



ORDER NUMBER
G-78-16

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

British Columbia Hydro and Power Authority
W.A.C. Bennett Dam Riprap Upgrade Project

BEFORE:

D. M. Morton, Panel Chair/Commissioner
N. E. MacMurchy, Commissioner
H. G. Harowitz, Commissioner

on May 27, 2016

ORDER

WHEREAS:

- A. On November 13, 2015, the British Columbia Hydro and Power Authority (BC Hydro) filed the W.A.C. Bennett Dam Riprap Upgrade Project application and statement of capital expenditures with the British Columbia Utilities Commission (Commission) under section 44.2(1)(b) of the *Utilities Commission Act* (UCA), requesting acceptance pursuant to section 44.2(3)(a) of the UCA (Application);
- B. The W.A.C. Bennett Dam Riprap Upgrade Project (Project) will address inadequate long-term erosion protection of the W.A.C. Bennett Dam (Dam) located on the Peace River approximately eighteen kilometres west of the town of Hudson's Hope within Treaty 8 First Nations' territories. The Project involves:
 - replacing portions of the failed rock armour layer, also known as riprap, on the upstream face of the Dam;
 - development and operation of the Sand Flat quarry to source the required volume of riprap;
 - transportation by truck of the riprap from the Sand Flat quarry to the Dam; and
 - temporary stockpiling of riprap near the Dam;
- C. The median (P50) estimate of the Project expenditures is \$137.1 million with the Project expenditures expected to be below \$171.4 million and above \$109.7 million;
- D. Quarry construction is scheduled to start in 2016 and the Project is expected to be completed by mid-2021;
- E. On November 24, 2015, the Commission issued Order G-182-15 establishing the preliminary Regulatory Timetable for the review of the Application, and included one round of written information requests and a procedural conference;
- F. The Commercial Energy Consumers Association of British Columbia, the British Columbia Old Age Pensioners Organization *et al.*, McLeod Lake Indian Band and Saulteau First Nation registered as interveners and

participated in the hearing. The Association of Major Power Customers of BC also registered as an intervener but did not actively participate;

- G. By Orders G-15-16, G-31-16 and G-54-16, the Regulatory Timetable was amended to include:
 - a second round of information requests of limited scope;
 - a submission by the Saulteau First Nation of their Traditional Use Study and a joint First Nations' Independent Technical Report;
 - a third round of information requests limited in scope to BC Hydro's Duty to Consult and the First Nations Consultation Process;
 - a second procedural conference; and
 - a written argument phase;
- H. BC Hydro's written final submission was filed on May 6, 2016. Intervener final submissions were filed by May 16, 2016, and the written hearing concluded with the filing of BC Hydro's reply submission on May 17, 2016;
- I. The Commission has a duty to determine whether the Crown's consultation and, if required, accommodation with First Nations have been adequate up to the point of the Commission's decision; and
- J. The Commission considered the evidence and submissions and concludes that BC Hydro's consultation with First Nations has been adequate and that part of the Project expenditure schedule is in the public interest.

NOW THEREFORE with Reasons for Decision to be issued at a later date, the British Columbia Utilities Commission orders as follows:

- 1. Pursuant to section 44.2 of the Utilities Commission Act, the part, not relating to the Emergency Stockpile Riprap, of British Columbia Hydro and Power Authority's (BC Hydro) expenditure schedule (Expenditure Schedule), which has in total a median (P50) estimate of \$137.1 million for the W.A.C. Bennett Dam Riprap Upgrade Project (Project), is accepted.
- 2. The part of the Expenditure Schedule concerning the Emergency Stockpile Riprap, which relates to the stockpiling of 8,000 cubic meters of riprap for potential future use, is rejected.
- 3. Pursuant to sections 23 and 43 of the Utilities Commission Act, BC Hydro must file with the Commission:
 - a) An updated and detailed Project cost estimate and schedule (Updated Reporting Baseline) consistent with BC Hydro's Board approval with explanations of all material cost and schedule and variances to the P50 base estimate information filed in the Project application, by June 30, 2016.
 - b) Annual progress reports on the Project schedule, costs and any variances from the Updated Reporting Baseline, any difficulties that the Project has encountered and any material changes to the identified risks. The form and content of the annual progress reports will be consistent with other BC Hydro capital project progress reports filed with the Commission. The annual progress reports will be filed by February 15 until the final completion report is filed.
 - c) Within 30 days of identification, the cost or schedule variance resulting from any individual project difficulties that are expected to result in: 1) cost increases greater than \$5 million over the P50 base estimate in the Updated Reporting Baseline or 2) major construction activities requiring additional construction seasons beyond the four scheduled.

