the unequivocal practice of Nova Scotia to approve every complete quarry and marine terminal application made between 2000 and 2016 despite community objections in several of these cases, an objective EA review applying Nova Scotia standard practice would also find that WPQ should be approved, albeit with terms and conditions.

131. Further, it would be arbitrary and unreasonable for the Nova Scotia Minister of Environment to reject WPQ for EA approval.

132. Under Nova Scotia's EA law and policies applicable at the time of WPQ, where there is no likelihood of "adverse effects" or of **"**environmental effects" that cannot be mitigated, the Minister approves the project as is or approves the project subject to specified terms and conditions.

133. There was no testimony by provincial officials before the JRP that WPQ would likely cause "adverse effects" as that term is defined in the NSEA that could not be mitigated; nor was there testimony that WPQ was likely to cause "environmental effects" that cannot be mitigated.

[95] Tribunal Liability Award, parg. 472.

134. Rather, the thrust of testimony of both provincial and federal officials was that while effects could be predicted to arise, they also could be prevented or mitigated with appropriate and usual terms and conditions.

135. Therefore, because Nova Scotia's legal criteria and guidelines for evaluating a quarry EA approval application does not include visions and beliefs, and because Nova Scotia's EA practice for at least the last 15 years is to approve all complete quarry and marine terminal project EAs, despite public concern and opposition in a number of instances, the Nova Scotia Minister of Environment, acting reasonably and consistently with EA practice, would have been lawfully bound to approve the WPQ EA, with customary terms and conditions.

136. Nova Scotia's denial of WPQ EA approval having regard to its regulatory approval criteria and standard practice was unreasonable, discriminatory and arbitrary.

David Estrin

March 8, 2017

APPENDIX A to Expert Report of David Estrin, March 8, 2017

Clarification of terms "environmental assessment" or "EA" used in this Expert Report

- "environmental assessment" (EA) in this report means either
    - a process used to consider potential significant environmental effects of an undertaking or project and to evaluate whether, after the application of mitigation measures, the effects will be significantly adverse, minimal or otherwise (in this witness statements, generally called an EA); or

    - a report on the process which contains the analysis and conclusions of the process (generally called an EA report).

- Under the Canadian Environmental Assessment Act (CEAA) applicable at the time of the WPQ project, an EA process and the EA reports could be of three types

    - A "screening" – requires an EA analysis in the form of a "screening report"; this is a "self-directed" assessment prepared by the project proponent. Some screenings may contain only a brief review of the available information and a one or two page report; others can be more thorough. While a screening EA must consider the factors set out in CEAA s. 16(1), this is usually accomplished by the Responsible Authority (RA) providing the proponent with its expectations as to technical studies that may be required and the review of that information by the RA. But there is no prior approval needed from the Canadian Environmental Assessment Agency (CEA Agency) as to what must be considered or done in carrying out a screening EA and preparing screening reports. As set out in my First Expert Report in the first phase of this matter, 98.8% of CEAA EAs carried out from the initiation of CEAA to 2011 were screenings.[96]

    - A Comprehensive Study – requires an EA analysis in the form of a Comprehensive Study Report (CSR) – sometime abbreviated as a "Comp Study". This type of EA was required under CEAA for certain types of projects listed in CEAA regulations. According to the CEA Agency, "A comprehensive study deals with those projects likely to have significant adverse environmental effects. Such projects tend to be large-scale and complex, such as major oil and natural gas developments, transportation projects, water projects, electrical generation projects, mining projects and pipelines". A comprehensive study EA must consider factors set out in CEAA s. 16(1) as well as s. 16(2) (the purpose of the project, alternative means of carrying out the project and their environmental effects, the need for a follow-up program, and the effects on the capacity of renewable resources to meet the needs of the present and future). Up to 2011 less than 1% of CEAA EAs were in the form of a Comp Study.[97]

    - A Review Panel EA, (federal only or joint with another jurisdiction) – requires an EA analysis to be presented in the format of an Environmental Impact Statement" (EIS);

    - In the WPQ matter, the WPQ JRP itself issued the terms of reference for the EIS after holding community pre-hearings. The JRP's final EIS terms of reference added different and in some instances substantively more stringent requirements for the EIS beyond those suggested by the CEA Agency.
    - In contrast, a CEAA Comprehensive Study Report (CSR) EA was used for two comparator quarry and related marine terminal projects, Belleoram and Aguathuna; projects that were undertaken before or

[96] Estrin, First Witness Statement, pargs. 7-9.
[97] Ibid, parg 10.

about the same time as the WPQ.

- An EIS in the context of a panel review includes not just the original documentation submitted by the proponent to the review panel prior to a hearing; it also includes any further documentation submitted by the proponent of its own volition, or at the request of the review panel or other parties to the hearing, as well as written submissions by any other person and testimony provided at the hearing.
- Under CEAA 1995 a review panel report was prepared following the panel hearing and delivered by the review panel to the government(s) that constituted the review panel.
- Under CEAA 2012, where an EIS is required but no panel is appointed, (as for BPQ) the CEA Agency prepares the Environmental Assessment Report.

APPENDIX B to Expert Report of David Estrin, March, 2017

DAVID ESTRIN

Curriculum Vitae

Précis

David Estrin's 45-year environmental law career has uniquely combined litigation, teaching, research and writing.

He is certified by the Law Society of Upper Canada as a Specialist in Environmental Law.

Canada's first private environmental law practitioner, Mr. Estrin was a founding Director and first General Counsel for the Canadian Environmental Law Association.

As a member of the Ontario bar and former member of the Alberta bar, Mr. Estrin has been counsel to governments, crown and private corporations, municipalities, Indigenous peoples, public interest and community groups as well as law firms in Canada and the United States in all facets of environmental law.

He has been counsel before Environmental Assessment and Municipal Boards, and at virtually every level of court in Ontario and Alberta as well as before the Federal Court, Trial and Appellate Division. Many of his cases establish important precedents in matters ranging from administrative, environmental assessment and constitutional issues to statutory interpretation and enforcement.

In 2006 the Canadian Bar Association honoured his achievements in the development of Canadian environmental law practice by establishing the *David Estrin Prize* for the best scholarly essay in environmental, energy or resources law by a Canadian law student.

In 2014 Mr. Estrin co-chaired the International Bar Association President's Task Force that produced a groundbreaking report, *Achieving Justice and Human Rights in an Era of Climate Disruption*. He currently co-chairs an IBA expert working group drafting a Model Climate Change Legal Remedies Statute.

He is a past Chair of the International Bar Association Environment, Health and Safety Committee (2014-2016). He is currently a council member of the IBA Section on Energy, Environment, Natural Resources and Infrastructure Law (SEERIL).

In 2016 he received the Law Society of Upper Canada Medal to recognize his outstanding achievements and community contributions.

Mr. Estrin is the author of three environmental law texts:

- *Business Guide to Environmental Law* (Thomson Reuters) that provides continuously updated insights into Canadian (and comparative U.S,) environmental law developments affecting the business community
- *Handle with Caution: Liability in the Production and Disposal of Dangerous Substances* (Carswell, 1986)
- *Environmental Law* (Carswell, 1984).

He is also the co-author of the pioneering book *Environment on Trial - A Handbook of Ontario Environmental Law* (1973) (now in its 3rd edition). His other writings include contributions to books, law and non-legal journals.

He has had extensive academic teaching experience. Currently, Mr. Estrin is Co-Academic Director of the Environmental Justice and Sustainability Law Clinical Program at Osgoode Hall Law School (York University, Toronto).

For over 12 years he was Associate Professor in the Faculty of Environmental Studies, University of Waterloo, where he taught hundreds of today's planners, engineers and environmental managers about environmental law and resource management.

His teaching also includes term-long courses at law and engineering faculties, as well as numerous guest lectures.

He has directed and authored research reports on topics such as: an Environmental Bill of Rights; environmental law enforcement; resource management conflicts; environmental impact assessment.

The founding editor of the *Canadian Environmental Law Reports*, he lectures widely to multi-disciplinary audiences across Canada, the U.S. and Europe.

1. EDUCATION

Bachelor of Arts, University of Alberta, 1968 (Political Science).

Bachelor of Laws, University of Alberta, 1969.

Graduate, Bar Admission Course, Law Society of Upper Canada, 1971.

2. MEMBERSHIP AND DIRECTORSHIPS

Law Society of Upper Canada, 1971

Member, Ontario Bar, 1971

Member, Alberta Bar, 1980-2014

Founding Editor, *Canadian Environmental Law Reports.*

Founding Director and Member, 1971 - 1978, of the National Executive Committee, Canadian Environmental Law Association

Executive Director, Canadian Environmental Law Research Foundation, 1971 - 1984

Member, International Joint Commission, Great Lakes Research Advisory Board, Expert Committee on Societal Aspects of Great Lakes Water Quality, 1977-78

Contributing Editor, *Ottawa Law Review*, Faculty of Law, University of Ottawa, 1975-80

Environmental Defence Fund, Legal Advisory Committee, Washington, D.C., 1972 - 1980

Member, Canadian Bar Association, 1971 -

Executive Committee, Canadian Bar Association - Ontario Environmental Law Section, 1986 - 1988

Director, Federation of Ontario Naturalists, 1982 - 1986

3. TEACHING & RESEARCH APPOINTMENTS

2015- Adjunct Professor and Academic Co-Director, Environmental Justice and Sustainability Law Clinical Program, Osgoode Hall Law School, York University

2014-2016 Senior Research Fellow, International Law Research Program, Centre for International Governance Innovation, Waterloo, Ontario

2014-2015 McMurtry Fellowship Visiting Professor, Osgoode Hall Law School, York University

2013-2014 Lecturer, Faculty of Law, University of Ottawa: lectures on "proof" in science and how this contrasts with "proof" in legal issues.

1998 Co-coordinator and Instructor, Atomic Energy Control Board, Senior Staff Seminar on the *Canadian Nuclear Safety Act*, Administrative Law and Enforcement Issues

1998 Co-coordinator and Instructor, LL.M. Program in Administrative Law (part-time) - Osgoode Hall Law School, York University, Administrative Law in Context: Social Regulation

1995–97 Lecturer, York University, Graduate Program, Faculty of Environmental Studies

1982- 90 Faculty, Banff Centre School of Management, "How to Prepare and Present Environmental Evidence" (a five-day annual program)

1977- 88 Associate Professor, Faculty of Environmental Studies, University of Waterloo (part-time). Responsible for teaching an introductory environmental and planning law course, a course in legal research, and a senior environmental law course

1976- 77 Assistant Professor, Faculty of Engineering Sciences, University of Western Ontario (one half-year course in Environmental Law, for Masters of Engineering students)

Adjunct Professor of Law, University of Waterloo, Faculty of Environmental Studies (coordination of one half-year course in Planning Law and lecturing in second half-year course in Environmental Law)

Lecturer, Ryerson Polytechnical Institute, Faculty of Arts (senior Geography course)

1975-76 Assistant Professor, University of Ottawa, Faculty of Law (one half-year course for 2nd and 3rd year law students in Common Law Section)

Adjunct Professor of Law, University of Waterloo, Faculty of Environmental Studies (one half-year course in Environmental Law)

1974-75 Adjunct Professor of Law, University of Waterloo, Faculty of Environmental Studies (one half-year course in Environmental Law)

1972-73 Coordinator and Lecturer, Humber College of Applied Arts and Technology (credit course in Environmental Law for civil servants employed by Federal and Provincial environmental agencies)

4. ENVIRONMENTAL LAW PRACTICE

2015- Counsel, Gowling WLG

1990-2015 Partner and Head, Environmental Law Group, Gowling Lafleur Henderson LLP

1976-90 Private Practice restricted to environmental, energy and municipal planning law

1975 Full-time negotiator for Northern Quebec Inuit Association in regard to settlement of environmental and land use aspects of native land claims in northern Quebec (i.e. the James Bay Settlement)

1972-74 General Counsel, Canadian Environmental Law Association

1971 Associate, Law Office of Aubrey E. Golden (Administrative Law and Litigation)

5. PUBLICATIONS

A. Books

2014 *Achieving Justice and Human Rights in an Era of Climate Disruption*, International Bar Association Climate Justice and Human Rights Task Force Report Co-Chair

1992 *Business Guide to Environmental Law* (Carswell Legal Publishers, Toronto) 1992 Note: this is a loose-leaf book up-dated twice per annum

1986 *Handle With Caution - Liability in the Production, Transportation and Disposal of Dangerous Substances* (Carswell Legal Publishers, Toronto)

1984 *Environmental Law* (Carswell Legal Publishers, Toronto)

1983 *"The Application of Rules of Procedure and Evidence"* in Bankes and Saunders, eds., Public Disposition of Natural Resources (Canadian Institute of Resources Law, Calgary, 1983)

1978 *Environment on Trial - A Handbook of Ontario Environmental Law* (Revised and Expanded principally by John Swaigen and others)

1976 *"The Legal and Administrative Management of Ontario's Air Resources, 1967-1974"* in P.S. Elder (ed.), Environmental Management and Public Participation (Toronto, 1976)

"An Environmental Impact Assessment Statute for Ontario, with Commentary" (with Castrilli and Swaigen) in P.S. Elder (ed.), Environmental Management and Public Participation (Toronto, 1976)

1975 Author (and editor) of *"Environmental Law"* section for Canadian Encyclopaedic Digest (Ontario) (3rd), Vol. 10 (Legal Encyclopaedia)

1974 Senior Editor (and major contributor to) *Environment on Trial - A Citizen's Guide to Ontario Environmental Law* (Toronto, 1974)

"Tokenism and Environmental Protection" in O.P. Dwidedi (ed.), Protecting the Environment: Issues and Choices - Canadian Perspectives (Toronto, 1974)

B. Legal Journals

1975 *"Three Phases in the Evolution of Canadian Environmental Law"*, Annual Survey of Canadian Environmental law, 7 Ottawa Law Review 397

1983 *"Private Practitioners' Statutory Remedies for Environmental Pollution: A Canadian Viewpoint"*, 4 New York Law School Journal of International and Comparative Law, 569

C. Non-Legal Journals

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"The Role of Intervenor Funding in Project Approval" Part 2, Proceedings of the International Bar Association - Environmental Law Seminar, Victoria, B.C., March 20, 1986

"An Overview of Federal and Provincial Regulatory Requirements Concerning the Transportation of Dangerous Goods, Hazardous Wastes and Spills", Proceedings of Canadian Bar Association Seminar "Spills - Municipal Requirements, Rights and Compensation", February 7, 1986

"Regulatory Hearing Reform - Legal Principles of 'Fairness', Timely Access to Information and a Constitutional Right to Funding of Public Participation", in Proceedings of the Facility Siting and Routing '84, Energy and Environment Symposium, Banff.

