IN THE MATTER OF AN ARBITRATION UNDER CHAPTER ELEVEN OF THE NORTH AMERICAN FREE TRADE AGREEMENT AND THE UNCITRAL RULES OF 1976

- between -

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

- and -

GOVERNMENT OF CANADA

Reply Expert Report of Howard Rosen

23 August 2017

Permanent Court of Arbitration (PCA) Case No. 2009-04

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1. Introduction

1.1 My name is Howard Rosen. My curriculum vita was appended as Appendix 1 of my previous report dated 15 December 2016 ("**FTI Report**").[1] The FTI Report was issued alongside the Investors' damages memorial dated 16 December 2016 and updated 10 March 2017 ("**Investors' Damages Memorial**").

1.2 The Government of Canada submitted its counter-memorial on damages dated 9 June 2017 ("**Respondent's Damages Counter-Memorial**"), which included an expert report by Darrell B. Chodorow of the Brattle Group dated 9 June 2017 ("**Brattle Report**") that is, in part, responsive to the FTI Report.

1.3 This report addresses the contents of the Brattle Report and, where appropriate, the conclusions of other experts that form the basis of the Brattle Report. As was the case with the FTI Report, this reply report will cross-reference to the witness statements and expert reports of others where appropriate.

Professional standards and independence

1.4 In preparing this report, I have been assisted by FTI Consulting staff working under my direction, supervision, and review. I have discussed the issues relevant to the matter with Counsel. The opinions expressed herein, however, are my own.

1.5 I have acted independently and objectively in the preparation of this report, and my compensation is not contingent on any action or event resulting from the use of this report.

1.6 This report was prepared in conformity with the Practice Standards of the Canadian Institute of Chartered Business Valuators ("**CICBV**"), of which I am a member in good standing. The relevant Practice Standards of the CICBV include those governing the preparation of Expert Reports (CICBV Standard 310, 320 and 330).[2] The financial analysis in this report was prepared to be at the level of an Expert Report under the CICBV Practice Standards.

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1 Unless stated otherwise, the defined terms used in this report are consistent with those used in the FTI Report.
2 All CICBV Practice Standards are available at https://cicbv.ca/practice-standards/.

Restrictions

1.7 This report is subject to the same restrictions that were presented in Section 1 of the FTI Report.

1.8 As with the FTI Report, amounts in this report are presented in US$.

Sources of information

1.9 This report incorporates all sources of information relied upon as set out in Appendix 2 of the FTI Report. Additional documents that I relied upon are set forth in **Appendix 1**.

1.10 Subject matter experts and witnesses also issued reply reports and statements alongside the Investors' reply memorial. I refer to these reply reports throughout this report. A summary of expert reports and witness statements appended to the Investors' reply memorial, which I have relied upon is provided below:

Figure 1.1 Summary of Investors' witnesses and experts

Name	Firm / Organization	Reply Report Date	Subject Matter
William Richard Clayton	Clayton Group	21 August 2017	-
Joe Forestieri	Clayton Group	21 August 2017	-
Tom Dooley	NYSS	18 August 2017	-
John Wall	Quarry Manager	18 August 2017	-
Paul Buxton	Project Manager	18 August 2017	-
Dan Fougere	Martin Marietta (until 2011)	18 August 2017	Operating Costs
Wayne Morrison	Tamarack Resources Inc.	18 August 2017	Freight
Michael Cullen	Mercator Geological Services	1 August 2017	Geology
Peter Oram	GHD Limited	17 August 2017	Permitting
George Bickford	LB&W Engineering Inc.	8 August 2017	Plant and Mobile Equipment
Michael Washer	LB&W Engineering Inc.	8 August 2017	Plant and Mobile Equipment
Christopher Fudge	SNC-Lavalin Inc.	14 August 2017	Marine Terminal
Bill Collins	SNC-Lavalin Inc.	14 August 2017	Marine Terminal

Name	Firm / Organization	Reply Report Date	Subject Matter
Michael Wick	John T. Boyd Company	16 August 2017	Aggregates Market Study
John Lizak	Mineral Valuation & Capital, Inc.	8 August 2017	Aggregates Market Study
George Seamen Jr	GS Management Inc.	10 August 2017	Aggregate Industry Profitability
Stephen Shay	Harvard Law School	19 August 2017	Taxation
Michael Colborne	Thorsteinssons LLP	17 August 2017	Taxation
Lorne Sossin	Osgoode Hall Law Society, York University	3 August 2017	Administrative Law
David Estrin	Gowling WLG	20 August 2017	Environmental Law

Report structure

1.11 My report is set out as follows:

a) In **Section 2**, I present a summary of my approach and conclusion of the damages suffered by the Investors.

b) In **Section 3**, I respond to the general valuation theory issues raised in the Brattle Report.

c) In **Section 4**, I address the historical offers and transactions referred to in the Brattle Report as indicators of value.

d) In **Section 5**, I discuss the issues raised in the Brattle Report regarding the inputs to the discretionary cash flow model.

e) In **Section 6**, I provide additional commentary regarding the taxation gross-up calculation.

f) In **Section 7**, I discuss Mr. Chodorow's alternative pre-award interest methodology.

g) In **Section 8**, I provide my conclusion on damages.

h) In **Section 9**, I summarize the assumptions made throughout this report.

i) In **Section 10**, I make my expert declaration.

2. Executive Summary

2.1 I quantified the financial loss suffered by the Investors as a result of the Respondent's breaches of the Treaty. I was instructed that the Investors would have constructed and operated the Whites Point project absent the Respondent's breaches of the Treaty.

2.2 In the FTI Report, I determined that the most appropriate approach to apply in calculating the Investors' financial loss was to conduct an analysis of lost profits. Lost profits measure the profits that the Investors would have earned from the Whites Point project absent the Respondent's breaches. While actual profits are typically deducted from lost profits, the Investors have not earned any profits from the Whites Point project. As such, no deductions were appropriate.

2.3 Lost profits from the Whites Point project comprised:

a) Past lost profits, which represent the cash flows that the Investors would have generated from the Whites Point project from 1 January 2008 to 31 December 2016; and,

b) Future lost profits, which represent the future cash flows that the Investors would have reasonably expected from the Whites Point project beyond 31 December 2016. I discounted the future cash flows to their present value using the WACC.

2.4 I adjusted the past and future lost profits to account for the higher taxes that the Investors would have been responsible for on an award of damages versus on the Whites Point project's operating income. Additionally, I added the pre-award interest, which I calculated using U.S. government treasury yields.

2.5 After my review of the Brattle Report, the Respondent's expert reports, and the replies by the Investors' experts and witnesses, I applied the following changes to the lost profits calculation in the FTI Report:

a) [redacted]

b) [redacted]

c) [redacted]

d) [redacted]

e) [redacted]

f)

g) I adjusted beta in my weighted average cost of capital from 1.29 to 1.19.

2.6 Individually, these changes had the following impact on damages:

Figure 2.1 Summary of changes to the lost profits calculation

(in US$)	Lost Profits (before)	Adjustment	Lost Profits (after)
[redacted]			
g. Beta	298,166,906	14,237,013	312,403,919
All Changes[3]	298,166,906	10,271,357	308,438,263

3 The effects of the individual changes do not add to the cumulative effect of all changes due to discounting.

2.7 Based on the scope of review, assumptions, and restrictions, and applying the changes discussed herein, I calculated the financial loss suffered by the Investors, including the pre-award interest, as at 31 December 2016 to be:

Figure 2.2 Summary of conclusion

(in US$)	Past Lost Profits	Future Lost Profits	Total
Lost Profits	24,840,337	283,597,926	308,438,263
Gross-up	12,084,488	137,966,559	150,051,047
Pre-award interest	120,425	-	120,425
Damages	37,045,250	421,564,485	458,609,734

3. General Valuation Issues

Quantifying damages as at a current date is the appropriate valuation approach

3.1 As I stated in the FTI Report, I understand that "the appropriate standard of compensation in this case is full reparation, meaning that investors should be fully compensated for losses that they have suffered due to the unlawful measures of the Respondent."[4]

3.2 In order to determine the quantum of losses suffered by the Investors, I was instructed that the Investors' position is that they would have constructed and operated the Whites Point project.[5] As a result, damages should compensate for:

a) Lost profits (both past and future);

b) Higher taxes levied on an award of damages (compared to profits received in the normal course of operations); and,

c) Pre-award interest.

3.3 Compensation for higher taxes and pre-award interest are discussed in detail in **Section 6** and **Section 7**, respectively.