- d) Within 6 months of substantial completion of the Project including the reclamation of the Sand Flat quarry, a final report that shall include: 1) a complete breakdown of the final costs of the Project, 2) a comparison of these costs to Updated Reporting Baseline and 3) an explanation of all material cost and schedule variances.
- e) In future revenue requirement applications that include requests to recover Project expenditures, a statement confirming that no expenditures relating to Emergency Stockpile Riprap were included or BC Hydro shall explain otherwise.

DATED at the City of Vancouver, in the Province of British Columbia, this 27th day of May 2016.

BY ORDER

Original signed by:

D. M. Morton
Commissioner



IN THE MATTER OF

**British Columbia Hydro and Power Authority
W.A.C. Bennett Dam Riprap Upgrade Project**

**REASONS FOR
DECISION**

July 13, 2016

Before:

**D. M. Morton, Panel Chair/Commissioner
N. E. MacMurchy, Commissioner
H. G. Harowitz, Commissioner**

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1.0 INTRODUCTION

1.1 Application

On November 13, 2015, the British Columbia Hydro and Power Authority (BC Hydro) filed the W.A.C. Bennett Dam Riprap Upgrade Project Application (Application) with the British Columbia Utilities Commission (Commission) under section 44.2(1)(b) of the *Utilities Commission Act* (UCA) requesting acceptance pursuant to section 44.2(3)(a) of the UCA.

The W.A.C. Bennett Dam Riprap Upgrade Project (the Project) will address inadequate long-term erosion protection of the W.A.C. Bennett Dam (the Dam) located on the Peace River, within Treaty 8 First Nations' territories, approximately eighteen kilometres west of the town of Hudson's Hope.

The Project involves:

- replacing portions of the failed rock armour layer, also known as riprap, on the upstream face of the Dam;
- development and operation of the Sand Flat Quarry (SFQ) to source the required volume of riprap;
- transportation by truck of the riprap from the SFQ to the Dam; and
- temporary stockpiling of riprap near the Dam.

BC Hydro's median (P50) estimate of the Project expenditures is \$137.1 million with the Project expenditures expected to be below \$171.4 million and above \$109.7 million. Quarry construction is scheduled to start in 2016 and the Project is expected to be completed by mid-2021.

1.2 Key participants

The Commercial Energy Consumers Association of British Columbia (CEC), the British Columbia Old Age Pensioners Organization *et al.*(BCOAPO), McLeod Lake Indian Band (McLeod Lake) and Saulteau First Nation (SFN) registered as interveners and participated in the hearing. The Association of Major Power Customers of BC (AMPC) also registered as an intervener but did not actively participate. CEC, BCOAPO and SFN filed the final written arguments while McLeod Lake and AMPC did not file argument.

1.3 Regulatory process

The Commission issued Order G-182-15 which established the preliminary Regulatory Timetable for the review of the Application and included one round of written information requests and a procedural conference. The Regulatory Timetable was subsequently amended to include:

- a second round of information requests of limited scope;
- a submission by SFN of their Traditional Use Study and a joint First Nations' Independent Technical Report;
- a third round of information requests limited in scope to BC Hydro's Duty to Consult and the First Nations Consultation Process; and
- a second procedural conference and a written argument phase.

The written argument phase included BC Hydro and Intervener final arguments and BC Hydro's reply argument which concluded the hearing.