"Siting Hazardous Waste Disposal Facilities - How to Prevent Law Suits and the 'Not in My Backyard' Syndrome", in Proceedings of the 27th Ontario Industrial Waste Conference, Toronto, 1980

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"Transportation of Hazardous Materials - A Critical Review of Existing and Proposed Legislation" in Proceedings of a Symposium on the Transportation of Hazardous Materials, University of Toronto and the Canadian Association for Chemical Engineering, April, 1980

"Science and the Law: An Essay on Interaction Between These Disciplines in Preventing and Predicting Harmful Environmental Activities", Contact, Journal of Urban & Environmental Affairs, Vol. 10, No. 2, p. 105, summer 1978

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"The Public is Still Voiceless: Some Negative Aspects of Public Hearings" in Involvement and Environment, Vol. 2, p. 83, Proceedings of the Canadian Conference on Public Participation, Alberta Environment Council, Banff, Alberta, 1977

"Occupational Health: Whose Health - Industry's or Workers' - Does the Law Really Protect?", in Proceedings of the Corpus "Hazards at Work" Conference, Toronto, 1977

"Public Hearings, Comments on Their Use and Effectiveness" in International Joint Commission, Proceedings of a Workshop on Public Participation, P. Bonner and R. Shimizu (eds.), 1975

"How Liable Can an Engineer Be?" in Canadian Consulting Engineer (1973) Vol. 15, No. 10, p. 40

"Private Prosecutions" in Ask The People, Proceedings of a Multi-Disciplinary Workshop on Public Participation in the Environmental Management Decision-Making Process, Agassiz Centre for Water Studies, Winnipeg, Manitoba (1973)

"Legal Tools for Environmental Control" in Water and Pollution Control Magazine (April, 1973)

D. Research Studies

1995 "Coordination of Municipal Planning & Environmental Assessment", Government of the Republic of Trinidad & Tobago.

1985 *"Ontario's New Hazardous Waste Regulations"*. A study for the Ontario Hospital Association.

1984 *"Priority of Resources: Forestry or Coal"*. A private study for an Alberta resource company.

1983 *"The Legality of Searches and Seizures Under the Federal Fisheries Act"*. A private study for an Alberta resource company.

1983 *"Regina v. Suncor: Implications for Environmental Law Enforcement and Recommendations for Reform"*. A study for the Alberta Attorney-General's Department.

1983 *"Preliminary Comments on Environmental Law Enforcement in Alberta"*. A study for the Alberta Department of the Environment.

1983 *"Alberta Environmental Approvals, Enforcement and Management Procedures"*. A study to identify a sound environmental management procedure having regard in particular to licencing processes and enforcement techniques. Prepared jointly for the Alberta Departments of Environment and Department of Energy and Natural Resources.

1981 *"Alternative Regulatory Control Options for Canada and the United States Needed to Address Long-Range Transport of Air Pollution and Related Acidic Precipitation"*. This study, which involved legal research, field investigations and an integration of scientific knowledge with institutional mechanisms, was undertaken for the Federal Department of Environment through the Canadian Environmental Law Research Foundation.

1979 *"Re Bill C-25 - An Act to Promote Public Safety in the Transportation of Dangerous Goods"*. Submission to the Standing Committee of the House of Commons on Transport and Communications.

1976 *"The Constitutional, Statutory and Administrative Powers of the Government of Canada to Compel Conservation in the Consumption of Energy"*. Prepared for the

Federal Department of Energy, Mines & Resources, Office of Energy Conservation. This study involved an examination and analysis of all Federal Statutes that had any potential whatsoever for allowing the Federal Government to compel energy conservation and analyzed the need for and the constitutional ability of the Federal Government to pass a Federal Energy Conservation Act.

1975 *"Dredging Pollution on the Great Lakes: The Legal and Administrative Means of Ensuring the Prior Environmental Impact Assessment of Great Lakes Dredging Operations in Canada and the Unites States"*. Prepared for the Federal Department of the Environment. This study involved an examination of statutory and regulatory mechanisms in place in Canada and in the United States and necessitated intensive discussions with Canadian, U.S. Federal and U.S. State officials concerned with the top prior to the preparation of the report.

6. ADDRESSES AND GUEST LECTURES

For over three decades, I have been invited to deliver major addresses on environmental law or to make a significant contribution as part of a panel on topics related to this area. Some of these occasions are listed below:

2016 *Lessons from International Litigation: Moving from Climate Change Loss and Damage to Climate Justice,* Public Lecture at the International Centre for Climate Change and Development, Dhaka, Bangladesh

2015 *The Challenge of Achieving Justice and Human Rights in an Era of Climate Disruption*, Lecture to the International Law Summer Institute, Centre for International Governance Innovation, Waterloo, Canada

2011 Land & Development 7th Annual Conference, Presented Paper: "The Challenges of land Development in the GGH: Can you Overcome Provincial and Municipal Constraints?"

2010 Federated Press, 2nd Environmental Deal-Breakers in Real Estate & Business Transactions Course, Presented Paper: "So You've Bought Dirty Property: Dealing with Liability and Tips for Redevelopment".

International Bar Association, Biennial Conference, Section on Energy, Environment, Natural Resources and Infrastructure Law: Challenges for Resources in a Changing World

International Bar Association Presented as part of Environment, Health & Safety Law Committee

2009 Southern Ontario Gateway Council – Presented Paper: "Environmental Assessment – Good For The Environment Or Only Good For Consultants?"

International Bar Association, Presented Paper: A Comparison of Environmental Liability and the Polluter Pays Principle in Canadian law and in the EU Environmental Liability Directive

2008 Understanding Land/Water Regs. In Canada's Territories (The Canadian Institute) Vancouver
LSUC Roundtable on Aboriginal Consultation and Environmental Law, Presented Paper: Administrative Tribunals and Duty to Consult
International Bar Association Conference, Presented Paper: Greenrush or Goldrush? What is the role of lawyers in achieving "success" in environmental matters?"

2007 Remarks for University of Ottawa, Sierra Legal Clinic Faculty of Law on the Theme of "Practicing Environmental Law From the Perspective of the Private Firm Lawyer"

2006 Law Society of Upper Canada 4th Annual Six-Minute Municipal Lawyer, Presented Paper "Important New Cases – Municipal Environmental Regulation, the *Charter* and Class Actions"

2005 Ontario Bar Association Conference "Back With a Vengeance – Part II: A Changing Legal Environment, Presented Paper on Class Actions
Canadian Bar Association, Environmental Law Section, Edmonton, Alberta, Presented Paper "Hot Topics in Environmental Law Practice"
University of Alberta, Faculty of Law, Presented Paper "Rhetoric and Realities – Reflections on the Values, Practice and Future of Canadian Environmental Law"
2005 International Bar Association Conference, Prague, Czech Republic, Presented Paper – A Canadian Environmental Lawyer's Comparative Perspective on EU Environmental Implementation in Accession States, The Kyoto Protocol & Emissions Trading, WEEE Regulation
Osgoode Hall Law School, Lecture to Class on Environmental Advocacy

International Council of Shopping Centers (ICSC) Conference, Member of a Panel and Presentation of Paper – Dirty Business

Federated Press – 8th Annual Due Diligence Conference, Presented Paper – Environmental Due Diligence: What to Keep an Eye On.

2004 Law Society of Upper Canada – 7th Annual Estates and Trust Law Summit Program, Presented Paper – Environmental Liability of Estate Trustees and Beneficiaries

Canadian Environmental Auditing Association, 2004 CEAA Technical Conference, Vancouver, B.C., Presented Paper – New Legal Perspectives on Providing Auditing Services

European Acoustics Symposium Conference, Guimaraes, Portugal, Presented Paper –Noise Impact Evaluation and Regulation in Canadian Transportation Planning

Environmental Commissioner of Ontario, EBR Law Reform Workshop, Participant and Presented Paper – Statements of Environmental Values Under Ontario's *Environmental Bill of Rights*: Missed Opportunities and Options for Reform

Canadian Environmental Auditing Association, The Auditing Roundtable Conference , Montreal, Quebec, "Global Audit Programs and Practices, Approaching 2005, Participant in Panel Discussion re. The Impact of Globalization on the Practice of Corporate Environmental Law

IAIA, International Association for (Environmental) Impact Assessment Conference, Vancouver, British Columbia – Presented Paper – Scoping a Comparative Review

of Legal Requirements & Public Expectations Under Canadian, Ontario and U.S. Environmental Assessment Regimes

2003 OMB Intensive Training Seminar – New Legal Issues and Challenges in Water Management – presented Paper

The Canadian Institute Conference re. "Safe Drinking Water Act", acted as Chair and presented Paper

City of Burlington – Staff Seminar on Contaminated Lands and Brownfields Development – Chaired and presented one-half day programme

2002 The Canadian Institute Conference re."Preventing a Municipal Water Crisis, acted as Chair and presented Paper

The Canadian Institute Conference re.5th Annual What's New In Environmental Law & Regulation in Ontario, presented Paper

University of Toronto, Faculty of Law, Acting as Moot Court Judge

Eco-North 2002 Conference, Speech: "Environmental Compliance and Liability in Tourism Operations – Avoiding the Hidden Hazards"

2001 City of Hamilton/The Canadian Urban Institute Conference re Brownfields 2: New Tools to Stay on Track, Speaker: "Comments on Ontario's proposed Brownfields Legislation"

The Canadian Institute Conference re. "Preventing a Municipal Water Crisis", acted as Chair of two-day conference and presented Paper

2000 "Overview of Environmental Liabilities Imposed on Purchasers, Vendors and Lenders": Paper presented at Canadian Institute Advanced Course on Due Diligence

"Environmental Law Update: New Liabilities and New Compliance Requirements": Paper presented at 4th Annual In-House Counsel Congress

Speech to "Canadian Environmental Assessment Act" Conference sponsored by Centrum Information

Innis College, University of Toronto - Lecture on History and Status of Environmental Impact Assessment in Canada

Osgoode Hall Law School - Acting as Judge in Environmental Law Moot Competition

1999 Invited Participant in Symposium to Commemorate the 5th Anniversary of Ontario Environmental Bill of Rights

"Environmental Due Diligence" - Co-author of Paper presented at Federated Press Seminar and published in Federated Press Journal

"Landfill Design - Legal Liabilities Arising from Geotechnical and Hydrogeological Issues" - Co-author of Paper to be presented at 3rd Environmental Engineering Conference, South Africa

Conference of Ontario Boards and Agencies, November 1999 – Presentation to Conference of Ontario Boards and Agencies) on Judicial Review in the Environmental Law Context

1998 "The Role of Environmental Assessment in Government Decision-Making", Gordon Foundation/CEDF Federal Environmental Assessment Seminar

"Environmental Due Diligence in Business Transactions" - Co-Chair and Presenter to The Federated Press Symposium on "Environmental Deal-Breakers in Real Estate and Business"

"Environmental Issues and Liabilities of Estate and Corporate Trustees" - The Institute of Canadian Bankers

1997 "Legal Liabilities of Landfill Design Engineers and Regulators" - Co-Author of Paper and Presenter at Sardinia '97 - Sixth International Landfill Symposium, Cagliari, Italy

"Legal Issues Surrounding Toxic Real Estate" - Paper presented at Regional Municipality of Halton Planning and Public Works Department Staff Work Shop

"Environmentally Acceptable Decommissioning" - Paper presented at EPIC Educational Seminar

"Environmental Exposure: How to Avoid Liability" - Paper presented at The Canadian Institute Conference on Provincial/Municipal Government Liability