3.4 Regarding my calculation of lost profits in the FTI Report, I quantified the Investors' lost profits arising from the Whites Point project as at a current date (i.e. 31 December 2016).[6] The Respondent has instructed its damages expert "that the relevant measure of loss would be the value of lost profits as of the breach date."[7] Brattle was also instructed "to determine the present value of the future profits of Whites Point as of the 22 October 2007 breach date excluding the effect of the breach using a DCF analysis."[8]

3.5 Under the full reparation standard of compensation, as Professor Irmgard Marboe states, "the time of the unlawful act itself or of the occurrence of damage is not important. It only represents the

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4 FTI Report, para 4.2.

5 FTI Report, para 4.3.

6 For purposes of consistency with the FTI Report, this report will continue to use 31 December 2016 as a proxy for the "current date".

7 Brattle Report, para 105.

8 Brattle Report, para 157.
As the breach date was 22 October 2007, assuming Canada's instructions, the appropriate valuation date should be 21 October 2007, the day immediately before the breach occurred. As I quantify damages as at a current date, this distinction does not impact my damages conclusion.

starting point for the valuation which must continue to include subsequent and consequential damage."[9]

3.6 Professor Marboe goes on to conclude that with respect to lost profits specifically, "[i]t does not matter that a 'reasonable businessman' in the past has foreseen certain profits. In order to calculate the amount of lost profits to be compensated in a damages award, a comparison has to be made between the profits that could have been earned with and without the breach. The valuation, therefore, has to be made as of the date of the award."[10]

3.7 This is the approach I adopted in the FTI Report. In contrast, a breach date analysis is not applicable in this case because the Investors are claiming lost profits under the full reparation standard. Furthermore, Counsel has instructed me that Respondent's breach is considered a continuing breach of the Treaty and that performing my lost profits analysis as at a current date is appropriate to meet the full reparation standard of compensation.

3.8 For the purposes of calculating lost profits, "[t]he choice of a valuation date as late as possible ensures that all information available until that date may and can be used in order to arrive as closely as possible at full reparation."[11] A current date analysis allows experts to incorporate actual market data available up to the effective date of the report rather than attempting to artificially create a proxy for the market outlook as of the breach date. My approach also avoids potential hindsight issues as all available information can be included in my analysis.

3.9 Setting aside Respondent's instruction, the Brattle Report does not provide an economic rationale as to why compensation to the Investors must be based on a valuation as at the breach date. Therefore, I maintain my position that it is reasonable to calculate lost profits as at a current date.

Respondent's theory on mitigation is not appropriate

3.10 In the Respondent's Damages Counter-Memorial, Canada introduces a theory that "mitigation was reasonably available to the [Investors] and [Bilcon] in the form of a judicial review in the Canadian courts."[12] Consequently, Mr. Chodorow was instructed, "the [Investors] could have mitigated the

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9 Marboe, Irmgard. Calculation of Compensation and Damages in International Investment Law, para 3.290.
10 Marboe, Irmgard. Calculation of Compensation and Damages in International Investment Law, para 3.297.
11 Marboe, Irmgard. Calculation of Compensation and Damages in International Investment Law, para 3.289.
12 Respondent's Damages Counter-Memorial, para 87.

effects of the breach through a judicial review to obtain a non-breaching [Joint Review Panel ("**JRP**")] report."[13]

3.11 Respondent's theory on mitigation, expanded upon and quantified in the Brattle Report, asserts that rather than eliminating the Investors' ability to profit from the Whites Point project, the Respondent's breaches of the Treaty have merely:[14]

a) "deferred the Project's ability to start commercial operations"; and,

b) "required additional procedural costs".

3.12 The Brattle Report argues that aside from these two discrete impacts, "[d]eferring the start of commercial operations while the [Investors] pursued mitigation would not have reduced the value of Whites Point as of the breach date because the deferral [redacted]

3.13 In response to the Respondent's assertion that the Investors could have sought remedies through a judicial review in the Canadian courts, the Investors' expert Dean Lorne Sossin opines in his reply report dated 3 August 2017 ("**Sossin Reply Report**"), "the process and remedies available through these domestic judicial recourses differ substantially from the NAFTA process and remedies."[16] He is also "aware of no doctrine that requires parties to exhaust domestic remedies before seeking redress for unfair treatment under Chapter 11 of NAFTA."[17]

3.14 Aside from the differences in available remedies, Dean Sossin finds the Canadian and Treaty proceedings are mutually exclusive, as pursuing monetary remedies through the Canadian courts would have precluded the Investors from pursuing concurrent Treaty proceedings.[18] Dean Sossin further states, had the Investors sought damages through the Canadian courts, the proceedings "would almost certainly have taken more than 3 years to complete…, thus rendering subsequent NAFTA proceedings time-barred."[19]

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13 Brattle Report, para 27.
14 Brattle Report, para 28.
15 Brattle Report, para 28.
16 Sossin Reply Report, para 10.
17 Sossin Reply Report, para 48.
18 Sossin Reply Report, para 57.
19 Sossin Reply Report, para 57.

3.15 If the Investors had pursued non-monetary remedies through a judicial review and had been successful, Dean Sossin considers that the likeliest remedy would have been for the Investors to return to "a process that has already been found to have accorded them unfair and inequitable treatment."[20] As such, Dean Sossin concludes, "it would be entirely unreasonable for the Investors to choose the uncertain path of judicial review instead of the recourse prescribed under the NAFTA."[21]

3.16 Additionally, the Investors' witness Mr. Paul Buxton notes in his reply witness statement dated 18 August 2017 that if the Investors had pursued a judicial review, "the new JRP environmental assessment process would actually have been underway by the end of 2013, at which point much of the data gathered for the first EIS would have been approximately eight to ten years old."[22] Mr. Buxton estimates that "about "10% to 20% of the information submitted in the first JRP environmental assessment process would have been useful in a second JRP process."[23] Mr. Buxton also notes, "I have no reason to believe that a second JRP process would be any less complicated or expensive than the first" and the process would have been completed in 2017 with "an outcome that cannot be predicted."[24]

3.17 Therefore, I have been instructed by Counsel that the Respondent's alleged mitigation to damages (i.e. a judicial review in the Canadian courts) was neither appropriate nor reasonable.

3.18 [redacted]

20 Sossin Reply Report, para 60.
21 Sossin Reply Report, para 60.
22 Buxton Reply Witness Statement, para 45.
23 Buxton Reply Witness Statement, para 47.
24 Buxton Reply Witness Statement, para 49.
25 Brattle Report, para 28.
26 Tamarack Reply Report, para 51.

[redacted]

Pre-feasibility and feasibility studies were not required to proceed with the Whites Point project

3.19 The Brattle Report makes repeated reference to feasibility and pre-feasibility studies and suggests that this is detrimental to the Investors' claim for lost profits.[28] Underlying Mr. Chodorow's citations is a misunderstanding of the purpose and history of feasibility and pre-feasibility studies that I will discuss in this section.

3.20 In the mining industry, feasibility studies and pre-feasibility studies are used to demonstrate the economic viability of a project to potential investors.[29] They typically present information about the proposed project in a detailed, scientific manner, including a general description of the project, a report quantifying the Mineral Resources, a detailed mine plan, and an economic model of the proposed mine that establishes the Mineral Reserves present at the site.

3.21 National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("**NI43-101**") is a set of rules established by the Canadian Securities Administrators, an umbrella organization comprised of Canada's provincial securities commissions, which regulates Canada's stock markets.[30] NI43-101 specifically governs the disclosures made by mining companies to the public about the quality and quantity of their Mineral Resources and Mineral Reserves. In Canada, NI43-101 regulates the content of feasibility studies and pre-feasibility studies that are published by public companies in order to attract investment.

3.22 NI43-101 was created in the mid-1990s following a scandal where Canadian mining company Bre-X Minerals Ltd. ("**Bre-X**") fraudulently reported that it had discovered a major gold deposit in Indonesia.[31] The news caused Bre-X's share price to increase significantly from 1995 through 1996.

27 Tamarack Reply Report, para 69.

28 For example, see Brattle Report, para 89.

29 Stantec. Hard Rock Miner's Handbook, page 54. (Source: http://www.stantec.com/content/dam/stantec/files/PDFAssets/2014/Hard%20Rock%20Miner's%20Handbook%20Edition%205_3.pdf)

30 NI43-101 standards available at http://web.cim.org/standards/documents/Block484_Doc111.pdf and http://www.osc.gov.on.ca/en/SecuritiesLaw_csa_20030124_43-302_faq-43-101.jsp#1.1.

31 Visual Capitalist. Bre-X scandal: A history timeline. (Source: http://www.mining.com/web/bre-x-scandal-a-history-timeline/)

Bre-X was able to deceive the public markets because, at the time, there were no disclosure rules specifically tailored to the mining sector.