2.0 STATUTORY AND REGULATORY FRAMEWORK

2.1 Section 44.2 of the *Utility Commission Act*

The Application is made under section 44.2 of the UCA. Section 44.2(1)(b) of the UCA states that a public utility may file an expenditure schedule containing "a statement of capital expenditures that the public utility has made or anticipates making during the period addressed by the schedule." Subsections 44.2(3) and (4) of the UCA stipulate that the Commission must accept the capital expenditure schedule if it determines that the expenditures would be in the public interest or, reject the capital expenditure schedule either in whole or in part.

Section 44.2 (5.1) of the UCA states that in considering whether to accept an expenditure schedule filed by the BC Hydro, the Commission, in addition to considering the interests of persons in British Columbia who receive or may receive service from the BC Hydro, must consider

- a) British Columbia's energy objectives,
- b) BC Hydro's applicable integrated resource plan,
- c) the extent to which the schedule is consistent with the requirements under section 19 of the *Clean Energy Act*, and
- d) if the schedule includes expenditures on demand-side measures, the extent to which the demand-side measures are cost-effective within the meaning prescribed by regulation, if any.

Subsections 44.2(5.1)(d) of the UCA does not apply because the expenditure schedule for the Project does not include demand-side measures.

2.2 Aboriginal consultation

A primary consideration in determining whether an expenditure schedule is in the public interest pursuant to section 44.2 of the UCA is the assessment of Aboriginal consultation. As a Crown Corporation, BC Hydro has a duty to consult First Nations whenever it contemplates an activity that could potentially impact treaty rights or asserted aboriginal rights. This duty is grounded in the honour of the Crown, a principle requiring the Crown to act with integrity and honour and avoid "even the appearance of sharp dealing" in all its dealings with aboriginal peoples.¹

The duty to consult is triggered when the Crown has knowledge, actual or constructive, of the rights asserted under section 35(1) of the *Constitution Act, 1982* which states, in part, "[t]he existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed."

The Commission's role is to assess the scope of the Crown's duty to consult First Nations and make a determination as to the adequacy of consultation with First Nations up to the point of the Commission's decision on the Application. This role has been confirmed by the Supreme Court of Canada in *Rio Tinto Alcan Inc. v. Carrier Sekani Tribal Council*, 2010 SCC 43, para. 74.

¹ paraphrased from *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73, paras. 16, 19.

2.3 British Columbia's energy objectives

As the Application concerns capital expenditures related to the generation of clean and renewable hydroelectric power from a heritage asset, the following objectives listed in section 2 of the *Clean Energy Act* are relevant to the Application:

- (a) to achieve electricity self-sufficiency;
- (c) to generate at least 93 percent of the electricity in BC from clean or renewable resources and to build the infrastructure necessary to transmit that electricity;
- (e) to ensure BC Hydro's ratepayers receive the benefits of the heritage assets and to ensure the benefits of the heritage contract under the *BC Hydro Power Legacy and Heritage Contact Act* continue to accrue to BC Hydro's ratepayers;
- (f) to ensure the authority's rates remain among the most competitive of rates charged by public utilities in North America; and
- (g) to reduce BC greenhouse gas emissions

3.0 PROJECT DESCRIPTION AND PUBLIC INTEREST DISCUSSION

As described by BC Hydro, the Dam provides water to the G.M. Shrum hydroelectric generating facility (GMS) and together they make up a significant part of BC Hydro's generation capacity. The GMS generating station has a current installed capacity of 2,917 megawatts and average annual generation of 13,500 gigawatt hours providing energy to about a quarter of BC Hydro's electric system load. The Dam is located on the Peace River in north-eastern British Columbia and is situated approximately 18 kilometers west of the town of Hudson's Hope within Treaty 8 First Nations' territories. The Dam construction was completed in 1967 creating the Williston Reservoir which has a surface area of 1,780 square kilometers and a maximum storage capacity of approximately 74 cubic kilometers of water. The Dam is a zoned earth fill structure with a paved two lane road across the crest. The maximum height of the Dam is approximately 183 meters (600 feet) and the length along the crest is approximately 2,040 meters (6,700 feet). Located along the right abutment, a concrete spillway structure allows for controlled releases of water.²

3.1 Current state of the upstream W.A.C. Bennett Dam face

In the Application BC Hydro provides the following description of the riprap portion of the Dam. The outermost and coarsest material is a layer of armour rock, or riprap. The purpose of the riprap is to absorb wave energy and the forces of ice movement so that the underlying dam fill is not disturbed or eroded. To do this, the riprap must be heavy enough to resist movement under wave or ice loading, knit together so that each piece is supported by adjacent pieces and resistant to breakdown.