"Managing Water for Sustainability" - Paper presented at The Canadian Water Resources Association Conference

1996 "Future Liability for Past Practices" - Paper presented at Insight Conference - From Waste Management to Resource Management

Participant at Ontario Environmental Assessment Board Workshop on Scientific and Technical Evidence

1995 "Landfill Design and the Regulatory System" - Co-Author of Paper and Presenter at Sardinia '95 - Fifth International Landfill Symposium, Cagliari, Italy

"Environmental Law: New and Revisited Ticking Time Bombs" - Paper presented at Canadian Bar Association Corporate Counsel Meeting in Ottawa

"Environmental Exposure: How to Avoid Liability" - Paper presented at The Canadian Institute Conference re. Provincial/Municipal Government Liability

"Potential Liabilities - Environmental Issues for Trustees" - Speech given at The Trust Institute Seminar

1994 "Business Guide to Environmental Law & Regulation: A Practical Course" - Presentation at INFONEX Symposium

"Potential Environmental Liabilities of Executors, Administrators and Trustees" - Paper presented at Gowling, Strathy & Henderson Seminar for Montreal Trust Environmental Law and Estates Groups

"Potential Environmental Liabilities of Executors, Administrators and Trustees", Seminar for Royal Trust & Investment Services Division

1993 "Selected Environmental Law Issues Affecting U.S.-Canadian Business" - Speech to the Ohio Valley Environmental and Natural Resources Law Institute First Annual Environmental Law Symposium, Cincinnati, Ohio

Seminar for Journalists on Environmental Issues, University of Western Ontario School of Journalism, London, Ontario

"Status of the Canadian Environmental Assessment Act and Its Significance for Forest Projects" - Paper presented at the Canadian Institute Conference re. Environmental Law and Regulation for the Canadian Forest Industry

1992 Chair of Seminar "Negotiating with the MOE over Contaminated Property", Insight Information Inc.

"Environmental Liabilities of Lenders, Receivers and Trustees" - Paper presented to Insight Seminar

"The Canadian Environmental Assessment Act", Paper presented to intensive 2-day seminar, The Canadian Institute

Address to the Faculty of Law, University of Alberta, "The Role of Environmental Litigation in Environmental Management"

"Environmental Auditing - The Legal Context", an address to the Canadian Environmental Auditing Association

"Environmental Prosecutions - Practical and Effective Advice" - Speech to and Chair of Seminar for Gowling, Strathy & Henderson clients

1991 City of Toronto Legal Department, "Recent Developments in Environmental Law"

"Municipal By-laws and Environmental Regulation" at Conference on "Environmental Regulation, Today and Tomorrow": Insight Educational Services Seminar

Seminar for City of Toronto staff "Increasing Environmental Liability in the Municipal Environment"

1990 University of Toronto, the 26th Annual Conference on Law and Contemporary Affairs, Panel address on the topic "Environmental Consciousness and Productive Activity"

Faculty of Laws, University College, London (England), International Conference on Current Issues in Canadian Environmental Law, "Evaluation of Different Environmental Compliance Techniques"

ICI Canada Inc., Commercial Conference on "Issues Today - Opportunities Tomorrow"

Seminars for the Canadian Imperial Bank of Commerce on "Lenders Liability".

The Canadian Manufacturer's Association, address to the Environmental Quality Committee on "Liability of Officers and Employees for Environmental Offences"

Speech to the opening banquet of the Federal Department of Justice Third Annual Legal Officers Conference

Financial Post Conference on "Sponsorship - Intelligent Promotion for Tomorrow's Consumers"

1989 "The Growing Concern about Environmental Implications in Real Estate Transactions" - Paper prepared for 2nd Annual "Waste Management in Ontario" Business Conference, Toronto

1987 11th Assembly of the Canadian Environmental Advisory Councils, "Economic Implications of Environmental Regulation"

1986 "Toxicology, Science and the Law" - Guest Lecture to Graduating Students Centre for Toxicology, University of Guelph

"Legal Aspects of Hydrogeological Practice" - Guest Lecture to Graduating Students in Hydrogeology, Faculty of Engineering, University of Waterloo

1985 Ontario Ministry of Environment - Land Use Planning Seminar 1985 "Waste Management and Land Use Conflicts"

Ontario Hospital Association Conference "Hospitals and the New Environmental Legislation"

Senate of Canada, Standing Committee on Transportation and Communications, "Representations Concerning the Federal Transportation of Dangerous Goods Act and Regulations" (A Brief and Testimony on behalf of the Canadian Bar Association - Environmental Law Section), November, 1985

Ontario Society Environmental Management Seminar on Hazardous Waste "An Overview of New Dangerous Goods and Hazardous Waste Legislation"

1984 Canadian Institute of Planners, Central Ontario Chapter meeting "Recent Developments in Environmental and Planning Law"

Canadian Institute of Foresters Annual Meeting, Quebec City, "Legal and Moral Implications of Acid Precipitation"

Banff Centre School of Management Conference on Environmental Protection and Resource Development: Convergence for Today, Comments on "Present Practices and Alternatives to Regulation, Compliance and Enforcement"

Air Pollution Control Association, Pollution Control Association of Ontario, Joint Annual Conference, Toronto "Reversing the Burden of Proof in Environmental Regulations - How Far should We Go?"

National Conference on the Enforcement of Environmental Laws, Edmonton:

"Environmental Law Enforcement - Private Practitioner's Remedies - Civil Litigation"

1983 University of Waterloo Graduate Students Planning Conference "Economic Restraint & Public Participation"

Canadian Bar Association - B.C. Address on "Pesticide Litigation"

Canadian Institute of Resources Law, Conference on Natural Resource Law, Banff "The Application of Rules of Evidence and Procedure in Relation to Public Disposition of Natural Resources."

University of Toronto, Faculty of Medicine, Guest Lecture "The Law & Environmental Health"

1982 Canadian Institute of International Affairs, "Workshop on Political and Legal Implications of a Canada-U.S. Air Quality Accord", Toronto

University of Waterloo, School of Planning, Evening Seminar on "The Planner as Expert Witness"

Organization and Presentation of Seminar on the Ontario Consolidated Hearings Act and on Recent Developments in Municipal Law, for Oyez Ltd., Toronto

New York University Law School, address on Environmental Rights and Remedies

1981 Organization of Seminar on Environmental Impact Assessment Procedures (Prepared for Del Can Consulting Engineers Ltd., Toronto)

Third National Conference on Hazardous Waste Management, Anaheim, California (sponsored by the U.S. Environmental Protection Agency)

Ontario Solid Wastes Management Association, Toronto, "What the Public Expects of Waste Managers"

McGill University, Faculty of Law, Guest Lecturer

Canadian Bar Association - Ontario Institute on Continuing Legal Education Environmental Law Program "Experience Before Various Environmental Tribunals"

Concordia University, Montreal, Guest Lecture on Environmental Impact Assessment

American Association for the Advancement of Science, Annual Meeting, Toronto: "Environmental Impact Assessment - the Law and the Reality in Ontario"

1980 University of Toronto, Guest Lecturer on Environmental Law, to Dept. of Geography

Ontario Waste Management Advisory Board, "Public Participation and Hazardous Waste Management".

Canadian Bar Association - Municipal Law Section (Ont.), "Municipal Control of Hazardous Wastes and Transportation of Hazardous Materials"

Chairing and speaking at a seminar on “The Transportation of Hazardous Materials”, Canadian Professional Conferences, Toronto

Ontario Good Roads Association, Annual Meeting

1977 Science Council of Canada, staff seminar “Public Participation in Decision-Making Regarding Hazardous Substances”, Ottawa

Faculty of Environmental Design, University of Calgary, Guest Lecture/Faculty Seminar “A Legal Right to the Public Interest Management of Resources?”, Calgary, Alberta

International Joint Commission, Economic and Legal Mechanisms Workshop “Pollution Abatement: Some Observations on Political and Legal Realities”, Windsor, Ontario

York University (Stong College), Conference on Contaminants in the Food Chain, Toronto

Universities of Guelph/Waterloo: seminar for Professional Consultants and Planners on Environmental Assessment and Land Use Planning

Université de Montreal, Labour College of Canada “Legal Aspects of Occupational Health”, Montreal

Science Council of Canada, Staff seminar on Interface Between Science and the Law, Ottawa

Alberta Environment Conservation Authority, Conference on Citizen Participation”, Banff

1976 Private seminar, Environmental and Native Rights, Factors Affecting Development of the Canadian Oil and Gas Industry, Calgary, Alberta

Alberta Environment Conservation Authority, Annual Meeting, Edmonton

1975 International Joint Commission Seminar on Public Participation, Ann Arbor, Michigan

Alberta Bar Association, Institute of Continuing Legal Education, Red Deer, Alberta

1974 School of Landscape Architecture, University of Guelph

Canadian Bar Association, Ontario Branch, Hamilton

1974 Canada Centre for Inland Waters, Lecture series on Unifying Principles in Multi-disciplinary Environmental Research, Burlington

1973 University of Toronto Faculty of Law

University of Windsor, Faculty of Law

Queen's University, Faculty of Law

University of Western Ontario, Faculty of Law

University of Manitoba, Faculty of Law

University of Toronto, Dept. of Geography

University of Waterloo, Faculty of Environmental Studies

University of Toronto, Faculty of Law Conference on Law and Contemporary Affairs: Topic "Our Environment - Can Our Law Protect It?"

Pollution Control Association of Ontario, Annual Meeting, Hamilton

Conference on International Environmental Law, University of Windsor, Windsor

Ontario Shade Trees Council Public Forum, Toronto

Canadian Public Land Use Symposium, Social Science Research Council of Canada, Ottawa

Canadian Society of Landscape Architects, Annual Meeting, Kitchener

Manitoba Institute of Continuing Legal Education, Winnipeg

National Council of Women, Annual Meeting, Toronto

Canadian Bar Association, Annual Meeting, Vancouver

1972 University of Manitoba, Faculty of Law

University of Waterloo, Man Environment Department

University of Toronto, Interdisciplinary course in Environmental Problem-Solving

York University, Faculty of Environmental Studies

McMaster University, Faculty of Engineering, Humanities Lecture Series

National Conference on the Law, Ottawa

1972 Federation of Ontario Naturalists, Annual Meeting, Sarnia

Ontario Ministry of the Environment, Conference For High School Students, Kingston

Canadian Nature Federation, Annual Meeting, Edmonton

International Conference on Automobile Pollution, Toronto

Algonquin Wildlands League, Annual Meeting, Toronto

Manitoba Naturalists Society Conference, Winnipeg

7. ENVIRONMENTAL ADVOCACY

Mr. Estrin's work before tribunals and courts has involved him, among other forums, before the Ontario Municipal Board, the Alberta Energy Conservation Board, the Ontario Environmental Assessment Board, the Environmental Appeal Board, the Joint Board established under the Consolidated Hearings Act, local Boards of Health, Provincial and Supreme Courts, in both Ontario and Alberta, the Ontario Divisional Court and Court of Appeal and the Federal Court of Canada, Trial and Appellate Divisions, and Supreme Court of Canada.

Examples of Mr. Estrin's environmental advocacy matters include:

Counsel for the City of Toronto before the Environmental Assessment Board in respect of the Proposed Leslie Street Extension.

Counsel for the Union of Ontario Indians and North Shore Tribal Counsel in hearings before the Ontario Environmental Assessment Board regarding a 25 year Ontario Hydro System Expansion Plan.

Special Crown Prosecutor for the Alberta Attorney General's Department in relation to prosecution of Suncor Ltd. in Ft. McMurray, Alberta, under the Federal Fisheries Act for oil pollution of the Athabasca River.

Counsel for the City of Edmonton regarding sewage pollution injunction and liability proceedings.

Acting for ratepayer groups in Toronto with regard to the potential health hazard from secondary lead smelters, forcing the Ontario Ministry of the Environment to issue the first "stop order" against Toronto Smelters and Refiners shutting down major parts of their operation on the basis that it was causing harmful emissions to nearby residents.

Counsel for the Inuit of Baker Lake, Northwest Territories, in the Federal Court of Canada regarding their concerns over uranium mining exploration activity harming caribou in their area.

Solicitor for the Plaintiffs in the legal actions to stop the building of a bridge across the scenic Elora Gorge near Guelph.

Counsel for Price Waterhouse in its capacity of Receiver/Manager in respect of a landfill site before the Ontario Environmental Assessment Board.

Counsel for the plaintiffs in the Supreme Court of Ontario in actions brought to stop the removal of scenic and unique sand dunes at Sand Banks Provincial Park near Belleville, Ontario.

Conducting the first private prosecution (for air pollution) ever conducted in Ontario under the Environmental Protection Act and conducting the first noise prosecution ever conducted under that Act.

Representing 15 national and provincial conservation and wilderness groups in hearings at Calgary to stop construction of the planned "Village Lake Louise Project" in Banff National Park.

Counsel for residents of the Pickering area northeast of Toronto in an attempt to invalidate Federal expropriation proceedings taken originally to provide a second international airport in the Toronto area.

Acting for property owners affected by provincially-imposed “land freezes” purportedly made under the Planning Act to invalidate such freezes in the Court.