3.23 Subsequently, the Canadian mining industry and securities regulators jointly created NI43-101 in order to mitigate the uncertainty caused by Bre-X. NI43-101 includes a number of reporting requirements that standardize and restrict disclosures made by mining companies in order to protect investors. Some key reporting standards included in NI43-101 are:[32]

a) Definition standards on Mineral Resources and Mineral Reserves;

b) Estimation of Mineral Resources and Mineral Reserves best practice guidelines;

c) Mineral exploration best practice guidelines;

d) Standards and guidelines for valuation of Mineral Properties;

e) Guidelines for the reporting of diamond exploration results; and,

f) Standards and requirements of a "Qualified Person".

3.24 As stated above, NI43-101 is primarily concerned with public disclosures made by mining companies seeking investment from the general public. However, in the case of the Whites Point project, a quarry owned and operated by Bilcon that would only seek limited bank financing, such disclosures were not necessary.

3.25 In my experience, unless required by regulation (i.e. NI43-101) feasibility studies are not pursued by private companies as the cost can be prohibitive, while the value provided by such studies is not apparent. Feasibility studies typically cost anywhere in the range of 0.5% to 1.5% of the estimated total project cost.[33]

3.26 [redacted]

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[32] Rawluk, Christopher. National Instrument 43-101: An Overview for Investors. (Source: https://www.geologyforinvestors.com/national-instrument-43-101-an-overview-for-investors/)

[33] Stantec. Hard Rock Miner's Handbook, page 73. (Source: http://www.stantec.com/content/dam/stantec/files/PDFAssets/2014/Hard%20Rock%20Miner's%20Handbook%20Edition%205_3.pdf)

3.27 [redacted]

3.28 Additionally, as Mr. John Lizak notes in his reply to the Brattle Report, "Brattle's conclusion is misleading and untenable because: (1) NI 43-101 was never applicable to the Bilcon venture, and (2) the analyses conducted by Bilcon, and its advisors, were comprehensive and consistent with the essential elements of a feasibility study."[37]

Brattle's instruction on potential permitting risks is not appropriate

3.29 Mr. Chodorow was instructed that the Whites Point project faced permitting risk, which included:

a) "even absent the breach, the Project still faced the risk of a negative JRP recommendation";[38] and,

b) "the Nova Scotia and Federal governments were not bound by the recommendation of the JRP. Therefore, even if the JRP reached a favorable conclusion, either the provincial or federal government could have refused to grant the necessary permits for a variety of events."[39]

3.30 The Respondent's Damages Counter-Memorial further elaborates on the permitting risk, which states that:

a) "the Whites Point JRP Report could have reasonably contained findings… that were simply not supportive of a recommendation to approve the project;"[40] and,

34 Clayton Reply Witness Statement, para 20.
35 Clayton Reply Witness Statement, para 20.
36 Cullen Reply Report, section 2.0.
37 Lizak Reply Report, page 26.
38 Brattle Report, para 159
39 Brattle Report, para 159.

b) "provincial and federal decision-makers could have exercised the wide discretion granted to them under provincial and federal law and rejected the project or refused to issue the requested permits."[41]

3.31 I have been instructed by Counsel that there is no permitting risk and have been provided with the reply expert reports of Mr. David Estrin dated 20 August 2017 ("**Estrin Reply Report**") and Dean Sossin to support this instruction. Mr. Estrin responds to the Respondent's assertion as follows:[42]

a) "the [Governor-in-Council] knew that the [White Point Quarry] JRP report did not provide a specific [severe adverse environmental effect] finding or analysis of matters other than [community core values] in respect of which the JRP had expressed concerns";

b) "the [Governor-in-Council] knew or would have known that if, for any reason, its decision to reject approval for the project based on [community core values] was found to be invalid or otherwise inappropriate, their legal pre-requisite for rejecting approval of the project would no longer exist;

c) "the [Governor-in-Council] had the opportunity and right to require the JRP to elaborate, explain or further consider the matters before it, including to ask the JRP to reach a conclusion as to whether [severe adverse environmental effect] was likely to result from other aspects of the project, but the [Governor-in-Council] did not choose to require any of these"; and,

d) "the [Governor-in-Council] chose to regard the JRP report as complete and in compliance with CEAA."

3.32 Regarding Respondent's experts, Mr. Estrin comments:

a) "In my professional opinion, it is not only unreasonable but indeed irrational to articulate arguments as to why [Whites Point Quarry] would have had doubtful approvability based on factors raised by [Ms. Lesley Griffiths and Dr. Tony Blouin] for Canada, when these same witnesses do not consider nor comment on the fact that such issues did not in fact affect the recommendation of the expert [Canadian Environmental Assessment] Agency to have Canada approve that [Black Point Quarry], nor did such issues affect the approval of the [Black Point

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40 Respondent's Damages Counter-Memorial, para 72.
41 Respondent's Damages Counter-Memorial, para 83.
42 Estrin Reply Report, para 22.

Quarry] by the Nova Scotia Environment Minister. In other words, the similar issues on which these witnesses base their prognostications that cast doubt upon the approval of the [Whites Point Quarry] did not in fact affect the approvability of the [Black Point Quarry];"[43] and,

b) "Neither Ms. Griffiths nor Dr. Blouin have identified any unique, distinguishing aspect or factor about the [Whites Point Quarry] that would place it in a different category than the typical quarries and mines that have consistently received [Environmental Assessment] approval in Nova Scotia."[44]

3.33 Dean Sossin makes similar observations regarding environmental permitting risk:

a) "[T]he Ministers did not appear to have a basis in the record for a finding of significant adverse environmental effects which could not be mitigated;"[45]

b) The federal and provincial Ministers did not have a residual discretion to reject the Whites Point project absent any evidence in the record of significant adverse environmental effects that could not be mitigated;[46] and,

c) "To conclude, it is my opinion in all the circumstances that the Ministers acting reasonably, were legally compelled to approve the Whites Point Quarry project."[47]

3.34 The Whites Point project also required industrial permits to allow for the construction and operation of the quarry. However, the Investors' experts Mr. Christopher Fudge of SNC-Lavalin Inc., Mr. Buxton, and Mr. Peter Oram of GHD opine that industrial permitting was not a concern:

a) "[T]here would be no reasonable basis to refuse the permits necessary for the construction of the Whites Point marine terminal and no reasonable prospect that the permits would not have been issued in the ordinary course";[48]

b) "[T]here could be no honest basis to deny the Whites Point Quarry any of its permits, licenses and authorizations" and "all of these permits, licenses and authorizations would have been

43 Estrin Reply Report, para 265.
44 Estrin Reply Report, para 321.
45 Sossin Reply Report, para 7.
46 Sossin Reply Report, para 8.
47 Sossin Reply Report, para 62.
48 Fudge Reply Report, page 2.

granted in the ordinary course to the proponent of any comparable quarry and to the Whites Point Quarry Project after environmental assessment approval";[49] and,

c) "If the [Whites Point Quarry] project received [Environmental Assessment] Approval, I have no doubt it would have been able to secure all the industrial permits necessary to operate the quarry," and "Several other analogous projects were permitted in a timely manner in Nova Scotia through this period…"[50]

3.35 In fact, Mr. Buxton includes a stipulation from the Respondent confirming that it had no examples where industrial permits were denied after a project received environmental assessment approval.[51] Therefore, Counsel has instructed me that the Investors did not face permitting risk absent the breaches.

49 Buxton Reply Witness Statement, para 6.
50 GHD Limited Report, page 4.
51 Buxton Reply Witness Statement, para 5.

4. Historical Transactions and Offers Related to the Whites Point project

4.1 The Brattle Report highlights four transactions or purchase offers that it refers to as "market indicators of the value of the Whites Point project."[52] The four transactions or purchase offers are:

a) [redacted]

b) Bilcon's 24 April 2002 formation of a partnership with Nova Stone named Global Quarry Products ("**GQP**") to develop the Whites Point project [redacted]

c) Bilcon's 1 April 2004 acquisition of Nova Stone's [redacted] of the GQP; and,

d) [redacted]

4.2 The value of the Whites Point project is not equivalent to the lost profits damages suffered by the Investors, as discussed below. However, I also address Brattle's usage of the four transactions or purchase offers in this section.

Lost profits versus value

4.3 Market indicators of the value of the Whites Point project referenced in the Brattle Report are not strictly relevant to and are not determinative of the Investors' damages case, which is an analysis of the lost profits that would have been received by the Investors absent the Respondent's breaches of the Treaty.

4.4 The Brattle Report purports to use these transactions or offers to test the reasonability of my lost profits calculation, but fails to acknowledge that they represent two different exercises. As discussed in the FTI Report, my lost profits analysis sought to "restore the Investors to the position that they would have been in but for the Respondent's breaches of the Treaty."[53] Under this counterfactual scenario, the Investors would have owned and operated the Whites Point project for over 50 years inclusive of the construction phase and vertically integrated the quarry into the Clayton Group of Companies. Effectively, this is a full reparation standard of compensation.