The Dam was designed with distinct zones within the structure, each consisting of slightly coarser materials moving away from the impervious core of the dam to prevent migration of soils into the adjacent zones. The outer zones are required to support and protect the core but are generally more pervious, and do not in themselves retain the reservoir.

² Exhibit B-1, Section 2.1.2.

Currently, the upstream side of the Dam is constructed of well graded sandstone riprap overlying Zone 5 Dam fill. Zone 5 is the outermost zone of the Dam and is a pervious shell approximately 6 meters (20 feet) thick, composed primarily of gravel to cobbles and some sand.³

BC Hydro noted limited localized erosion of the riprap dating back to 1973 and that at that time, the upstream Dam face was considered to be in generally good condition. In 1986, BC Hydro noted more extensive defects and erosion in the original riprap. Significant damage to the riprap was highlighted in BC Hydro's performance review of the Dam in 1998, which indicated that:⁴

Significant damage to the riprap has occurred over extensive stretches west of the intake. East of the intake the dam curvature is favourable, thus sheltering the dam from direct wave action, and the riprap appears undamaged...Damage includes beaching, furrowing and downslope sliding of riprap, reaching up to the crest level in some locations. In some places, sliding has exposed the underlying Zone 5 bedding material.

Investigations completed between 2012 and 2014 by BC Hydro conclude that the existing riprap has failed (e.g., rock breakdown and displacement) over approximately two thirds of the Dam length and erosion of the underlying Zone 5 Dam fill has occurred. The following image indicates the lateral extent of the riprap damage.

Figure 1 - Lateral Extent of Riprap Damage⁵



BC Hydro provided the following figures which illustrate the damaged riprap at the Dam compared to riprap in good condition at Mica Dam.⁶

³ Exhibit B-2, Section 2.2.1.

⁴ Exhibit B-1, Section 2.2.2.

⁵ Exhibit B-1, Section 2.1.2.