Drafting and defending municipal By-laws for the City of Mississauga prohibiting the disposal of PCBs in a cement kiln.

Acting for various municipalities and ratepayer groups concerned about hazardous and solid waste disposal proposals.

Advising and acting for industrial and development sector interests requiring sound environmental and municipal law advice.

Appendix C to Expert Report of David Estrin

March 8, 2017

Complete EA Applications Approved 2000-2016 for Nova Scotia Quarries, Mines, Sand Pits and Marine Terminals

This chart lists 50 EA applications made under the Nova Scotia Environment Act between 2000 and 2016 for quarries, mines, sand pits and marine terminals. The information source for this chart is the Nova Scotia Environment website: https://www.novascotia.ca/nse/ea/projects.asp .

In summary this chart shows that during this time period, Nova Scotia's standard EA practice was to approve complete EA applications for such projects.

For the 49 projects for which there was complete information, all but Whites Point Quarry were approved.

Completed Reviews (2000 – 2016)

No.	Project Name	Proponent	Decision Date	EA Decision
1	Loch Katrine Quarry Expansion Project	Dexter Construction Company Limited	December 22, 2016	EA approved
2	Black Point Quarry Project	Black Point Aggregates Inc.	April 26, 2016	EA approved
3	Seabrook Quarry Expansion Project	Municipal Enterprises Limited	April 20, 2016	EA approved
4	Nictaux Quarry Expansion Project	Dexter Construction Company Limited	June 19, 2015	EA approved
5	Bear Head LNG Project	Bear Head LNG Corporation	May 15, 2015	EA approved
6	National Gypsum Mine Extension Project	National Gypsum (Canada) Limited	April 9, 2015	EA approved
7	Brierly Brook Quarry	Nova Construction Co. Ltd	March 12, 2015	EA approved
8	Irish Cove Quarry Expansion Project	Municipal Enterprises Limited	February 26, 2015	EA approved
9	Coldbrook Sand Pit Expansion Project	3048483 Nova Scotia Limited	December 4, 2014	EA approved

10	Chedabucto Aggregates Quarry Expansion	Chedabucto Aggregates Limited	November 6, 2014	EA approved
11	James River Quarry Expansion Project	Municipal Enterprises Limited	June 4, 2014	EA approved
12	Goldboro LNG Project	Pieridae Energy (Canada) Limited	March 21, 2014	EA approved
13	Lafarge Hardscratch Quarry Extension Project	Lafarge Canada Inc.	December 11, 2013	EA approved
14	Donkin Export Coking Coal Project	Xstrata Coal Donkin Management Limited	July 19, 2013	EA approved
15	Middlewood Quarry Expansion	Dexter Construction Company Limited	June 6, 2013	EA approved
16	Cooks Brook Sand and Gravel Pit Extension	Gallant Aggregates Limited	January 7, 2013	EA approved
17	Torbrook Gravel Pit Expansion	Ivan H. Trimper Excavating Ltd.	April 20, 2012	EA approved
18	Northumberland Rock Quarry Extension Project	Alva Construction Limited	January 9, 2012	EA approved
19	Hants County Aggregate Quarry	Municipal Enterprises Ltd.	August 12, 2010	EA approved

	Extension Project			
20	Duncan Gillis Quarry Extension Project	Gillis Construction Cape Breton Limited	September 14, 2010	EA approved
21	Hardscratch Quarry Extension Project	Aberdeen Paving Limited	Aug 25, 2010	EA approved
22	Whycocomagh Quarry Extension Project	Alva Construction Limited	May 06, 2010	EA approved
23	Miller's Creek Gypsum Mine Extension	CGC Inc. Fundy Gypsum	Feb 4, 2010	EA approved
24	Sydney Harbour Access Channel Deepening and Sydport Container Terminal (Marine Terminal Project)	Laurentian Energy Corporation	April 28, 2009	EA approved
25	Proposed Melford International Terminal (Marine Terminal Project)	Melford International Terminal Inc.	Oct 23, 2008	EA approved
26	Panuke Road Quarry Expansion	Municipal Enterprises Limited	Apr 07, 2008	EA approved
27	Surface Gold Mine at Moose River Gold Mines, Halifax County	DDV Gold Limited	Feb 1, 2008	EA approved
28	Whites Point Quarry	Bilcon of Nova	Nov 20, 2007	EA rejected

		Scotia Corporation		
29	MacLeod's Settlement Pit Development	2227754 Nova Scotia Limited	Sep 14, 2007	EA approved
30	Lovett Road Aggregate Pit Expansion	Shaw Resources	Aug 20, 2007	EA approved
31	Glenholme Gravel Pit Expansion	M.S.D. Enterprises Limited	Aug 3, 2007	EA approved
32	Elmsdale Quarry Expansion, Hants County	Gallant Aggregates Limited	Jul 24, 2007	EA approved
33	Keltic Petrochemical (Marine Terminal Project)	Keltic Petrochemical Inc.	Mar 14, 2007	EA approved
34	Marshall Road Sand Pit Expansion	Scotia Aggregates Ltd.	May 30, 2006	EA approved
35	Leitches Creek Quarry Expansion	Alva Construction Ltd.	Apr 28, 2006	EA approved
36	Rhodena Rock Quarry Expansion	Rhodena Rock Ltd.	Apr 18, 2006	EA approved
37	Surface Coal Mine and Reclamation Project - Prince Mine Site	Pioneer Coal Ltd.	Dec 28, 2005	EA approved
38	Nictaux Pit and Quarry	Ward Aggregates Ltd.	Oct 28, 2005	EA approved

39	Sovereign Resources Quarry Expansion	Sovereign Resources Inc.	Aug 29, 2005	EA approved
40	Point Aconi Phase 3 Surface Coal Mine	Thomas Brogan and Sons Construction Ltd.	Jan 4, 2005	Minister required more information to make a decision; no decision made
41	Kemptown Road Quarry Expansion Project	Dexter Construction Co. Ltd.	Dec 29, 2004	EA approved
42	Bond Road Sand Pit Operations	Twin Mountain Construction Limited	Dec 20, 2004	EA approved
43	Bear Head Liquefied Natural Gas Terminal (Marine Terminal Project)	Access Northeast Energy Inc.	Aug 9, 2004	EA approved
44	East Uniacke Quarry Expansion	S. W. Weeks Construction Ltd.	Jun 21, 2004	EA approved
45	Stellarton Surface Coal Mine Extension	Pioneer Coal Limited	Feb 3, 2004	EA approved
46	Marine Terminal at Point Tupper (Marine Terminal Project)	Nova Scotia Power Incorporated (NSPI)	Feb 3, 2004	EA approved

47	Cambridge Aggregate Pit Expansion	Lawson Bennett Trucking Ltd.	Sep 19, 2003	EA approved
48	Troy Quarry Expansion	S. W. Weeks Construction Limited	Mar 7, 2003	EA approved
49	White Rock Quartz Mine	Black Bull Resources Incorporated	Sep 6, 2002	EA approved
50	Kennedys Big Brook Red Marble Mine	MacLeod Resources Ltd.	Sep 3, 2002	EA approved

EA approved	**EA rejected***	**EA Application Not Complete/ No Decision**
48	1 (WPQ)	1 (Point Aconi)

*Troy Quarry Expansion project was initially rejected on December 21, 2001 due to likely non-compliance issues with a previously issued Industrial Approval, as indicated on the Nova Scotia Environment website. A subsequent application for this project was made on February 10, 2003, which received an approval on 7 March, 2003 as indicated in the table above.

Appendix D to Expert Report of David Estrin,

March 8, 2017

Comparison of

- **Valued Environmental Components**
- **Potential Environmental Effects**
- **Residual Environmental Effects**

For the following projects:

Whites Point Quarry and Marine Terminal

Black Point Quarry and Marine Terminal

Aguathuna Quarry and Marine Terminal

Belleoram Quarry and Marine Terminal

Tiverton Harbour Development

Table of Contents

N/A means Not Addressed in the particular EA report
Not Applicable means no determination was provided in the particular EA report

Please Note, in this Appendix:

"N/A" means not addressed in the particular EA report

"Not Applicable" means no determination was provided in the particular EA report

The source of the information in the tables is the respective project EA reports; and the footnotes provide the specific reference.

Air Quality

Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry and Marine Terminal (2014)	Aguathuna Quarry and Marine Terminal[+] (1999)	Belleoram Quarry and Marine Terminal Project (2007)[▯]	Tiverton Harbour Development (2004)
VEC	**Air Quality – Particulate Emissions** **Climate – Greenhouse Gas**	**Air Quality and Climate Change**	**Air Quality**	**Atmosphere**	**N/A**
Potential Effects	<u>Air Quality</u> - Dust generated by on-site haul and access road; and rock processing - Emission of gases from burning brush during land equipment - Diesel emissions from heavy equipment - Exhaust emissions from vehicles during construction - Diesel emissions from heavy equipment -Emissions from vehicles during operation - Dust generated on the access road to the quarry - Particulate emissions from crushing and screening - Diesel exhaust emissions from vessels used to haul basalt rock from site[1] <u>Climate</u> - Loss of carbon storage with removal of trees for development	- Dust and combustion emissions from: • Site preparation • Soil and aggregate handling and storage • Portable processing plant - Dust emissions from access/haul roads - Combustion emissions from engines and vehicles - Dust and combustion emissions from blasting - Dust emissions from Permanent Plant - Dust Emission from storage pies - Exhaust emissions from equipment and vehicles - Combustion emissions from marine engines[3]	- Minor 'annoyance' levels of dust - Generation of dust causing the potential for breathing and health problems associated with the ingestion of poor quality air[4]	- Dust emissions affecting air quality - Dusting affecting air quality and the creation of noise - Degradation of air quality - Noise generation affecting humans and wildlife - Air quality concerns[5] - Increased dust emissions[6] - Increased exhaust emissions[7] - Atmospheric pollutants affecting human health[8] -Accidental release of dust or toxic fumes[9]	N/A

N/A means Not Addressed in the particular EA report
Not Applicable means no determination was provided in the particular EA report

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal[+] (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)[▯]**	**Tiverton Harbour Development (2004)**
	- CO2, methane and NO emissions from burning brush during clearing - Exhaust emissions from operation of heavy equipment Exhaust emissions from employee and truck traffic[2]				
Residual Effects after Mitigation	Air Quality – Not Significant[10] Climate – Not Significant[11]	Not significant[12]	Non-Significant Effects[13]	Non-Significant[14]	N/A

[+] While the Comprehensive Study Report title refers only to the quarry development, the project in Aguathuna also involved a marine terminal. See Mid Atlantic Minerals Inc., *Aguathuna Quarry Development Environmental Impact Comprehensive Study Report* (8 July 1999), Exhibit C 440 [Aguathuna] at p. 1, Section 1.1, para. 3

[▯] VECs under Belleoram were taken from both the Draft CSR which included quarry operations as well as the Final CSR which was limited to the marine terminal project.

[1] Bilcon of Nova Scotia, *Whites Point Quarry and Marine Terminal: Responses to Information Requests Received (Comments on the EIS), Volume II* (February 2007), Exhibit C 629 [WPQ Responses] at Table 3.6

[2] WPQ Responses at Table 3.1

[3] Vulcan Materials Company and Morien Resources Corp, *Environmental Impact Statement: Black Point Quarry Project,* (February 2015) [BPQ] at Table 7.1-5; See also Table 12-1

[4] Mid Atlantic Minerals Inc., *Aguathuna Quarry Development Environmental Impact Comprehensive Study Report* (8 July 1999), Exhibit C 440 [Aguathuna] at Table 11.4

[5] Continental Stone Limited, *Belleoram Marine Terminal Project: Comprehensive Study Report* (23 August 2007), Exhibit C 190 [Belleoram] at p. 138, Section 11.0,

[6] Continental Stone Limited, *Belleoram Crushed Rock Export Quarry: Draft – Comprehensive Study Report* (March 2007), Exhibit R-475 [Belleoram Draft CSR] at pp. 83 - 85

[7] Belleoram Draft CSR at pp. 83-85

[8] Belleoram Draft CSR at pp. 83- 85

[9] Belleoram Draft CSR at pp. 83- 85

[10] WPQ Responses at Table 3.6

[11] WPQ Responses at Table 3.1

[12] BPQ at Table 7.1-5

[13] Aguathuna at Table 11.4

[14] Belleoram at p. 138

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Not Applicable means no determination was provided in the particular EA report