52 Brattle Report, Section IV.

53 FTI Report, para 4.2.

4.5 On the other hand, the value of an asset, such as the Whites Point project, is typically calculated in cases where the subject asset has been expropriated and the requested remedy is its "value" at a specific point in time, be it market value, fair market value ("**FMV**"), or some other definition. FMV is a commonly used definition of value equal to, "the price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms-length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts."[54]

4.6 Professor Marboe explains that full reparation and FMV are distinct and separate standards of compensation and cites the Tribunal in *Amco Asia v. Indonesia* which stated "in a lawful taking, Amco would have been entitled to the fair market value of the contract at the moment of dispossession… But if Amco is to be placed as if the contract had remained in effect, then subsequent known factors bearing on that performance are to be reflected in the valuation technique."[55]

4.7 Full reparations are ultimately concerned with the perspective of the Investors rather than the views of the general market. Absent the Respondent's breaches of the Treaty, the Investors intended to develop and make use of the Whites Point project. Changing the standard of compensation from full reparations to an undefined notion of "value" assumes that the Investors intended to put the Whites Point project up for sale and would, absent the Respondent's breaches of the Treaty, potentially accept a price different than the present value of the profits they could receive by operating the project themselves.

4.8 As I discuss in the following sections, the transactions referred to in the Brattle Report do not represent Bilcon's expected lost profits, but rather the prices that Nova Stone was willing to accept first to entice Bilcon into a partnership and later to exit that arrangement. [redacted]

54 CICBV. Practice Bulletin No. 2: International Glossary of Business Valuation Terms, page 4. (Source: https://cicbv.ca/wp-content/uploads/2010/10/Practice-Bulletin-No-2-E-2001.pdf)
The CICBV notes that "In Canada, the term "price" should be replaced with the term "highest price"."

55 Marboe, Irmgard. Calculation of Compensation and Damages in International Investment Law, para 3.292.

The transactions and purchase offers are not determinative of Investors' lost profits

4.9 Value is a time specific concept that is a function of the conditions prevailing, facts known, and expectations held at a given point in time. As the reference date changes, for example by moving from 22 October 2007 to 31 December 2016, the value can shift dramatically on account of new information becoming public knowledge.

4.10 By the current date in the FTI Report, the various transactions and purchase offers were between [redacted] years stale. Mr. Chodorow recognizes that they "may not be comparable due to shifts in market conditions over time" and attempts to compensate for this deficiency by indexing the value of these transactions and purchase offers to Martin Marietta Materials, Inc. and Vulcan Materials Company's total equity returns over time based on a market-value weighted index.[56]

4.11 Brattle's approach to indexing deal values to equity returns of unrelated public companies is not supported by any evidence. Mr. Chodorow merely "assumes that the value implied by the market indicators would have increased or decreased in tandem with the equity returns of Martin Marietta and Vulcan Materials", but offers no additional analysis.[57] These metrics are separate and distinct from the developments at the Whites Point project over time.

4.12 I discuss the context of the individual deals in the following sections, but it seems that applying Mr. Chodorow's assumption leads to unreasonable results. For example, [redacted]

4.13 There is no discussion in the Brattle Report about why this, or any of the other results of indexing, are reasonable other than to say that "[if] they had instead invested these funds in the index of Martin Marietta and Vulcan Materials stock, the investment would have grown to approximately [redacted][59] This statement does nothing to prove

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56 Brattle Report, para 94.
Mr. Chodorow asserts that Martin Marietta Materials, Inc. and Vulcan Materials Company are the most relevant comparable companies and excludes the other companies referred to in the FTI Report (Summit Materials, Inc., Eagle Materials Inc., United States Lime & Minerals, and U.S. Concrete, Inc.) because "these other companies have less of an aggregates focus".

57 Brattle Report, para 94.

58 Brattle Report, Table F.3.

59 Brattle Report, para 95.

that Mr. Chodorow's analysis is reasonable and only serves to highlight the extent of the damage done to the Investors by the Respondent's actions.

4.14 [redacted]

4.15

4.16

Bilcon April 2002 transaction

4.17 [redacted] on 24 April 2002, Bilcon and Nova Stone formed GQP [redacted][63] Mr. Chodorow summarizes the contributions made by the parties and estimates that Bilcon's total contribution would have been approximately [redacted][64]

4.18 This analysis is flawed. [redacted]

4.19 This transaction was concluded much earlier than either Mr. Chodorow's breach date or my current date and contemplated a version of the Whites Point project that was materially different than its status as at either of our respective dates. For example, [redacted]

60 Brattle Report, para 65.
61 Buxton Reply Witness Statement, para 84
62 Brattle Report, para 67-68.
63 Brattle Report, para 69.
64 Brattle Report, para 75.

[redacted]

4.20 Mr. Chodorow also does not consider the unique circumstances and qualities of the buyers and sellers. [redacted] Therefore, the 24 April 2002 transaction is not determinative of the damages claimed by the Investors in this arbitration.

Bilcon April 2004 transaction

4.21 The third indicator used in the Brattle Report is the purchase of Nova Stone's [redacted] interest in GQP [redacted]

4.22 Mr. Buxton provides additional context in his reply witness statement stating that the start of the joint review panel process increased the cost of obtaining environmental approval "very significantly" while delaying industrial approval "likely for some years".[68] [redacted]

4.23 [redacted]

65 Brattle Report, para 71.
66 Brattle Report, para 78.
67 Brattle Report, para 79.
68 Buxton Reply Witness Statement, para 90.
69 Buxton Reply Witness Statement, para 91.
70 Buxton Reply Witness Statement, para 92.

[redacted]

4.24 [redacted] the 1 April 2004 transaction is not determinative of the damages claimed by the Investors in this arbitration.

4.25 [redacted]

4.26

4.27

71 Clayton Reply Witness Statement, para 7.
72 Brattle Report, para 80.
73 Clayton Reply Witness Statement, para 9, 11.
74 Clayton Reply Witness Statement, para 12.
75 Brattle Report, para 82.
76 Brattle Report, para 82.

4.28 [redacted]

77 Clayton Reply Witness Statement, para 13.

78 Clayton Reply Witness Statement, para 11.

5. Calculation of Lost Profits Arising from the Whites Point project

Overview

5.1 This section discusses comments made by Mr. Chodorow in the Brattle Report regarding the discretionary cash flows analysis that I used in the FTI Report to estimate both past lost profits and future lost profits.

5.2 As a byproduct of his breach date analysis, Mr. Chodorow views analyses based on information after 22 October 2007 as incorporating hindsight bias. In the Brattle Report, Mr. Chodorow refers extensively to the Investor's environmental assessment of the Whites Point project dated 31 March 2006 ("**EIS**").[79] Mr. Chodorow believes that deviations from the EIS are unreasonable even though its contents are nearly a decade old by current date of my report (i.e. 31 December 2016).

5.3 As noted by Mr. Buxton in his reply witness statement, "an EIS was drafted at a very early stage of a project, was intended to be conceptual, and was naturally focused on the environmental effects of a project and mitigation measures, not the specifics of the project's business model or design."[80] Additionally, the EIS and business plans were "always subject to revision in response to changing conditions and circumstances" and would be revised and refined "as detailed planning and design specifications were developed and financialized during and following the industrial permitting phase of the project."[81] As such, I disagree with Mr. Chodorow's assertion that damages should be based on the EIS instead of more recent and contemporaneous information available as at the current date.

5.4 Mr. Chodorow accepts and adopts my assumptions with regards to the following inputs:

a) Product mix for revenues;[82]

b) Selling, general, and administrative costs;[83]

c) Reclamation and decommissioning costs;[84]

d) Canadian income taxes;[85] and,

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79 Brattle Report, para 114-122.
80 Buxton Reply Witness Statement, para 20.
81 Buxton Reply Witness Statement, para 23.
82 Brattle Report, para 165.
83 Brattle Report, Schedule 1, footnote 11.
84 Brattle Report, para 174.

e) Change in working capital.[86]

5.5 Mr. Chodorow also does not include any amounts related to borrowing costs in his discretionary cash flows analysis as a result of his earlier breach date-based analysis (discussed in **Section 3**).[87] Therefore, these areas are not addressed further in this section.

Period of loss

5.6 I considered in the FTI Report that the Whites Point project comprises three phases: a construction phase from 2008 to 2010; a production phase from 2011 to 2060; and, a decommissioning phase in 2061.[88] I referred to this 54-year period collectively as the period of loss.