Figure 2 – Riprap at WAC Bennett Dam



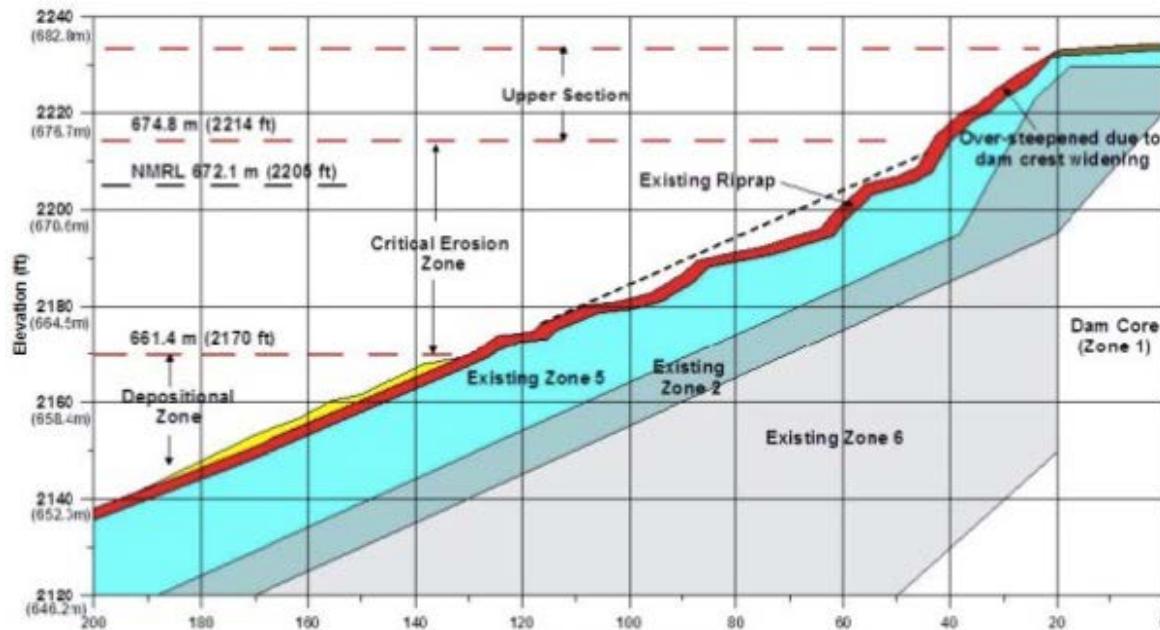
Figure 3 – Riprap at Mica Dam



⁶ Exhibit B-1, Section 2.2.2.

BC Hydro submits that the riprap traverses three zones: the upper section, the critical erosion zone and depositional zone as shown in the figure below.

Figure 4 – Erosion Zones



BC Hydro submits that each zone is subjected to different erosional elements and describes the condition of the riprap of each zone as follows:

- Critical erosion zone – Erosion damage is observed on the upstream face above 661 m (2170 ft). The most severe erosion occurs from 665 to 675 m (2180 to 2214 ft) with typical erosion depths of 1.5 m (5 ft) and a maximum local erosion depth of 2.4 m (8 ft). In this area, the larger original riprap has remained in place, but significant erosion of under-sized riprap and underlying Zone 5 Dam fill materials has occurred. Between 661 to 665 m (2170 to 2180 ft), in many areas, only a small percentage of the originally placed riprap can be seen, and the area is covered with undersized riprap or with gravel washed down from above;
- Upper section – Erosion has undercut the upstream slope between the Normal Maximum Reservoir Level at 672 m (2205 ft) and the Dam crest; with some shallow sliding occurring on the slope. Stability analyses indicates that 15 per cent to 25 per cent (1.7 to 2.8 m) of the 11 m wide crest within the upgrade area, is potentially unstable due to this undercutting, as well as the over-steepening of the upper slope that occurred when the crest road was widened shortly after original construction; and
- Depositional zone – In the lower zone from 652 to 661 m (2140 to 2170 ft), the deposition of finer materials from above has formed a small berm, overlying the zone originally placed riprap. The depositional loose materials estimated to be up to 1.2 m (4 ft) in thickness.⁷

⁷ Exhibit B-1, Section 2.2.3.

BC Hydro submits that the condition assessments it completed in 2014 concluded that the failure of the existing riprap has been caused by the following deficiencies:

- Filter layer – The absence of a separate filter material between the Zone 5 surface and the riprap has contributed to erosion of the Zone 5 Dam fill;
- Riprap size – A significant proportion of the existing riprap is undersized, the existing riprap layer thickness is insufficient and the riprap is poorly interconnected with large riprap situated in a finer particle size matrix; and
- Sandstone breakdown – The existing riprap has experienced breakdown due to the freeze-thaw cycles each winter.⁸

BC Hydro proposes to address these issues through the restoration and upgrading the eroded or damaged portion of the upstream riprap as outlined in the Application.

3.2 Mitigation measures undertaken in response to failed riprap

Recognizing that significant damage of the upstream slope could occur during a single windstorm, BC Hydro prepared an Upstream Riprap Emergency Plan in December 1998. The plan included the following elements:

- installation of a wind gauge at the Dam;
- alarmed monitoring of wind speed;
- visual inspections of the Dam to follow up wind alarms; and
- creation of a list of sources of rock materials available for use in emergency repairs and the contact information of local contractors that could carry out the work.

BC Hydro incorporated the Upstream Riprap Emergency Plan into a more general Enhanced Surveillance and Response Plan (ESRP), Abnormal Conditions, issued in June 2009.