Birds

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	Migratory Land Birds (Identified as a sub-VEC under **Terrestrial Ecology**)	Effects on Birds considered under **Terrestrial Wildlife**	Potential Effects on Migratory Birds considered in general terms under **Terrestrial Resources (Wildlife)**[1]	**Marine Birds** including seabirds and seaducks **Land Birds and Waterfowl**[15]	**Birds / Bird Habitat**
Potential Effects	- Loss / alteration of migratory bird habitat - Possible collision with quarry buildings by night migrating birds - Blasting may startle birds in area - Noise from the extraction, transportation, and crushing activities could exclude some of the more sensitive species from adjacent, undisturbed habitats and possibly reduce the reproductive success of those that do remain.[16]	- Loss of habitat for terrestrial wildlife, including landbirds - Destruction of active migratory bird nests during vegetation clearing or other activities - Loss or degradation of habitat for aquatic herpetiles and aquatic-nesting bird species (loons, waterfowl), - Increased lighting attracting and/or disorienting nocturnal wildlife, including migratory birds - Increased shipping activity causing disturbance to seabirds and waterfowl[17]	- Wildlife will be displaced as the result of the removal of vegetation and forest cover - Wildlife may stray into the project site[18]	- Loss or degradation of habitat - Disruption of marine birds and their habitat[19] <u>Land Birds and Waterfowl</u> - Loss of habitat from clearing operations - Loss or degradation of habitat from sediment/ chemical losses resulting form construction and operational activities - Disturbances/direct mortality of terrestrial birds from blasting-related effects[20]	- Food scraps could attract populations of predators - Disturbance to birds due to noise from machinery used during construction activities - Direct mortality to birds due to the release of deleterious substances - Deposit of dredged material on beaches or adjacent bird habitat could generate habitat too close to human contact[21]
Residual Effects after Mitigation	Not Significant[22]	Not Significant[23]	Not significant[24]	Non-Significant[25]	Insignificant[26]

[15] Belleoram Draft CSR at p. 34
[16] WPQ Responses at Table 3.9

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[17] BPQ at Table 7.9-1
[18] Aguathuna at Table 10.2
[19] Belleoram at p. 135, Section 11
[20] Belleoram Draft CSR at pp. 92 - 94
[21] Public Works and Government Services Canada, *Environmental Screening for Harbour Development (Breakwater, Floating Docks, Dredging and Service Area)* (May 2004), Exhibit R-342 [Tiverton] at Table 1, p. 019118
[22] WPQ Responses at Table 3.9
[23] BPQ at Table 7.9-1
[24] Aguathuna at Table 10.2
[25] Belleoram at p. 135, Section 11; Belleoram Draft CSR at pp. 92 - 94
[26] Tiverton at Table 1, p. 019118

Freshwater Resources

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Aquatic Ecology – Freshwater** - Fish habitat - Fish species	**Freshwater Species and Habitat**	**Freshwater Resources** - Stream bed - Pond bottoms - Fish habitat - Fish - Water column - Surface Water Quality - Freshwater Fish	Potential Effects on Freshwater Fish and their Habitat considered under **Vegetation and Wetlands**[27] and **Fish and Fish Habitat**[28]	**N/A**
Potential Impacts	- Impairment / loss of fish habitat and communities through site clearing and siltation caused by erosion - Impairment /loss of fish habitat and communities due to water loss as a result of quarrying.[29]	- Loss of catchment area and altered flow in Murphy's Lake - Reduced flow to Reynolds Brook[30]	<u>Stream bed, pond bottoms, fish habitat</u> - Potential for accumulation of suspended sediment on substrate - Potential for hydrocarbon contamination from fuel or lubricant spills - Accumulation of particulate matter on substrate, potentially causing destruction of habitat - Site drainage during decommissioning may increase suspended sediment load, with potential accumulation of material on stream beds and/or pond bottoms <u>Water Column</u> - Dust will cause an increase in the suspended sediment loading	<u>Vegetation and Wetlands</u> - Loss/degradation of aquatic vegetation and wetlands[32] <u>Fish and Their Habitat</u> - Potential mortality of freshwater fish or the destruction or alteration of their habitat[33]	N/A

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			of the water column <u>Fish</u> - Increased suspended sediment load may clog interstitial gill spaces - Blasting near water produces shock waves that can damage fish swim bladders and internal organs. Blasting can also kill or damage fish eggs or larvae <u>Surface Water Quality</u> - Potential for localized increase in nutrients available in freshwater resources surrounding the Project area. Potential for an increase in primary production if blasting residue reaches freshwater environment[31]		
Residual Effects After Mitigation	Not Significant[34]	Not Significant[35]	Not Significant[36]	Non-Significant[37]	N/A

[27] Belleoram Draft CSR at p. 34
[28] Belleoram Draft CSR at p. 34
[29] WPQ Responses at Table 3.10
[30] BPQ at Table 7.10-3
[31] Aguathuna at Table 9.2
[32] Belleoram Draft CSR at p. 89
[33] Belleoram Draft CSR at p. 107
[34] WPQ Responses at Table 3.10

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[35] BPQ at Table 7.10-3
[36] Aguathuna at Table 9.2
[37] Belleoram Draft CSR at p. 89; Belleoram Draft CSR at p. 107

Geology & Hydrogeology

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Geology & Hydrogeology** - Basalt Rock - Residential Well Water Yields - Residential Well Water Quality **Surficial Geology and Soils**	**- Groundwater Resources** **- Geology, Soil & Sediment Quality**	Groundwater quality and quantity (Identified as sub-VEC under **Freshwater Resources**) Soil (Identified as sub-VEC under **Terrestrial Resources**)	**Soil/ Sediment Quality and Transport**[38]	No disturbance of terrestrial soils or increase in soil erosion is expected[39]
Potential Effects	<u>Geology & Hydrogeology</u> - Irretrievable loss of basalt rock - Loss of residential well water yields - Deterioration of well water quality[40] <u>Surficial Geology and Soils</u> - Soil erosion caused by lack of vegetation during quarry preparation - Soil erosion caused by exposed land during quarry operation.[41]	<u>Groundwater Resources</u> - Reduction in groundwater recharge to offsite surface water features - changes to groundwater quality[42] <u>Geology, Soil and Sediment Quality</u> - Impacts to marine water quality from acid rock drainage - Impacts to marine water quality from sediment discharge. - Discharge from the sediment ponds[43]	<u>Groundwater Resource</u> - Potential for a reduction in water supply due to project draw-up or sedimentation from blasting activities[44] <u>Soil</u> - Potential for soil contamination as the result of a hydrocarbon spill.[45]	- Potential for an increase in aquatic suspended solids and degradation of terrain - Potential contamination of soils - Work within or near marine waters could result in water quality[46]	N/A
Residual Effects After Mitigation	Not Significant[47]	Not Significant[48]	Not Significant[49]	Non Significant[50]	N/A

[38] Belleoram Draft CSR at 34

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[39] Tiverton at p. 11, Issue B2
[40] WPQ Responses at Table 3.2
[41] WPQ Responses at Table 3.3
[42] BPQ at Table 7.5-1
[43] BPQ at Table 7.4-1
[44] Aguathuna at Table 9.2
[45] Aguathuna at Table 10.2
[46] Belleoram Draft CSR at pp. 78 - 82
[47] WPQ Responses at Table 3; WPQ Responses at Table 3.3
[48] BPQ at Table 7.5-1; BPQ at Table 7.4-1
[49] Aguathuna at Table 9.2; Aguathuna at Table 10.2
[50] Belleoram Draft CSR at pp. 78 - 82

Light

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Light**	**Ambient Light**	**N/A**	**N/A**	Not identified as VEC and not considered although proponent's Environmental Protection Plan addresses Light and Noise Levels
Potential Effects	- Security lighting and lights required for the construction of the quarry and marine terminal will change light environment at and adjacent to the site - Pole mounted security lighting may cause night sky "glow" - Lighting of the shiploader and conveyor systems will be required for night time shiploading and elevated shiploader will be equipped with lighting directed downward to the holds of the ship - Possible collision with quarry buildings by night migrating birds[51]	- Light trespass from the temporary plants - Light trespass from the construction of the marine terminal including marine construction vessel operation - Light trespass from the permanent plant - Light trespass from other site lighting including the marine terminal - Light from marine vessel operation[52] - Attraction or disturbance of nocturnal wildlife and/or migrating birds[53]	N/A	N/A	- During construction activities there will be an increase in light and noise level - Excessive lights and noise emissions may cause a public disturbance in the vicinity of the project area and along the transportation route, particularly during regular public off-work hours[54]
Residual Effects After Mitigation	Not Significant[55]	Not Significant[56]	N/A	N/A	Not Applicable

[51] WPQ Responses at Table 3.8
[52] BPQ at Table 7.3-1

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[53] BPQ at Table 12-1
[54] Tiverton at p. 4, Appendix E
[55] WPQ Responses at Table 3.8
[56] BPQ at Table 7.3-1; BPQ at Table 12-1

Marine Species and Habitat

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Aquatic Ecology – Marine** Marine Fish Habitat incl. Species (Intertidal, Nearshore) - Marine mammals (inc NARWCA) - American Lobster - Marine Waterbirds - Marine Species at Risk (fish, mammals, reptiles, waterfowl)	**Marine Species and Habitat** Note: Marine Species at Risk and Species of Conservation Concern addressed under **Species at Risk**	**Marine Habitat and Fish** - Lobster Habitat - Water Column - Marine Substrate - Marine Environment	**Fish and Fish Habitat**	**Fish / Fish Habitat**
Potential Effects	- Loss of bottom fish and lobster habitat and alteration of water column habitat due to placement of pipe piles in nearshore waters - Introduction of disease organisms from ballast water - Loss of wintering habitat for Harlequin Duck, Barrow's Goldeneye - Pressure from blasting can cause lethal damage to fish and incubating eggs, and noise can cause behavioural changes - Subtle changes in marine mammal activity - Contact with vessels and marine mammals	- Noise and vibration effects to marine biota from blasting and pile driving - Permanent loss of habitat (flora, substrates) resulting from the construction and operation of the marine terminal - Effects on marine water quality due to construction of the marine terminal and/or spills or discharges from the terrestrial environment - Re-suspension of sediments from propeller wash affecting marine flora and fauna and their habitat in relatively shallow water - Disturbance of seabirds and	<u>Lobster Habitat</u> - Habitat will be altered by infill <u>Water Column</u> - Potential for infill material to introduce fines - Erosional runoff leaving site - Dust <u>Marine Substrate</u> - Anchors will alter substrate in a site specific manner - Accumulation of particulate matter on substrate, potentially causing destruction of habitat <u>Marine Environment</u>	<u>Fish and Fish Habitat</u> - Potential mortality of fish or HADD of fish habitat - Chemical losses affecting water and sediment quality[61] - Potential mortality of freshwater fish or the destruction or alteration of their habitat[62]	- Loss of fish habitat - Release of a deleterious substance - Suspended solids could effect fish - Blasting in the basis could effect fish[63]

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Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry and Marine Terminal (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
	- Harm to lobster from pressure and sound is possible - Harm to marine water birds caused by noise/vibration - Contact with waterbirds and vessels - Harm to Inner Bay of Fundy Atlantic Salmon and / or Leatherback Turtle - Behavioural changes in marine mammals - North Atlantic Right Whale strikes by marine vessels[57]	waterfowl marine terminal activity and vessel movement between the terminal and the main shipping lanes approximately 7 km from the terminal - Illegal discharge or ballast water[58] <u>Effects Identified Under Species at Risks (Marine SAR/SOCC: Fish, Mammals, and Reptiles)</u> - Loss of fish habitat due to construction of marine terminal [Affected area represents approximately 0.38% of lobster habitat within Stormont Bay] - Habitat degradation of Marine SAR/SOCC due to sedimentation and turbidity from vessel - Disturbance and potential change in behaviour of marine fish and mammal SAR / SOCC due to noise from pile driving, shore blasting, and other construction activities - Mortality (potential marine mammal and turtle SAR/SOCC) as a result of collision with ships[59]	- Destruction of habitat - Localized increase in marine primary production if blasting residue reaches marine environment - Site drainage during this phase may increase the suspended sediment load and potentially the accumulation of material on substrate - Potential adverse effects on water quality, benthic sediment and benthic communities from a ship source accident[60]		

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Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
Residual Effects After Mitigation	Not Significant[64]	Not Significant[65]	Non-Significant Effects[66]	Non-Significant [67]	Insignificant[68]

[57] WPQ Responses at Table 3.11
[58] BPQ Table 7.11-4
[59] BPQ Table 7.12-2; For marine species at risk identified by proponent in BPQ, see Table 7.12-1 (The Atlantic Leatherback was one of the SAR/SOCC identified by the proponent)
[60] Aguathuna Table 8.2
[61] Belleoram, at p. 129, Section 11
[62] Belleoram Draft CSR at p. 107
[63] Tiverton at Table 1, p. 019117-019118
[64] WPQ Responses at Table 3.11
[65] BPQ Table 7.11-4; BPQ Table 7.12-2 and Table 7.12-1
[66] Aguathuna Table 8.2
[67] Belleoram, at p. 129, Section 11
[68] Tiverton at Table 1, p. 019117-019118