5.7 Mr. Chodorow contends, "[Bilcon] characterized the Project as having a 50-year life, which included the time for construction, operations and decommissioning" in the EIS,[89] and the 54-year term of the Whites Point project is not consistent with the EIS. Mr. Chodorow instead adopts the 50-year term in his discounted cash flow analysis.

5.8 I disagree with Mr. Chodorow's methodology of adopting the project term of 50-years to be consistent with the EIS. I calculated the Investors' lost profits as at the current date, incorporating all contemporaneous evidence available as at the current date. The EIS was nearly a decade old, and I had evidence from the Investors' experts and management that was more recent and representative of progress that the Investors made on the Whites Point project after the EIS.

5.9 Additionally, as I explained previously, the EIS "was drafted at a very early stage of a project, was intended to be conceptual, and was naturally focused on the environmental effects of a project and mitigation measures, not the specifics of the project's business model or design."[90] The Investors' expert Mr. Peter Oram also replies, "proponents are not required to adhere strictly to the description of an undertaking in EA documents"[91] and whether the Whites Point project operates for 50 years or 48.5 years would not be relevant to regulators.[92]

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85 Brattle Report, Schedule 11.
86 Brattle Report, Schedule 12.
87 Brattle Report, Schedule 10.
88 FTI Report, para 5.4 to 5.6.
89 Brattle Report, para 115 and 164.
90 Buxton Reply Witness Statement, para 20.
91 Oram Reply Report, page 1.
92 Oram Reply Report, page 3.

5.10 Based on these considerations, I maintain my assumption that the Whites Point project would have had a 54-year term.

Production level

5.11 The Investors expected to produce up to [redacted] of marketable aggregate annually from the Whites Point project over [redacted][93] Based on this production level, I calculated that the Investors would have produced [redacted] tons of marketable aggregate from the Whites Point quarry.[94]

5.12 Mr. Chodorow argues that this production level is inconsistent with the EIS, as "BNS stated that the annual production would remain flat at approximately 2.0 million tons-per-year during the JRP process."[95] [redacted]

5.13 As I explained above, I disagree with Mr. Chodorow's methodology of relying on the EIS over information that is more recent and representative of the Investors' progress on the Whites Point project. [redacted][98]

5.14 [redacted]

5.15 Additionally, Mr. Buxton notes that the EIS contained Mr. Lizak's December 2002 summary report, which concluded, "the Whites Point site contained in excess of 200 million tons of in place stone."[101] [redacted]

93 FTI Report, para 5.8.
94 FTI Report, para 5.9.
95 Brattle Report, para 117.
96 Brattle Report, para 117.
97 Brattle Report, para 165.
98 Wall Witness Statement, para 55 and Wall Reply Witness Statement, para 17.
99 Buxton Reply Witness Statement, para 31.
100 Buxton Reply Witness Statement, para 30.
101 Buxton Reply Witness Statement, para 35.

5.16 As such, I maintain my assumption that the Investors would have produced up to [redacted] of marketable aggregate annually.

Revenues

Quantity

5.17 In response to Bilcon's expected sales volume [redacted],[102] Mr. Chodorow states, [redacted]

5.18 [redacted]

5.19 [redacted][105] As such, I maintain my assumption that Bilcon would have achieved the sales [redacted]

Price

5.20 In the FTI Report, I relied on the evidence of Mr. Dooley for the aggregate prices from 2011 to 2015.[106] Mr. Chodorow asserts that the prices are overstated[107] because the prices "do not account for the downward impact that an increase in available supplies from Canada would have on prices."[108] He also cites competition and purported adverse qualities of the Whites Point aggregate as reasons why the prices are overstated.[109]

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102 FTI Report, para 5.12.
103 Brattle Report, para 120.
104 Brattle Report, para 165.
105 Brattle Report, para 165.
106 FTI Report, para 5.19.
107 Brattle Report, para 131.
108 Brattle Report, para 133.
109 Brattle Report, para 134 to 137.

5.21 First, Mr. Chodorow is not an expert on aggregate prices, aggregate markets, or aggregates.

5.22 Second, Mr. Chodorow attempts to analyze the impact that the Whites Point project's supply would have had on price based on "basic economic logic" of supply and demand.[110] In support, he cites "the actual imports of crushed stone from Canada to the U.S. Atlantic Coast,"[111] without explaining its relevance to the Whites Point quarry's target markets.

5.23 Mr. Chodorow also remarks that the Respondent's market expert, SC Market Analytics ("**SCMA**"), concluded the same.[112] [redacted] The Investors' expert Mr. Michael Wick also comments in his reply report dated 16 August 2017 ("**John T. Boyd Company Reply Report**"), "the market would easily absorb the additional volume from Whites Point with no price effect on the entire NYC market."[115] As such, I believe Mr. Chodorow oversimplifies the aggregate market and the associated prices without contemporaneous evidence or analysis.

5.24 I have read Mr. Dooley, Mr. Wall, Mr. Fougere, Mr. Lizak, and Mr. Wick's replies to the SCMA's report dated 9 June 2017 ("**SCMA Report**") and the Brattle Report regarding the aggregate market and price. Mr. Chodorow relies on the SCMA's price estimates, to which Mr. Lizak concludes, "SC incorrectly uses state-wide stone price data as a proxy for local New York City (NYC) prices in its hypothetical model. SC also employs statewide price data for products unrelated to construction aggregate. A consequence of this flawed methodology is that SC's model distorts and understates the price of crushed stone, and SC's estimates of NYC aggregate prices are unreliable."[116]

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110 Brattle Report, para 133.
111 Brattle Report, para 132.
112 Brattle Report, para 136.
113 Dooley Reply Witness Statement, para 11.
114 Dooley Reply Witness Statement, para 6.
115 John T. Boyd Company Reply Report, para 39.
116 Lizak Reply Report, page 15.

5.25 Additionally, on SCMA's prediction that the aggregate price would decline by 10%, 15%, and then, 20% over the purported 50-year project term, Mr. Wick opines the prices are "drawn from the key input assumptions that reflect a decreasing market demand and increasing supply from additional competition", both of which are "completely false when verifiable and independent market data are reviewed and the enormous supply barriers to enter NYC are considered."[117]

5.26 [redacted]

5.27 Based on the evidence of Mr. Dooley, Mr. Wall, Mr. Fougere, Mr. Lizak, Mr. Wick, and Mr. Cullen, I understand that the SCMA's price estimates are not a reasonable basis for determining the Investors' lost profits. As such, I maintain my assumption that the Investors would have realized the prices estimated by Mr. Dooley for 2011 through 2015 and the 2015 price adjusted for inflation from 2016 through 2060.

Freight

5.28 In the FTI Report, I relied on the evidence of [redacted] to set the freight rates [redacted]

5.29 [redacted]

5.30 [redacted]

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117 John T. Boyd Company Reply Report, para 5.
118 Cullen Reply Report, page 5, 6.
119 FTI Report, para 5.23.
120 Brattle Report, para 121.
121 Brattle Report, para 121.

5.31 [redacted]

5.32 Additionally, as I already explained, the EIS was intended to be a conceptual document drafted at a very early stage of a project.

5.33 [redacted]

5.34 [redacted]

5.35 [redacted]

5.36 [redacted]

122 Buxton Reply Witness Statement, para 37.
123 Tamarack Reply Report, para 20.
124 Brattle Report, para 146.
125 Tamarack Reply Report, para 3.
126 Tamarack Reply Report, para 13.
127 Marsoft Report, para 34.

5.37 [redacted]

5.38 [redacted]

[redacted]

5.39 [redacted]

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128 Tamarack Report, page 10.

129 Tamarack Report, page 11.

5.40 [redacted]

5.41 [redacted]

5.42 [redacted]

5.43 [redacted]

5.44 [redacted]

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130 Adjustments to freight rates in Schedule 3.

131 Marsoft Report, Attachment 1. [redacted]

132 Marsoft Report, para 90.

133 Tamarack Reply Report, para 46.

134 Tamarack Reply Report, para 68.

135 Tamarack Reply Report, para 3.

136 Marsoft Report, para 37.

137 Tamarack Reply Report, para 43.

138 Brattle Report, para 171.

[redacted]

Operating costs

5.45 The Brattle Report asserts that I have understated or excluded certain costs, primarily based on the evidence of the SCMA Report. I provide my response to Mr. Chodorow's comments as well as criticisms by SCMA.

5.46 [redacted]

5.47

5.48

5.49

139 See Schedule 3.
140 SCMA Report, para 94.
141 SCMA Report, para 96.
142 Bickford Reply Witness Statement, para 36.
143 Bickford Reply Witness Statement, para 31.
144 Bickford Reply Witness Statement, para 22.