BC Hydro states that in the event that riprap damage extending to or near the crest of the Dam occurs, the ESRP calls for end-dumping and bulldozing or placing rock from the top of the Dam. In addition to rock available at local sources, BC Hydro has stockpiled approximately 6,700 cubic meters of sandstone rock fill near the Dam site for such emergency use.⁹

3.3 Independent assessment of the riprap

As part of BC Hydro's ongoing Dam performance assessment study, BC Hydro convened an Expert Engineering Panel (EEP).¹⁰ The EEP provided a report titled *BC Hydro WAC Bennett Dam Expert Engineering Panel Report - Volume 1*, dated August 13, 2012 which BC Hydro submitted as an evidentiary update to the Application. The

⁸ Exhibit B-1, Section 2.2.3.

⁹Ibid., Section 2.2.2.

¹⁰ The members of the EEP were Dr. Kaare Hoeg (Norwegian Geotechnical Institute), Emeritus Professor Robin Fell (University of New South Wales, Australia) and Mr. Rodney Bridle (Dam Safety Ltd., United Kingdom).

EEP states that the “dam was well designed for the time it was constructed, and the extensive construction control testing indicates it was well constructed.”¹¹

However, the report notes that the upper part of the dam may be vulnerable to internal erosion through concentrated cracks when the reservoir level is high. In the report the EEP recommended that the three issues, riprap repair, seismic resistance, and vulnerability to cracking and internal erosion be considered simultaneously to produce a solution that addresses the three identified risks to the upper part of the dam.¹² To better understand the risks, the EEP recommended investigations into seismic stability¹³ and cementation of the high carbonate fines in the dam.¹⁴

The issue raised by the 2012 recommendation of the EEP that a solution be produced that considers the three identified risks to the upper part of the dam were explored in Information Request No. 2.

In its response to Information Request No. 2, BC Hydro provided an updated report from the EEP which states:

The EEP questioned the effectiveness of the upper part of the Dam in resisting internal erosion in their 2012 report. In response to their concern, BC Hydro completed a number of assessments that indicate this would not be a concern under normal conditions. BC Hydro also completed a seismic assessment of the Dam. The EEP agrees that, although the overall Dam will remain stable, the very upper part of the Dam may be vulnerable to deformations and cracking under seismic loads. However, this situation would only be a concern after an extreme seismic event in combination with a series of conditions that the EEP considers as highly unlikely. BC Hydro intends to carry out the additional studies and laboratory tests suggested by the EEP in future studies to be undertaken in an order of priority to be determined. The results, along with the other Dam performance information, will assist BC Hydro in making a properly informed decision in regard to possible future remedial works.¹⁵

The EEP notes the riprap Project is progressing and makes a number of recommendations for further work including the following:

- Consider raising the Filter and possibly the Drain at vulnerable locations (such as downstream of Sinkholes 1 and 2) in the upper part of dam;
- Examine filtering or other improvements at Spillway-Dam interface where a crack may open; and
- Consider the feasibility of densifying or replacing less dense fill in Sinkhole 1 to limit uncertainty about performance of upper part on dam near the sinkhole.¹⁶

BC Hydro states it is currently assessing the internal erosion issues, as well as the seismic vulnerabilities, in developing the long-term risk management strategy for the Dam. This is part of the ongoing Dam performance assessment study, of which the EEP was convened to provide advice and guidance to BC Hydro.

¹¹ Exhibit B-1, Section 2.2; Exhibit B-1-4, Executive Summary, p. 1.

¹² Exhibit B-1-4, Sections 3.7, 7.2.11.

¹³ Ibid., Section 7.2.10.

¹⁴ Ibid., Section 7.2.4.

¹⁵ Exhibit B-11, BCUC IR 28.1.1, p. 2.

¹⁶ Exhibit B-11, BCUC IR 28.1.1, p. 43.

BC Hydro made a decision that the Riprap Project, which is a confirmed deficiency, should proceed as per BC Hydro's capital plan. Any future capital upgrades to address seismic vulnerabilities would require work to the upper part of the Dam. BC Hydro states the possible seismic upgrade work on the Dam crest could not practically be implemented simultaneously with the Riprap Project as the Riprap Project requires access to the Dam crest.¹⁷

Commission determination

The Panel notes that the drain and drain filter are located on the downstream side of the Dam away from the area to be repaired during this Project, thus eliminating the concern that potential newly placed riprap would need to be removed to accommodate those possible seismic upgrades. The Panel takes note of the possibility that if seismic upgrades become a higher priority, completion of the riprap may be delayed as a result, however, the evidence suggests the likelihood of this happening is low and the scheduling consequences to be manageable.