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Noise and Vibration

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry and Marine Terminal (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Noise and Vibration**	**Noise**	Generation of noise and vibrations from blasting considered generally under effects on **Terrestrial Resources**	Noise and Blasting considered under different VECS: **- Fish and Fish Habitat** **- Marine Birds** **- Atmosphere** **-Acoustic Disturbances**[69]	Effect of noise considered under **Birds / Bird Habitat** Vibration / Blasting effects considered under **Fish / Fish Habitat** and **Mammal Species at Risk**
Potential Effects	- Noise from heavy equipment and construction of buildings and marine terminals - Concussion and ground vibration from blasting - Noise from loading rock into trucks and from aggregate screening process - Noise from loading vessels for transport - Increased sound levels in marine environment (blasting; ship traffic)[70]	- Ambient noise perceived by residents living around the site during construction (road, building, vehicle traffic, blasting, crushing, marine terminal construction - Ambient noise perceived by residents living around the site during operation (blasting, loading, crushing, screening, offloading)[71]	- The blasting, crushing and loading of dolomite can generate noise, causing avoidance behaviour by local wildlife and nuisance effects on nearby communities. - Air and/or physical vibrations from blasting may influence the integrity of concrete foundations[72]	<u>Fish and Fish Habitat</u> - Blasting: Potential mortality of fish or HADD[73] <u>Marine Birds</u> - Blasting: Disruption of marine birds and their habitat[74] <u>Atmosphere</u> - Blasting: Dusting affecting air quality and the creation of noise[75] <u>Acoustic Disturbances</u> - Quarry-related noise affecting wildlife habitat and local quality of life from operation of vehicles and equipment - On-site health and safety issues from operation of vehicles and equipment - Blasting effects on human health	- Disturbance to birds due to noise from machinery used during construction activity - Blasting in the basin could affect fish - Blasting in the basin could affect marine mammals[77]

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				and safety from blasting operations - Acoustic disturbances on aquatic environments from blasting operations and shipping activities[76]	
Residual Effects After Mitigation	Not Significant[78]	Not Significant[79]	Not Significant[80]	Non-Significant[81]	Negative Insignificant (for fish/fish habitat) Insignificant (for birds & marine mammals)[82]

[69] Belleoram Draft CSR at p. 34
[70] WPQ Responses at Table 3.7
[71] BPQ at Table 12-1
[72] Aguathuna at Table 10.2
[73] Belleoram at p.130
[74] Belleoram at p. 138
[75] Belleoram at p. 139
[76] Belleoram Draft CSR at pp. 101 - 105
[77] Tiverton at Table 1, p. 019118,
[78] WPQ Responses at Table 3.7
[79] BPQ at Table 12-1
[80] Aguathuna at Table 10.2
[81] Belleoram at p.130, 138, 139
[82] Tiverton at Table 1, p. 019118 - 019119

Physical Oceanography

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Physical Oceanography** - Tides - Turbidity	Not identified nor assessed extensively although some potential effects related to turbidity is noted under the **Species at Risk** VEC	**N/A**	**N/A**	Not specifically identified as a VEC but addressed briefly in Proponent's response to Issue B11, B24, and B27
Potential Effects	- Increased turbidity with construction of the marine terminal caused by the placement of piles - Obstruction of tides and currents from the placement of the pipe pile of the marine terminal - Increased turbidity caused by discharge of surface water run off to marine environment and additional ship traffic in the area - Obstruction of tides and currents from the placement of the pipe pile of the marine terminal[83]	- Indirect plant mortality due to potential runoff and erosion, siltation and turbidity[84] - Habitat degradation due to sedimentation and turbidity from vessels[85]	N/A	N/A	- The proposed harbour development (breakwater, floating dock construction and dredging) has the potential for causing disturbance in the aquatic environment (increased turbidity and sedimentation). - Potential impacts from increased water velocity on pelagic fish and/or larval stages is predicted to be minimal considering any change in water velocity is anticipated to result in negligible overall impact on Petit Passage (with the exception of localized eddying in the vicinity of the new harbour entrance).[86] - The proposed harbour is located in the part of Petit Passage where the reverse flow zone is at its widest. The new breakwater will not extend sufficiently far from shore to disrupt this flow pattern.

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Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
					There will be localized eddying in the vicinity of the new harbour entrance around the times of mid-tide.[87]
Residual Impact After Mitigation	Not Significant[88]	Not Significant[89]	N/A	N/A	- Minimal predicted negative effects from turbidity and sedimentation during this project after implementation of mitigative measures[90] - The overall impact on Petit Passage will be negligible because the main flow is not being constricted any more than it is now. [91]

[83] WPQ Responses at Table 3.5
[84] BPQ at Table 7.12-2
[85] BPQ at Table 7.12-2
[86] Tiverton Environmental Screening Document at p 14
[87] Tiverton Environmental Screening Document at p 21
[88] WPQ Responses at Table 3.5
[89] BPQ at Table 7.12-2
[90] Tiverton Environmental Screening Document at p 23
[91] Tiverton Environmental Screening Document at p 21

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Species at Risk

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	Species at Risk identified as sub-VEC under: - **Terrestrial Ecology** - **Aquatic Ecology - Marine**	**Species at Risk & Species of Conservation Concern**	Not identified as standalone VEC but addressed under **Terrestrial Resources**	**Species at Risk**	**Mammal Species at Risk**
Potential Effects	<u>Terrestrial Ecology</u> - Loss of habitat for and removal of existing species at risk as a result of quarry and terminal site clearing, development of infrastructure - Loss of habitat for and removal of existing species at risk and potential for spread of invasive plant species as a result of clearing and quarry face development, drilling and blasting, crushing, screening and wash plant operation.[92] <u>Aquatic Ecology – Marine</u> - Loss of wintering habitat for Harlequin Duck, Barrow's Goldeneye - Harm to Inner Bay of Fundy Atlantic Salmon and/or Leatherback Turtle - North Atlantic Right Whale strikes by marine vessels[93]	- Terrestrial Flora and Fauna SAR/SOCC – Clearing and site preparation will result in habitat loss and fragmentation and SOCC plant mortality - Terrestrial Fauna SAR/SOCC – Change in behaviour as a result of noise and light (including blasting) - Marine SAR/SOCC – Loss of fish habitat due to construction of marine terminal - Marine SAR/SOCC – Disturbance and potential change in behaviour due to noise from ship traffic, pile driving and blasting.[94]	- No rare or endangered animal or plant species are found on-site. The area does not constitute critical habitat for any species[95]	- Disruption of protected species and their habitat.[96]	- Blasting in the basin could effect marine mammals.[97]

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Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
Residual Effects After Mitigation	Not Significant[98]	Not Significant[99]	Not Applicable	Non-Significant[100]	Insignificant[101]

[92] WPQ Responses at Table 3.9
[93] WPQ Responses at Table 3.11
[94] BPQ at Table 12-1; Table 7.12-2
[95] Aguathuna at p. 66
[96] Belleoram, Section 11 at 136
[97] Tiverton, at Table 1
[98] WPQ Responses at Table 3.9; WPQ Responses at Table 3.11
[99] BPQ at Table 12-1; Table 7.12-2
[100] Belleoram, Section 11 at 136
[101] Tiverton, at Table 1

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Terrestrial Ecology

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Terrestrial Ecology** - Habitat (incl. plants, wildlife) - Wetlands - Migratory Birds - Species at Risk	**- Terrestrial Ecosystems, Habitat & Vegetation** **- Terrestrial Wildlife** (includes consideration of effects on birds and terrestrial fauna)	**Terrestrial Resources** - Vegetation - Wildlife habitat - Wildlife - Forest - Forest cover - Concrete foundations and community structures (Non VEC) - Surrounding communities	**Terrestrial Wildlife and Habitat***	It was noted that proposed project will have minimal effects on the terrestrial wildlife due to physical boundaries of the project area although not specifically considered as a VEC[102]
Potential Effects	- Removal of habitat from active areas of the quarry and the lands immediately adjacent to the active areas - Existing wetlands are in protected areas, and a constructed wetland will be put in place - Loss/alteration of migratory bird habitat - Possible collision with quarry buildings by night migrating birds - Blasting may startle birds in area - Noise from the extraction, transportation, and crushing activities could exclude some of the more sensitive species from adjacent, undisturbed habitats	<u>Terrestrial Ecosystems, Habitat and Vegetation</u> - Direct plant mortality, habitat removal or alteration due to site preparation, clearing and grubbing - Indirect plant mortality as a result of potential erosion, sediment loading, stormwater discharges - Displacement or loss of natural/native habitat due to introduction of invasive species - Indirect plant mortality and impairment as a result of fugitive dust emissions during construction and operation - Increase in levels of toxic and	<u>Wildlife</u> - Wildlife will be displaced as the result of the removal of vegetation and forest cover. Wildlife may stray into the project site - The blasting, crushing and loading of dolomite can generate noise, causing avoidance behaviour by local wildlife and nuisance effects on nearby communities <u>Vegetation</u> - Vegetation will be removed - Localized reduction in photosynthesis, minor mortality	- Loss of wildlife and their habitat from clearing procedures, sediment and chemical losses* from construction and operations - Effects of blasting on wildlife and their habitat*[107]	Not Applicable

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Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
	and possibly reduce the reproductive success of those that do remain - Loss of habitat for and removal of existing species at risk - Potential for spread of invasive plant species[103]	deleterious substances due to infrastructure maintenance (salt)[104] <u>Terrestrial Wildlife</u> - Loss of habitat for terrestrial wildlife including landbirds - Fragmentation of terrestrial habitat in and around the Project area - Disturbance of terrestrial fauna due to construction activities (noise, blasting, dust generation) - Destruction of active migratory bird nests during vegetation clearing or other activities - Disturbance of terrestrial fauna due to increased human presence and noise (incl. blasting) Destruction of active migratory bird nests during vegetation clearing, other project activities - Loss or degradation of habitat for aquatic herpetiles and aquatic nesting bird species (loons, waterfowl). - Increased lighting attracting and/or disorienting nocturnal wildlife, including migrating birds - Increased shipping activity	<u>Concrete foundations and community structures (Non-VEC)</u> - Air and/or physical vibrations from blasting may influence the integrity of concrete foundations <u>Forest cover and wildlife habitat</u> - Potential for the destruction of pristine vegetation and wildlife habitat <u>Forest and wildlife</u> - Disruption and destruction of the habitat and forest area surrounding the dolomite site[106]		

N/A means Not Addressed in the particular EA report

Not Applicable means no determination was provided in the particular EA report

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
		causing disturbance to seabirds and waterfowl - Increased numbers of human-adapted terrestrial species preying on/competing with native species[105]			
Residual Effects After Mitigation	Not significant [108]	Not Significant[109]	Non-Significant Effects[110]	Non-Significant[111]	Not Applicable

[102] Tiverton at p. 12
[103] WPQ Responses at Table 3.9
[104] BPQ Table 7.7-1
[105] BPQ Table 7.9-1
[106] Aguathuna Table 10.2
[107] Belleoram Draft CSR at pp. 90 - 91
[108] WPQ Responses at Table 3.9
[109] BPQ Table 7.7-1; BPQ Table 7.9-1
[110] Aguathuna Table 10.2
[111] Belleoram Draft CSR at pp. 90 - 91

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Not Applicable means no determination was provided in the particular EA report

Water Quality

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Surface Water** - Little River Watershed - On-site surface water drainage/wetlands - On-site surface Water quality	**Marine and Surface Water Resources**	Surface Water Quality identified as sub-VEC under **Freshwater Resources**	Effects to water quality considered under **Fish /Fish Habitat**	**Water Quality**
Potential Effects	- Contamination of Little River Watershed through surface water runoff during site preparation - Contamination of the watershed through surface water runoff - Loss of water from the watershed through groundwater loss during quarry operation - Alteration of existing site topography and drainage patterns due to quarry operation - Surface water contamination from quarry operation.[112]	<u>Marine and Surface Water Resources</u> - impacts to fresh and marine water quality and habitats from erosion, siltation and accidental spills - Effects to on-site watercourses, Murphys Lake and Reynolds Brook from diversion of surface and groundwater into the pit over time.[113]	<u>Surface Water Quality</u> - Potential for localized increase in nutrients available in freshwater resources surrounding the Project area. Potential for an increase in primary production if blasting residue reaches freshwater environment.[114]	- Chemical losses affecting water and sediment quality.[115]	- Release of a deleterious substance - Invasive species could be introduced into the marine environment.[116]
Residual Effects After Mitigation	Not Significant[117]	Not Significant[118]	Non-Significant[119]	Non Significant[120]	Insignificant[121]

[112] WPQ Responses at Table 3.4
[113] BPQ at Table 7.6-1
[114] Aguathuna Table 9.2 at p. 60

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Not Applicable means no determination was provided in the particular EA report

[115] Belleoram, Section 11 at 130-131
[116] Tiverton at Table 1, p. 019119
[117] WPQ Responses at Table 3.4
[118] BPQ at Table 7.6-1
[119] Aguathuna Table 9.2 at p. 60
[120] Belleoram, Section 11 at 130-131
[121] Tiverton at Table 1, p. 019119

Wetlands

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	Wetlands (Identified as a sub-VEC under **Terrestrial Ecology** and **Surface Water**)	**Wetlands**	**N/A**	**Vegetation and Wetlands**[122]	No wetlands within project footprint[123]
Potential Effects	<u>Surface Water</u> - alteration of existing site topography and drainage patterns due to quarry operation.[124] <u>Terrestrial Ecology</u> - Existing wetlands are in protected areas, and a constructed wetland will be put in place.[125]	- Wetland removal or loss of wetland functions as a result of infilling and development activities - Alteration of wetland hydrology -Alteration of water quality from sediments and dust - Reduction in wetland functionality due to the introduction of invasive species - Impacts from contaminated site runoff and vegetation management[126]	N/A	- Loss of vegetation and wildlife habitat from clearing procedures, access roads and vehicles & erosion - Loss/degradation of aquatic vegetation and wetlands from activities near aquatic vegetation and wetlands & chemical losses[127]	Not Applicable
Residual Effects After Mitigation	Not Significant[128]	Not Significant[129]	N/A	Non-Significant[130]	Not Applicable