[redacted]

5.50 [redacted] I maintain my assumption that the Whites Point project would have incurred personnel, equipment and maintenance costs in line with [redacted]

SCMA's EBITDA comparison is not relevant

5.51 At the end of the SCMA Report, SCMA attempted to make a comparison between the earnings before interest, tax, depreciation, and amortization ("**EBITDA**") of the Whites Point project and the full corporate operations of Martin Marietta Materials, Inc. and Vulcan Materials Company, the latter of which SCMA refers to as the "gold standard 'pure play' aggregates business".[146] In this appendix, SCMA merely notes the EBITDA margins of the two companies, briefly discusses a methodology for calculating the Whites Point project's EBITDA from my discounted cash flow model, and sets the two numbers beside each other without providing analysis or supporting documentation.

5.52 Focusing on Martin Marietta Materials, Inc., the company may have a number of accounting entries and non-quarry expenses, such as acquisition-related expenses incurred as "part of [Martin Marietta Materials, Inc.'s] strategic growth plan", that may negatively impact their EBITDA ratio, which are simply irrelevant to the Whites Point project.[147] Additionally, SCMA's Paragraph 5 appears to be out of place as it discusses the need for an adjustment to the methodology for calculating depreciation, when, by definition, EBITDA (i.e. earnings <u>before</u> interest, tax, depreciation, and amortization) excludes the impact of depreciation.

5.53 A simpler analysis may be to compare the gross profit margins[148] of the Whites Point project with that of the two companies referred to in the SMCA Report, which focuses purely on the revenues and direct costs of generating that revenue. In that case, the Whites Point project's greater than [redacted] are attributable to the revenues and costs provided by the experts referred to throughout the FTI Report, supported by their reply reports discussed above, and are reasonable on

145 Wall Reply Witness Statement, para 21-22.
146 SCMA Report, Appendix I.
147 Martin Marietta Materials 2016 Annual Report, page 141.
See also **Paragraph 5.53** for additional examples of operational differences between the companies that may reduce Martin Marietta Minerals, Inc.'s EBITDA.
148 Gross profit margin = gross profit / net revenues.

that basis.[149] Martin Marietta Materials, Inc. has lower margins on a consolidated basis for a number of reasons including selling different products into different markets,[150] overhang from less modern operations in its large quarry portfolio,[151] or other costs. However, due to the limited discussion and analysis provided in the SCMA Report, I am unable to comment further on the statements made in Paragraph 6 and can only conclude that the comparison SCMA attempts to make is not meaningful.

5.54 The Investors' expert, Mr. George S. Seamen Jr of GS Management Inc., also provides insight into the profitability of public and private aggregate producers in his report dated 10 August 2017 ("**Seamen Report**"). As Mr. Seamen notes, large public companies and private companies have differing objectives and operational characteristics that contribute to differences in profitability.[152] Mr. Seamen concludes, "while the ROI reflected in the published earnings of Martin Marietta may be in the range of 30%, it is not unusual in my experience for the ROI of individual well-run privately-owned quarries, especially modern, well designed, automated, and efficient quarries, to be in the 60-75% range."[153]

Adjustments to other operating costs

5.55 [redacted]

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149 FTI Report, Schedule 1.

150 Martin Marietta Materials 2016 Annual Report, page 136-138.
The average aggregates selling prices of Martin Marietta Materials, Inc. during 2014, 2015, and 2016 was US$11.12, US$12.00, and US$12.88 per ton, respectively. Its gross margins were also negatively impacted by lower than average margins in the Southeast and West Groups of 18.8% and 18.7%, respectively. In Schedule 1 of the FTI Report, The Whites Point project was expected to generate net revenues of [redacted]

151 Martin Marietta Materials 2016 Annual Report, page 45, 103.
As of 2016, Martin Marietta Materials, Inc. had 190 actively producing quarries, 188 of which were located in the United States. The majority of its operations transport aggregates by truck and rail, with only the Southeast Group (covering the Alabama, Florida, Georgia, Tennessee, Nova Scotia, and the Bahamas) potentially utilizing water routes. The Southeast Group consists of 23 of the 190 total quarries in the Martin Marietta Materials, Inc. portfolio. I understand that the cost profile of quarries that make use of water transport are different from those that use truck and rail.

152 Seamen Report, page 1.

153 Seamen Report, page 4.

154 Brattle Report, para 151.

155 Buxton Reply Witness Statement, para 52 to 57.

5.56 [redacted]

Capital expenditures

5.57 [redacted]

5.58 The option exercise was included in my capital expenditures schedule in Schedule 5 of the FTI Report, but the amount was not carried through to my damages schedule (Schedule 1 of the FTI Report). [redacted]

Adjustment of CR-1 crusher price

5.59 In the FTI Report, I relied on the expert report of Mr. Michael Washer of LB&W Engineering, Inc. dated 8 December 2016 for capital expenditure costs related to the processing plant, infrastructure, and mobile equipment.[158]

5.60 [redacted]

5.61 [redacted]

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156 Buxton Reply Witness Statement, para 59 to 62.
157 FTI Report, para 5.27.
158 FTI Report, para 5.37.
159 Letter from Counsel to Tribunal dated 10 March 2017, page C 1342-017.
160 Brattle Report, Schedule 5.
161 See Schedule 5.

[redacted]

5.62 [redacted]

5.63 [redacted]

5.64 [redacted]

5.65 [redacted]

5.66 Accordingly, I do not adjust the Whites Point project's capital expenditures.

Past lost profits

5.67 Past lost profits equal the discretionary cash flows from 2008 to the current date (31 December 2016).

5.68 Taking into account the adjustments made in this report, I calculated the past lost profits suffered by the Investors to be US$24,840,337 from US$27,015,331 in the FTI Report.

162 SCMA Report, para 97.
163 SCMA Report, para 97.
164 Wall Reply Witness Statement, para 38.
165 Washer Reply Witness Statement, para 11.
166 Washer Reply Witness Statement, para 10.
167 Washer Reply Witness Statement, para 5.
168 Brattle Report, para 173.

Future lost profits

5.69 Future lost profits represent future discretionary cash flows from the Whites Point project.

5.70 I presented my discount rate analysis in Appendix 4 of the FTI Report and concluded that the appropriate discount rate as at 31 December 2016 was 5.78%.[169]

5.71 Mr. Chodorow alleges that I estimated my discount rate incorrectly with respect to four inputs:[170]

a) Cost of borrowing;

b) Beta;

c) Inflation adjustment formula; and,

d) Inflation rate forecast.

5.72 I address these comments in detail in **Appendix 2**, but note that the issues raised by Mr. Chodorow are areas where we hold differences of opinion in terms of approach, but are not "methodological flaws". Furthermore, if the Tribunal decides that the methodology proposed by Mr. Chodorow is more appropriate, my discount rate as of 31 December 2016 drops from 5.78% to 5.10%.[171] However, the cost of borrowing and inflation-related adjustments are differences in opinion; accounting for only the adjustment to beta, my discount rate would be 5.41%.

5.73 Taking into account the adjustments made in this report, I calculated the present value of the future lost profits to be US$283,597,926 from US$271,151,575 in the FTI Report.

Summary of adjustments

5.74 I apply the following adjustments to the lost profits calculation:

a) [redacted]

b) [redacted]

c) [redacted]

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169 FTI Report, para A4.44.

170 Brattle Report, para 123-127.

171 See **Paragraph A2.18**.

d) [redacted]

e)

f)

g) I adjust beta in my weighted average cost of capital from 1.29 to 1.19.

5.75 The individual and cumulative impact of these adjustments is summarized in the table below:

(in US$)	Lost Profits (before)	Adjustment	Lost Profits (after)
[redacted]			
g. Beta	298,166,906	14,237,013	312,403,919
All Changes[172]	298,166,906	10,271,357	308,438,263

172 The effects of the individual changes do not add to the cumulative effects of all changes due to discounting.

6. Taxation on Repatriated Discretionary Cash Flows and on any Award of Damages

Overview of the FTI Report

6.1 In Section 6 of the FTI Report, I discussed the need for a gross-up of my conclusion to offset the impact of double taxation on the potential damages award. From the evidence of Mr. Joe Forestieri, I noted that the Investors' effective tax rate on any award of damages would be approximately [redacted] compared to its effective rate for profits of [redacted].[173] The gross-up amount can be estimated based on the effective tax rates:

Cash flows to the Investors from quarry operations = Cash flows to the Investors from an award

Cash Flow before taxes x (1 – [redacted]) = Cash Flow before taxes x Gross Up x (1 – [redacted])

Gross up = 148.65%

6.2 As such, I increased the lost profits calculated by a factor of 48.65%. This increase in damages ensures that when the Investors receive any award and remit the United States taxes, they would be left with cash equivalent to having received distributions from a quarry operation.

The Brattle Report and the Respondent's Damages Counter-Memorial

6.3 The Brattle Report does not directly address the issue of double taxation and merely states, "I have been instructed that the application of a gross-up in this case is not appropriate and hence have not included it in my analysis."[174] The Respondent, however, elaborates on this instruction in the Respondent's Damages Counter-Memorial.[175]

6.4 Notably, the Respondent's Damages Counter-Memorial states, [redacted][176] I am instructed that Respondent's interpretation above is incorrect. It also is not consistent with the damages calculations included in the FTI Report, which assumes that [redacted][177]

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173 FTI Report, para 6.3, 6.5.
174 Brattle Report, para 213.
175 Respondent's Damages Counter-Memorial, para 156-160.
176 Respondent's Damages Counter-Memorial, para 157.
177 FTI Report, para 6.4.

The Shay Report and the Colborne Report

6.5 The Investors retained Mr. Stephen Shay and Mr. Michael Colborne to opine on the taxation of repatriated operating profits and an award of damages. Mr. Shay, in his expert report dated 19 August 2017 ("**Shay Report**"), determines:

a) "how U.S. taxes would have applied to Operating Income earned by Bilcon Nova Scotia to allow the Tribunal to determine the amount of cash that the Investors would have received, absent the Respondent's breaches, after all U.S. and Canadian taxes";[178] and,

b) "how U.S. taxes would apply to the payment by the Respondent of damages to the Investors."[179]

6.6 Mr. Shay opines that upon the receipt of damages, the Investors cannot claim deductions for depreciation or depletion, or a foreign tax credit for Canadian income taxes (since the Investors incur Canadian taxes only on a notional basis). However, these deductions and foreign tax credit would have been available to the Investors upon the receipt of operating income from the Whites Point project.[180] Such differences "cause the overall effective rate of tax on a damages payment to be higher than the overall effective tax rate on Operating Income."[181]

6.7 Mr. Shay concludes, "the Total Lost Profits Amount would have to be adjusted to result in an after-tax damages amount that is equivalent to what would have been received had the Investors been allowed to earn Operating Income from conducting the Whites Point project."[182] Mr. Shay opines that "a gross up of the Total Lost Profits Amount of 146% would be appropriate and reasonable,"[183] and "my gross-up ratio of 146% is consistent with Mr. Rosen's gross up of 148%."[184]

178 Shay Report, para 1.8.4.
179 Shay Report, para 1.8.5.
180 Shay Report, para 6.4.1.
181 Shay Report, para 6.4.2.
182 Shay Report, para 7.1.
183 Shay Report, para 7.2.
184 Shay Report, para 6.7.2.

6.8 The Shay Report reaffirms the gross-up factor of 48.65%.[185] Subject to the adjustments made to my lost profits calculation as described in this report, my adjusted gross-up calculation is as follows:

Figure 6.1 Adjusted gross-up of lost profits

(in US$)	Past Lost Profits	Future Lost Profits	Total
Lost Profits	24,840,337	283,597,926	308,438,263
Gross-up			
Percentage	48.65%	48.65%	
Amount	12,084,488	137,966,559	150,051,047
Lost Profits, after gross-up	36,924,825	421,564,485	458,489,309

185 I note that Mr. Shay determines the appropriate gross-up to be 146% based on my analysis of the lost profits in the FTI Report. While my approach to calculating the lost profits remains unchanged from the FTI Report, I made certain adjustments to the lost profits calculation in this report and assumed that Mr. Shay's conclusion still applies. I reserve the right to reconsider any opinion given in this report in the light of additional information that may become available to me in the future.

7. Pre-award Interest

7.1 In the FTI Report, I calculated pre-award interest on the Investors' lost profits from the Whites Point project by applying a United States' 1-year government treasury yield on a compound basis, which reflects the economics of the Investors' ability to re-invest the principal and interest.[186]

7.2 Although the Respondent disagrees that pre-award interest is applicable in this case, Mr. Chodorow agrees that the rate and use of compounding in this case are economically reasonable.[187]

7.3 In the FTI Report, I calculated lost profits from the point where the Investors would have actually started to earn a net profit (i.e. [redacted]).[188] In the FTI Report, I calculated pre-award interest to 31 December 2016 of US$129,696.

7.4 Table 5 of the Brattle Report presents a different methodology for calculating pre-award interest that starts prior to the point where the Investors would have actually earned a profit.[189] As a result of calculating pre-award interest on the capital expenditure outflows from [redacted], Mr. Chodorow concludes that pre-award interest should be negative US$358,972 (i.e. a net benefit to the Investors that should be used to offset damages). Mr. Chodorow attempts to justify this "strange outcome" by stating that the Investors "avoided large project-related cash outflows from [redacted]", indirectly benefitting from the Respondent's breaches of the Treaty.[190]

7.5 As stated throughout the FTI Report, the damages claimed by the Investors are the lost profits from the Whites Point project resulting from the Respondent's breaches of the Treaty. Under the Investors' claim, prior to [redacted] no lost profits were generated. It is unreasonable to calculate pre-award interest for periods where no actual damages are being claimed. Therefore, I believe that the methodology applied in the FTI Report for calculating pre-award interest is reasonable.

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186 FTI Report, para 7.4-7.5.
187 Brattle Report, para 202, 204, 206.
188 FTI Report, Schedule 13.
189 Brattle Report, Table 5.
190 Brattle Report, para 211.

8. Damages Conclusion

8.1 Based on the scope of review, assumptions and restrictions noted herein, I calculated the quantum of damages suffered by the Investors, including pre-award interest, to be as follows:

Figure 8.1 Summary of conclusion

(in US$)	Past Lost Profits	Future Lost Profits	Total
Lost Profits	24,840,337	283,597,926	308,438,263
Gross-up	12,084,488	137,966,559	150,051,047
Pre-award interest	120,425	-	120,425
Damages	37,045,250	421,564,485	458,609,734

8.2 For illustrative purposes, I calculated sensitivity of the overall damages conclusion to changes in the discount rate, WACC.

Figure 8.2 Sensitivity analysis

Discount rate	Future Lost Profits	Damages
2.41%	460,643,484	721,785,564
3.41%	386,086,718	610,957,938
4.41%	328,578,728	525,473,089
5.41%	283,597,926	458,609,734
6.41%	247,931,597	405,592,219
7.41%	219,273,791	362,992,777
8.41%	195,952,342	328,325,758

9. Assumptions

9.1 In addition to the assumptions in Section 9 of the FTI Report, I have assumed the following:

a) The expert report of Mr. Stephen Shay presents fairly, in all material respects, the differences between taxation of an award of damages and taxation of operating income from the Whites Point project;

b) The expert report of Mr. Michael Colborne presents fairly, in all material respects, certain Canadian tax implications under the Income Tax Act (Canada) of the damages award payment;

c) The expert report of Mr. George Seamen presents fairly, in all material respects, the difference in profitability of public and private aggregate companies;

d) The reply expert reports of Mr. David Estrin and Dean Lorne Sossin analyze fairly, in all material respects, the Respondent's theory on mitigation and the purported permitting risks in the absence of the Treaty breaches.

e) The reply witness statement of Mr. Paul Buxton presents fairly, in all material respects, the management costs and property taxes that would have been incurred from 2008 to 2010 in the absence of the breaches;

f) The reply expert reports of Mr. Wayne Morrison, Mr. Michael Cullen, Mr. Peter Oram, Mr. George Bickford, Mr. Michael Washer, Mr. Christopher Fudge, Mr. Bill Collins, Mr. Wick, and Mr. Lizak are complete and reasonable; and,

g) The reply witness statements of Mr. William Richard Clayton, Mr. Joe Forestieri, Mr. Tom Dooley, Mr. John Wall, Mr. Paul Buxton and Mr. Dan Fougere are complete and reasonable.

9.2 I reserve the right, but am under no obligation, to re-examine all expert reports and calculations referred to in my opinion, and if I consider necessary, to revise my opinion in the light of any new facts or decisions that become known to me subsequent to the date of this report.

10. Expert Declaration

10.1 I understand that my duty, including in providing written reports and giving evidence, is to help the Tribunal and that this duty overrides any obligation to the party who has engaged me. I confirm that I have complied with this duty.

10.2 I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my knowledge, I confirm them to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

10.3 I have endeavored to include in my report those matters, which I have knowledge of or of which I have been made aware, that might adversely affect the validity of my opinion.

10.4 I have indicated all the sources of information that I have used.

10.5 I have not without forming an independent view included or excluded anything which has been suggested to me by others.

10.6 I will notify those instructing me immediately and confirm in writing if for any reason my existing report requires any correction or confirmation.