[122] Belleoram Draft CSR at p. 34
[123] Tiverton at p. 13
[124] WPQ Responses at Table 3.4
[125] WPQ Responses at Table 3.9
[126] BPQ, Table 7.8-2
[127] Belleoram Draft CSR at pp. 86 – 90
[128] WPQ Responses at Table 3.4; WPQ Responses at Table 3.9
N/A means Not Addressed in the particular EA report
Not Applicable means no determination was provided in the particular EA report

[129] BPQ, Table 7.8-2
[130] Belleoram Draft CSR at pp. 86 – 90

Aboriginal Land and Resource Use

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Aboriginal Land and Resource Use**	**Aboriginal Land and Resource Use**	No aboriginal land claims or traditional hunting, gathering, or burial grounds on site associated with the site[131]	No known traditional Aboriginal fishing areas near the proposed marine terminal site[132] No aboriginal land claims or traditional hunting, gathering, or burial grounds associated with the site.[133]	No known sites of historical importance / traditional hunting and fishing grounds[134]
Potential Effects	- Loss or damage of aboriginal artifacts - Disruption / Loss of fishing grounds, lobster traps - Effects on terrestrial and aquatic environment - Contaminants in marine and terrestrial environment and country foods[135]	- Permanent loss of wildlife and plant resources which have been reportedly traditionally harvested within the immediate project footprint; loss of future opportunities to harvest these resources - Harm to, or dispersion of local wildlife due to noise disturbance - Potential depreciation of the quality of local food and medicinal plants for human consumption due to disturbance, or contamination of vegetation, wetlands and water bodies within the Project site - Potential degradation of the local marine and shoreline habitats surrounding the shipping terminal related to dust	Not Applicable	Not Applicable	Not Applicable

N/A means Not Addressed in the particular EA report

Not Applicable means no determination was provided in the particular EA report

Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
		contamination, the potential for accidental aggregate spillage during loading, and possible contamination resulting from petroleum products associated with cargo vessels[136]			
Residual Effects After Mitigation	Not Significant	Minor Significance[137]	Not Applicable	Not Applicable	Not Applicable

[131] Aguathuna at p. 89, Section 12
[132] Belleoram at p. 45
[133] Belleoram Draft CSR at p. 28
[134] Tiverton at p. 19
[135] WPQ Responses at Table 3.13
[136] BPQ at Table 7.17-2
[137] BPQ at Table 7.17-2

Aesthetics

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Aesthetics** - Highway 217 - Bay of Fundy	Not identified as VEC but related potential effect noted under **Local Economy, Land and Resource Use** and **Tourism and Recreation**	Not identified as VEC but addressed under Section 12: Additional Considerations	Project effects on visual aesthetics identified under **Land Use**	Not identified as VEC although raised as an issue No significant impacts on local aesthetics are expected. It is expected that during the construction operations that some aesthetic resources will be affected. [138]
Potential Effects	<u>Highway 217</u> - Quarry Operation is not visible from Highway #217 - Effects (night glow) seen from onshore <u>Bay of Fundy</u> -Quarry activity/infrastructure seen from Bay of Fundy.[139]	<u>Local Economy, Land and Resource Use</u> - Existing and planned land uses on adjacent properties or within the Affected Area may be impacted through changes to the visual or acoustic environment.[140] <u>Tourism and Recreation</u> - Visually, the quarry may deter boaters and kayaks from visiting this portion of the coastline. This in turn may negatively affect revenue at local campgrounds, rental accommodations and other service providers.[141]	- Quarry will not be visible from the highway or residential communities of the area, and the plant located on the floor of the East Quarry area will be buffered by the faces of the old quarry - Marine and loading facility will be visible to local residents.[142]	Affects on the visual aesthetics / tourism of the area[143]	Dust (i.e. short – to long term impacts, mitigable with calcium chloride, dust screens, water spray on source, or by covering the source of dust with sandstone or hydro seed tack); and Spillage of fill on driving surfaces (i.e. temporary, and requires immediate clean up)[144]

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Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
Residual Effects After Mitigation	Not Significant[145]	Not Significant[146]	Not significant[147]	Non-Significant[148]	Not Applicable

[138] Tiverton at p. 21
[139] WPQ Responses at Table 3.14
[140] BPQ at p. 131, Section 7.13.1
[141] BPQ at p. 139, Section 7.14.4
[142] Aguathuna at p. 89, Section 12
[143] Belleoram Draft CSR at p. 100
[144] Tiverton, p. 21
[145] WPQ Responses at Table 3.14
[146] BPQ at p. 131, Section 7.13.1 and p. 139, Section 7.14.4
[147] Aguathuna at p. 89, Section 12
[148] Belleoram Draft CSR at p. 100

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Archaeological and Heritage Resources

Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
VEC	**Heritage Resources** - Marine Archaeology - Land Archaeology - Heritage Properties & Site History	**Archaeological and Heritage Resources**	No heritage or cultural sites have been identified within the project area[149]	No cultural or heritage sites have been identified within the project area and no ecological reserves or areas of concern are in its immediate vicinity[150]	No known sites of historical importance / traditional hunting and fishing grounds [151]
Potential Effects	- Damage, loss of marine artifacts - Damage/loss of archaeological resources (land based) - Negative visual influences on heritage properties - Damage/loss of historical resources[152]	- Damage to or destruction of cultural resources[153]	Not Applicable	Not Applicable	Not Applicable
Residual Effects After Mitigation	Not Significant[154]	Not Significant[155]	Not Applicable	Not Applicable	Not Applicable

[149] Aguathuna at p. 89, Section 12
[150] Belleoram Draft CSR at p. 28
[151] Tiverton at p. 19
[152] WPQ Responses at Table 3.13
[153] BPQ at Table 7.16-1
[154] WPQ Responses at Table 3.13
[155] BPQ at Table 7.16-1

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Commercial Fisheries

Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry and Marine Terminal (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development (2004)
VEC	Commercial fisheries addressed under **Economy** - Aquaculture - Intertidal - Nearshore	**Commercial Fisheries and Aquaculture**	Effects on Commercial Fisheries not addressed as VEC although description of existing conditions noted commercial fishing activities such as lobster fishing, herring fishery, ground fishery, and harvesting of scallop and snow crab[156] Effects on lobster identified under **Marine Habitat and Fish**	**Aquaculture and Commercial Fisheries**	**Commercial Fisheries**
Potential Effects	Aquaculture: Adverse effects on pelagic fish including eggs and larvae - Intertidal fishery: Loss of access to intertidal zone where local harvesting of periwinkles and dulse takes place - Nearshore fishery: Disruption of lobster and herring fishery[157]	- Noise and suspended sediments causing fish avoidance from marine terminal construction - Loss of access to fishing grounds; displacement as a result of marine terminal construction and vessel traffic to support construction, presence of marine terminal, and project-related vessel traffic - Loss or damage to fishing gear - Accidental fuel spill or other discharges to the aquatic environment can alter water quality and physical habitat, which in turn can negatively affect life-cycle stages of commercially important species and their food	<u>Marine Habitat and Fish</u> - Lobster habitat will be altered by infill[159]	- Potential loss of commercial fish species or their habitat[160] - Direct mortality or decreased productivity of wild or caged fish resulting from construction and operational activities and shipping activities*[161]	Commercial Fisheries - Deposit of a deleterious substance - Interference with berthing and boat movement - Water quality may be disturbed in the immediate vicinity of the dredge area[162]

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Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
		supply - Interruption of mackerel movements due to the projecting marine terminal resulting in reduced catches in Indian Cove[158]			
Residual Effects After Mitigation	Not Significant[163]	Not Significant following Offset[164]	Not Significant[165]	Non-Significant[166]	Negative Insignificant[167]

[156] Aguathuna at p. 21
[157] WPQ Responses at Table 3.16
[158] BPQ at Table 7.15-1
[159] Aguathuna at Table 8.2
[160] Belleoram at p. 132, Section 11
[161] Belleoram Draft CSR at pp. 109 - 110
[162] Tiverton, Table 1 at p. 019120
[163] WPQ Responses at Table 3.16
[164] BPQ at Table 7.15-1
[165] Aguathuna at Table 8.2
[166] Belleoram at p. 132, Section 11; Belleoram Draft CSR at pp. 109 - 110
[167] Tiverton, Table 1 at p. 019120

Economy

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Economy** - Employment - GDP - Municipal Taxes - Tourism - Land Value - Recreation - Fishery (Aquaculture, Intertidal, Nearshore) see p. 33 above	**Local Economy, Land and Resource Use** - no sub-VECs identified although EIS addresses Local Economy and Land and Resource Use in two separate sections and touches on project effects on property values, employment, GDP, taxes, recreational use of land[168] - **Tourism and Recreation** is also identified as a standalone VEC – see p. 39 of this document	Addressed under section 12: Additional Considerations although not identified as VEC	**Land Use**[169]	Not identified as VEC although raised as an issue - see Issue B22: Effects on Economic Growth – no adverse effects identified[170]
Potential Effects	- Visibility of the quarry from tourist attractions/ accommodations - Changes in property values in areas immediately adjacent to property - Loss of access to Bay of Fundy coastline by Whites Cove Road for recreational purposes[171]	- Exclusion of current trapping and ATV passage as a result of preparation of the processing plant and quarry and construction of the processing plant, ongoing terrestrial and marine operations - Marine spill - Impacts on labour, income and economic activity[172]	- Due to remoteness of the quarry, off-site noise is not expected to generate adverse effects on surrounding communities.[173] - Generation of noise could potentially pose a nuisance factor in relation to recreational use of the surrounding lands immediately adjacent to the site.[174]	- Affects on the visual aesthetics/tourism of the area - Alteration of traditional land use[175]	Not Applicable
Residual Effects After Mitigation	Not Significant[176]	Not Significant[177]	Not Applicable	Non-Significant[178]	Not Applicable

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[168] BPQ at p. 133 – 134, Section 7.13.4
[169] Belleoram Draft CSR at p. 34
[170] Tiverton at p.20, Issue B22
[171] WPQ Responses at Table 3.16
[172] BPQ at Table 7.13-1
[173] Aguathuna at p. 88, Section 12
[174] Aguathuna at p. 88, Section 12
[175] Belleoram Draft CSR at pp. 100 – 101
[176] WPQ Responses at Table 3.16
[177] BPQ at Table 7.13-1
[178] Belleoram Draft CSR at pp. 100 – 101

Human Health and Safety

Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry Development (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development
VEC	**Human Health, Wellness and Socio-Cultural Environment** - Drinking water quality - Marine contaminants - Land contaminants - Country foods - Quality of life - Social Capital - Commercial Patterns - Community Infrastructure, Institutional Capacity - Education, Training, Skills	Not identified as a standalone VEC but addressed or noted under: - **Groundwater** for Drinking Water Quality - **Marine and Surface Water Resources** for marine contaminants - Effects on Human Health and Safety addressed under **Accidents and Malfunctions** - **Aboriginal Land and Resource Use**	Not identified as VEC but addressed under Section 12.4 "Effects of Construction and Operation"	**Human Health and Safety**	- Not identified as VEC but Human Health noted as potential effect resulting from accidents and malfunction[179] - Human health and safety also noted as an environmental concern in the Environmental Protection Plan[180]
Potential Effects	- Drinking water quality: Damage to off-site water supply quality - Marine contamination: Marine contamination from surface water and sediment runoff - Land contamination: land contamination from herbicides/pesticides, hazardous materials, diesel fuels, oils, greases, coolants, sewage, or solid waste - Country foods: Impacts on country foods through air, water, and soil pathways - Quality of life: Perceived impairment of environmental	<u>Human Health and Safety potentially affected by:</u> - Quarry pit slope failure - Stockpile slope failure - Terrestrial spill - Vessel accident/collisions - Explosives accident - Marine spill - Transportation accident - Forest /Site fire[182] <u>Groundwater</u> - no adverse effect predicted <u>Aboriginal Land and Resource Use</u> - Contamination of surrounding	- Potential social concerns related to health included dust, noise and accidents. Noise, at certain levels can be both a nuisance and health hazard. - Generation of dust and noise could potentially pose a nuisance factor in relation to recreational use of the surrounding lands adjacent to the site - Predicted effects on safety concerns relating to increased traffic of large machinery in the surrounding areas not expected to be significant[185] - Predicted effects with respect to	- Contamination of Local Fisheries - Health impacts related to industrial accidents or malfunctions - Navigational interference and maritime accidents[187] - Local food contamination[188] - On-site accidents[189] - Traffic concerns[190]	- Workers could be injured or killed if accidents occur during the project[191]