Howard Rosen
Senior Managing Director
23 August 2017

Appendix 1 Scope of Review

Exhibit Reference	Title
FTI 020	Marboe, Irmgard. Calculation of Compensation and Damages in International Investment Law (Excerpt)
FTI 021	Stantec. Hard Rock Miner's Handbook
FTI 022	NI 43-101 Standards
FTI 023	Visual Capitalist. Bre-X scandal A history timeline
FTI 024	Rawluk, Christopher. National Instrument 43-101 An Overview for Investors
FTI 025	CICBV. Practice Bulletin No. 2 International Glossary of Business Valuation Terms
FTI 026	Martin Marietta Materials 2016 Annual Report
FTI 027	U.S. Concrete 2010 Annual Report
FTI 028	Federal Reserve Bank of St. Louis, Moody's Seasoned Baa Corporate Bond Yield
FTI 029	Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters Q4 2016

Appendix 2 Discount Rate

Overview

A2.1 I presented my determination of the appropriate WACC-based discount rate for quantifying the lost profits of the Whites Point project in Appendix 4 of the FTI Report.

A2.2 Mr. Chodorow has commented on four particular areas of my discount rate that he considers to be "methodological flaws":[191]

a) "Mr. Rosen should have used forward-looking debt yields in his discount rate analysis";

b) "… Mr. Rosen should have removed from his 5-year betas the average company-specific leverage based on the 5-year period over which betas are measured";

c) I should have applied, "[t]he proper method for deriving the real discount rate, known as the Fisher equation…"; and,

d) "Mr. Rosen should therefore have used an inflation rate that reflects inflation expectations over the longer term."

A2.3 I address Mr. Chodorow's comments in this section in the order that the inputs were discussed in the FTI Report.

Industry beta

A2.4 In the FTI Report, I took the 5-year levered betas of comparable companies and sought to adjust for the impact of their individual capital structures (i.e. unlevering) in order to estimate the volatility of the aggregates industry's stock returns relative to the wider Standard & Poor's 500 Index.[192] This un-levered beta was then adjusted again for the anticipated capital structure of the Whites Point project as of 31 December 2016 (i.e. re-levering), resulting in an unlevered beta of 1.14 and a re-levered beta of 1.29.[193]

A2.5 Mr. Chodorow states that it is more appropriate to use a 5-year capital structure in the unlevering exercise as it more closely aligns with the data underlying the 5-year levered betas I relied on in FTI Report.[194] I agree with this and have revised **Schedule 15** to account for the difference.[195] The result

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191 Brattle Report, para 124-127.
192 FTI Report, para A4.19.
193 FTI Report, para A4.21-A4.22.
194 Brattle Report, para 125.

is a decrease in the unlevered beta from 1.14 to 1.05 and a decrease of the re-levered beta from 1.29 to 1.19. In isolation, this change would reduce my discount rate from 5.78% to 5.41%.

Cost of Debt

A2.6 In the FTI Report I applied 2015 interest expense data from five of the six comparable companies I identified in order to estimate the pre-tax cost of debt of 6.48%; the sixth comparable company, United States Lime & Minerals, Inc. was excluded because its debt had been reduced to US$0 by the end of 2015.[196] I used 2015 data because this was the most recently available full-year data as of the date of the FTI Report.

A2.7 In the Brattle Report, Mr. Chodorow states his preference for using bond yields rather than interest expense as a proxy for the cost of debt because "discount rates are forward-looking measures, while embedded interest rates are backward–looking".[197] The Brattle Report also points to U.S. Concrete's fluctuating embedded cost of debt from 2009 to 2011 as a reason not to rely on this metric.

A2.8 The reason for U.S. Concrete's fluctuating embedded interest rate was a decrease in its overall debt from US$297.5 million to US$53.2 million between 2009 and 2010.[198] According to its 2010 annual report, U.S. Concrete emerged from Chapter 11 reorganization proceedings in the year, which resulted in the cancellation of a number of its outstanding credit facilities.[199] However, by 2015 its interest expense had normalized to approximately 7.71% and was well within the range of interest expenses presented by other comparable companies (2.35% to 11.14%).[200] Therefore, I do not believe that the approach I applied in the FTI Report was unreasonable.

A2.9 Turning to the Brattle Report, Mr. Chodorow's approach relies on applying Moody's bond ratings from after the breach date to estimate the potential rating that a bond for the Whites Point project would be assessed.[201] According to R-736 cited in the Brattle Report, Mr. Chodorow uses Martin Marietta Materials ,Inc.'s 12 June 2013 Ba1 rating and Vulcan Materials Company's 4 May 2016 Ba1 rating to justify his use of "a borrowing cost based on the yields of bonds with an investment grade

195 See Schedule 15.
196 FTI Report, Schedule 15.
197 Brattle Report, para 124.
198 See Schedule 16.
199 U.S. Concrete 2010 annual report, page 5.
200 FTI Report, Schedule 15.
201 Brattle Report, Appendix G, para 13.

rating of Baa."[202] Using this synthetic bond rating based on hindsight information, Mr. Chodorow then reviews yields as of his breach date analysis and concludes that a pre-tax rate of 6.6% and an after tax rate of 4.55% are appropriate.[203]

A2.10 Applying Mr. Chodorow's approach as of 31 December 2016, a Baa rated bond would have a yield of approximately 4.83% on 1 December 2016 (down from 6.48%).[204] As a result, my pre-tax cost of debt would be reduced from 4.47% to 3.33%.[205] In isolation, this change would reduce my discount rate from 5.78% to 5.60%.

A2.11 However, as I state above, I believe this to be a difference of preference between Mr. Chodorow and myself rather than a methodological flaw. Therefore, I have not reduced my cost of debt estimate for purposes of this report.

Inflation Rate

A2.12 In the FTI Report, I converted my nominal inflation rate to a real inflation rate by subtracting the forecasted inflation rate of 2.20%.[206] The Brattle Report suggests an alternative approach to adjusting the discount rate using the Fisher equation.[207] Per the Brattle Report, the Fisher equation is:

Real Discount Rate = [(1 + Nominal Discount Rate) / (1 + Inflation Rate)] - 1

A2.13 All other inputs being held equal, the result of applying the Fisher equation is a reduction in the real WACC rate applied in the FTI Report from 5.78% to 5.66%.[208]

A2.14 The Brattle Report also asserts that I erred by applying projected inflation rates for 2017 and 2018 instead of a longer term forecast.[209] The Bloomberg data I relied upon included the aggregated forecasts of 73 different forecasters from banks, other financial institutions, economists, and

202 Brattle Report, Appendix G, para 13 and R-736.
203 Brattle Report, Appendix G, para 13.
204 Federal Reserve Bank of St. Louis, Moody's Seasoned Baa Corporate Bond Yield.
Using the 15 November 2016 data access cutoff from the FTI Report, this rate would be reduced to 4.71%.
205 4.47% * (100.00% - 31.00%) = 3.33%
206 FTI Report, para A4.43.
207 Brattle Report, para 126.
208 [(1 + 7.98%) / (1 + 2.20%)]
209 Brattle Report, para 127.

universities.[210] Although Bloomberg only reported forecasts to 2018, I believe that this was a reasonable basis on which to forecast long-term inflation rates.

A2.15 In order to test this assumption I refer to an additional long-term forecast published quarterly by the Federal Reserve Bank of Philadelphia, the *Survey of Professional Forecasters*, which estimated stated that the long-term annual average inflation rate (2016 to 2025) as of Q4'2016 was 2.22%.[211] This is materially the same as the 2.20% estimate I applied in the FTI Report.

A2.16 Applying both a 2.22% inflation rate and the Fisher equation as suggested in the Brattle Report decreases my overall discount rate from 5.78% to 5.64%.[212]

Conclusion

A2.17 Should the Tribunal decide to adopt all the adjustments suggested by the Mr. Chodorow, my WACC calculation would be updated as follows:[213]

Inputs	FTI Report (31 Dec 2016)	FTI Reply Report (31 Dec 2016)
Cost of Equity	8.65%	8.21%
Cost of Debt (after-tax)	4.47%	3.33%
Equity / Capital	84.12%	84.12%
Debt / Capital	15.88%	15.88%
WACC (Nominal)	7.98%	7.43%
Less: Inflation	2.20%	2.22%
WACC (Real)	5.78%	5.10%

A2.18 Excluding the impact of other adjustments discussed in this report, the impact of reducing my WACC rate from 5.78% to 5.10% is an increase in the future lost profits from US$271.2 million to US$298.3

210 FTI Report, FTI-11.
211 Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters Q4 2016, page3.
212 [(1 + 7.98%) / (1 + 2.22%)]
213 See Schedule 14.

million.[214] Incorporating only the beta adjustment (reducing my discount rate to 5.41%), future lost profits would increase from US$271.2 million to US$285.4 million.

214 Based on adjustments to the discount factor in Schedule 1.

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