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Project	Whites Point Quarry and Marine Terminal (2004)	Black Point Quarry (2014)	Aguathuna Quarry Development (1999)	Belleoram Quarry and Marine Terminal Project (2007)	Tiverton Harbour Development
	health and quality - Social capital: Differences in opinion about the project among residents of the community create a disruption of social cohesion - Commercial patterns: Inconvenience to nearshore fishermen as a result of marine terminal activities; visual degradation if tourism cruises venture along this section of coastline - Infrastructure and institutional capacity: additional burden on local services[181]	vegetation, wetlands and waterbodies through dust and other airborne pollutants - Contamination of marine and shoreline habitats surrounding the shipping terminal through possible fuel, oil or waste discharge associated with Project related vessel traffic or particulate run off from the project site[183] <u>Marine and Surface Water Resources</u> - Impacts to fresh and marine water quality and habitats from erosion, siltation and accidental spills[184]	existing land use are not expected to be significant.[186]		
Residual Effects After Mitigation	Not Significant[192]	Not Significant[193]	- Off-site noise is not expected to generate adverse effects on surrounding communities[194]	Non-Significant[195]	Not Significant[196]

[179] Tiverton at Table 3, p. 019122
[180] Tiverton at Appendix E, p. 019131
[181] WPQ Responses at Table 3.17
[182] BPQ at pp. 186- 187, Section 7.19.5
[183] BPQ at pp. 159 – 160, Section 7.17.3
[184] BPQ at Table 7.6-1
[185] Aguathuna at p. 88, Section 12
[186] Aguathuna at p. 89, Section 12

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[187] Belleoram at p. 141
[188] Belleoram Draft CSR at pp. 97 - 99
[189] Belleoram Draft CSR at pp. 97 - 99
[190] Belleoram Draft CSR at pp. 97 - 99
[191] Tiverton at Table 3, p. 019122
[192] WPQ Responses at Table 3.17
[193] BPQ at pp. 186- 187, Section 7.19.5; pp. 159 – 160, Section 7.17.3; Table 7.6-1
[194] Aguathuna at p. 88
[195] Belleoram Draft CSR at pp. 97 - 99
[196] Tiverton at Table 3, p. 019122

Tourism & Recreation

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	Addressed as sub VEC under **Economy** - Tourism - Recreation	**Tourism and Recreation**	Not identified as standalone VEC but addressed under Section 12	Effects on Tourism addressed under **Land Use** VEC	**Recreational Use of Harbours**
Potential Effects	- Tourism: Visibility of the quarry from tourist attractions/ accommodations - Recreation: Loss of access to Bay of Fundy coastline by Whites Cove Road for recreational purposes[197]	- Decrease in tourism on within the property boundary and Affected Areas - Marine fuel spill[198]	Recreational and commercial land use of the immediate Project area is minimal to non-existent[199]	- Affects on the visual aesthetics / tourism of the area[200]	- There are minimal recreational users at Tiverton[201]
Residual Effects After Mitigation	Not Significant[202]	Not Significant[203]	Not Applicable	Non-Significant[204]	Insignificant[205]

[197] WPQ Responses at Table 3.16
[198] BPQ at Table 7.14-1
[199] Aguathuna at 89, Section 12
[200] Belleoram Draft CSR at p. 100
[201] Tiverton at Table 1
[202] WPQ Responses at Table 3.16
[203] BPQ at Table 7.14-1
[204] Belleoram Draft CSR at p. 100
[205] Tiverton at Table 1, p. -019121

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Navigation

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Transportation** – Marine Other impacts associated with shipping are noted under: **Noise and Vibration** **Light** **Aquatic Ecology – Marine** **Economy** **Aboriginal Land and Resource Use** **Physical Oceanography** **Air Quality** **Aesthetics**	Not addressed as a standalone VEC but addressed under: **- Noise** **- Ambient Light** **Terrestrial Fauna** **- Marine Species and Habitat** **- Species at Risk** **- Commercial Fisheries** **- Aboriginal and Land Use**	Shipping not identified as standalone VEC but addressed under Effects of Malfunctions and Accidental Events[206]	**Navigation and Marine Safety**	**Navigation**
Potential Effects	<u>Transportation - Marine</u> - Inconvenience to the fishery of marine vessel traffic in the Bay of Fundy[207] <u>Noise and Vibration</u> - Noise from loading vessels for transport - Increased sound levels in marine environment (blasting; ship traffic)[208] <u>Light</u> - Lighting of the shiploader and conveyer systems will be required for night time ship loading and the elevated shiploader will be	<u>Noise</u> - Increased ambient noise from marine construction vessel operation[216] <u>Ambient Light</u> - Light trespass from the construction of the marine terminal including marine construction vessel operation[217] <u>Terrestrial Fauna</u> - Increased shipping activity causing disturbance to seabirds and waterfowl[218] <u>Marine Species and Habitat</u>	- Complete loss of a ship transporting dolomite in the shipping route would result in the loss of cargo of dolomite onto the substrate and the ships fuel into the water column. This would result in smothering of habitat and effects on water quality, benthic sediment and benthic communities along the shipping route in Port au Port Bay.[223] - CSR noted no concerns on behalf of the fishers in the area related to the shipping routes or marine loading facility[224]	- Degradation or loss of fish habitat - Disruption of other maritime activities (e.g. aquaculture and commercial fishing)[225]	Interference with berthing and boat movement during proposed work[226]

	equipped with lighting directed downward to the holds of the ship[209] <u>Aquatic Ecology – Marine</u> - Subtle changes in marine mammal activity - Contact with vessels and marine mammals - Contact with waterbirds and vessels - Harm to marine water birds caused by noise/vibration - Behavioural changes in marine mammals - North Atlantic Right Whale strikes by marine vessels[210] <u>Economy</u> - Disruption of lobster and herring fishery[211] <u>Aboriginal Land and Resource Use</u> - Disruption / loss of fishing grounds; loss of lobster traps - Contaminants in marine and terrestrial environment and country foods[212] <u>Physical Oceanography</u> - Increased turbidity caused by discharge of surface water run off to marine environment and additional ship traffic in the area[213]	- Disturbance of seabirds and waterfowl marine terminal activity and vessel movement between the terminal and the main shipping lanes approximately 7 km from the terminal - Illegal discharge of ballast water[219] <u>Species at Risk</u> - Habitat degradation due to sedimentation and turbidity from vessels - Degradation in fish habitat due to release of bilge and ballast water to Chedabucto Bay - Disturbance and potential change in behaviour due to noise from ship traffic - Mortality as a result of collisions with ships[220] <u>Commercial Fisheries</u> - Vessel traffic to support construction: loss of access to fishing grounds; displacement - Loss or damage to fishing gear - Accidental fuel spill or other discharges to the aquatic environment can alter water quality and physical habitat, which in turn can negatively affect life-cycle stages of commercially important species and their food			

	Air Quality - Diesel exhaust emissions from vessels used to haul basalt rock from site[214] Aesthetics - Effects (night glow) seen from onshore (HWY 217)[215]	supply[221] Aboriginal and Land Use - Contamination of marine and shoreline habitats surrounding the shipping terminal through possible fuel, oil or waste discharge associated with Project related vessel traffic or particulate run off from the project site.[222]			
Residual Effects After Mitigation	Not Significant[227]	Not Significant[228]	Non-Significant[229]	Non-Significant[230]	Insignificant[231]

[206] Aguathuna at p. 44
[207] WPQ Responses at Table 3.15
[208] WPQ Responses at Table 3.7
[209] WPQ Responses at Table 3.8
[210] WPQ Responses at Table 3.11
[211] WPQ Responses at Table 3.16
[212] WPQ Responses at Table 3.13
[213] WPQ Responses at Table 3.5
[214] WPQ Responses at Table 3.6
[215] WPQ Responses at Table 3.14
[216] BPQ at Table 7.2-3
[217] BPQ at Table 7.3-1
[218] BPQ at Table 7.9-1
[219] BPQ at Table 7.11-4
[220] BPQ at Table 7.12-2
[221] BPQ at Table 7.15-1
[222] BPQ at Table 7.17-1
[223] Aguathuna at p. 44

[224] Aguathuna at p. 29
[225] Belleoram, Section 11 at p. 134
[226] Tiverton at Table 1, 019120
[227] WPQ Responses at Table 3.15, Table 3.7, Table 3.8, at Table 3.11, Table 3.16, Table 3.13, Table 3.5, Table 3.6, Table 3.14
[228] BPQ at Table 7.2-3, 7.3-1, 7.9-1, Table 7.11-4, Table 7.12-2, Table 7.15-1, Table 7.17-1
[229] Aguathuna at p. 44
[230] Belleoram, Section 11 at p. 134
[231] Tiverton at Table 1, 019120

Transportation - Land

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Transportation - Land**	Effects of project on land transportation not specifically addressed although project effects associated with increased vehicle traffic was noted under **Species at Risk**	Vehicular Traffic considered under **Cumulative Effects**	Traffic considered under **Human Health and Safety** and **Cumulative Effects**	**N/A**
Potential Effects	- Inconvenience of heavy truck traffic on HWY 217 - An increase in truck and private automobile traffic for the year long construction phase - Alteration/ upgrades to Whites Cove Road - Truck traffic from delivery of fuel and explosives once every two weeks[232]	- Project will lead to increased vehicle traffic in area and may result in direct fauna mortality[233]	- Exploratory drilling project includes the construction of eight kilometres of new access road from the drill site. It is reasonable to expect some sediment runoff as a result. - Drilling project will make some contribution to local traffic related to equipment and crew transport. - Equipment transport during the decommissioning phase of the drilling program may increase the likelihood that vehicular safety in the Port au Port area may be compromised (Assuming that construction phase of the quarry operation will have begun by that time).[234]	<u>Human Health and Safety</u> - Construction activities are expected to require some heavy equipment and materials to be transported to the site via Highway 362 – possible concerns related to these vehicles include advanced road deterioration, the potential for collisions, fuel spills, and dust and noise production.[235] <u>Cumulative Effects</u> - Construction activities are expected to require some heavy equipment and materials to be transported to the site via this road. Possible concerns related to these vehicles include advanced road deterioration (due to their heavy weights), the potential for collisions, fuel, spills, and dust and noise production.[236]	N/A

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
Residual Effects After Mitigation	Not significant[237]	Not Significant[238]	Not Significant[239]	Non-Significant[240]	N/A

[232] WPQ Responses at Table 3.15
[233] BPQ at Table 7.12-2
[234] Aguathuna at p. 92, Section 13.2.2
[235] Belleoram Draft CSR at p. 56
[236] Belleoram Draft CSR at p. 71
[237] WPQ Responses at Table 3.15
[238] BPQ at Table 7.12-2
[239] Aguathuna at p. 92, Section 13.2.2
[240] Belleoram Draft CSR at p. 56

Cumulative Effects

Project	**Whites Point Quarry and Marine Terminal (2004)**	**Black Point Quarry (2014)**	**Aguathuna Quarry and Marine Terminal (1999)**	**Belleoram Quarry and Marine Terminal Project (2007)**	**Tiverton Harbour Development (2004)**
VEC	**Cumulative Environmental Impacts**	**Cumulative Environmental Effects**	**Cumulative Effects**	**Cumulative Effects**	No Cumulative Effects are predicted[241]
Potential VECs / Potential Effects	Greenhouse Gas Flora Species at Risk Marine Mammals - Blasting Marine Mammals - Ship Interactions Bay of Fundy Aesthetics Employment/Quarry Operation Municipal Tax Revenue/ Quarry Operation Tourism Quality of Life Social Capital	Cumulative effects from other potential projects Shipping and Navigation Local Economy, Land and Resource Use Cumulative effects on First Nations	Sedimentation of water courses and / or marine waters from road construction Vehicular traffic Quarry development and other foreseeable future development	Increase in Maritime Traffic Interference with Sensitive Species and their Habitat Increased dust and noise in combination with the rock quarry[242]	Not Applicable
Residual Effects After Mitigation	Greenhouse Gas - Insignificant / Negative Flora Species at Risk - Significant / Positive Marine Mammals - Blasting - Insignificant / Negative Marine Mammals - Ship Interactions - Insignificant / Negative Bay of Fundy Aesthetics - Insignificant /Negative Employment/Quarry Operation - Significant / Positive Municipal Tax Revenue/ Quarry Operation - Significant / Positive Tourism - Insignificant / Negative Quality of Life - Insignificant / Positive Social Capital - Insignificant / Positive[243]	Shipping and Navigation - insignificant Local Economy, Land and Resource Use - positive and potentially significant over the medium to long term[244]	No significant cumulative effects from respective projects related to sedimentation of water courses and/or marine waters are predicted No significant cumulative effects related to vehicular traffic in relation to the two projects are predicted No significant cumulative effects are predicted for the quarry development and any other foreseeable future development, in concert with or independent of respective activities.[245]	Non-Significant [246]	Not Applicable

[241] See Tiverton at Table 5
[242] Belleoram at pp. 126 - 128
[243] Bilcon of Nova Scotia, *Whites Point Quarry Environmental Impact Statement,* Volume IV (31 March 2006) at Table CEM-2
[244] BPQ at Part 4, Section 9.4, pp. 15 – 16, and Section 12.3,pp. 68 – 69
[245] Aguathuna at pp. 90 – 93, Section 13.0
[246] Belleoram at p. 128