3.4 Project criteria and design

3.4.1 Critical erosion zone

BC Hydro states that the proposed new riprap in the critical erosion zone is designed to meet the following performance criteria:

- 1/100 year Annual Exceedence Probability (AEP) wind event should result in no damage to the riprap, where no damage is defined as less than 5 per cent damage;
- 1/1000 year AEP wind event should result in acceptable damage to the new riprap, where acceptable damage is defined as damage that does not require emergency repair;
- 1/10000 year AEP wind event should not result in upstream slope failures that could lead to dam breach; and
- The new riprap is expected to meet performance expectations for 75 to 100 years (or longer) when combined with a civil maintenance program...¹⁸

To meet the above criteria, BC Hydro determined the required riprap characteristics which are presented in the table below along with the original design and current state for comparison purposes.¹⁹

¹⁷ Exhibit B-11, BCUC IR 28.4.

¹⁸ Exhibit B-1, Section 3.2.1.6.

¹⁹ Exhibit B-1, Table 3-1.

Table 1 – Comparison of Riprap Characteristics

Comparison of Riprap Characteristics For Critical Erosion Zone			
Riprap Design	Original Design (1962)	Current State	Project Design
Material	Sandstone	Sandstone	Limestone
Stone Weight (kg)	455 (median)	146 (median)	650 to 3250
Stone Gradation (mm)	305 – 1127 (well graded)	100 – 1000 (well graded)	730 – 1260 (narrow graded)
Layer Thickness (meters)	0.9	0 to 0.9	1.8

BC Hydro states that a 0.6 meter thick filter layer composed of limestone with sizes ranging from 70 millimetres to 500 millimeters will underlay the riprap in the critical erosion zone. Approximately 35,300 cubic meters of filter layer material, largely a by-product of riprap production, is required.²⁰

BC Hydro submits it did not set strict criteria for the riprap material, choosing to rather evaluate the options available as strict adherence to published criteria typically drives projects toward the highest quality rock and higher costs, where a lesser quality rock may be just as suitable.²¹ BC Hydro investigated eight quarry options for riprap supply and determined the only viable option to be limestone from the SFQ located approximately 40 kilometers from the Dam accessible by gravel forestry roads. BC Hydro submits that the Sand Flat limestone is of excellent quality²² and the new riprap is expected to meet performance expectation for 75 to 100 years.²³ The other options for riprap material are further discussed in Section 3.4.4 of these reasons.

3.4.2 Upper section

BC Hydro states that the repairs to the upper zone will consist of re-contouring to improve stability and placement of 22,200 cubic meters additional rock fill material for slope stability and erosion protection from rainfall and run-off. The rock fill material will be 70 millimeters and larger sourced primarily as a by-product of riprap production.²⁴

3.4.3 Depositional zone

BC Hydro maintains that the depositional zone, located below the critical erosion zone, has a lower probability of wave-induced damage due to limited exposure to high waves and that the design was optimized to reduce Project costs. BC Hydro states a filter layer is not required under the toe berm as this area has not been subjected to erosion and the existing depositional materials and underlying original riprap will remain in place. BC Hydro proposes to construct a toe berm from approximately 24,700 cubic metres of re-used sandstone riprap that has been excavated from the zones above. BC Hydro states that the cost reduction achieved by re-using the depositional material and relocation of existing sandstone riprap to the depositional zone is forecast at approximately \$11 to \$17 million.²⁵

²⁰ Exhibit B-1, Section 3.2.1.4.

²¹ Ibid., Appendix D-2, p. 17.

²² Ibid., Appendix D-2, p. 33.

²³ Ibid., Appendix D-1, Section 3.2.1.6.

²⁴ Ibid., Section 3.2.2.

²⁵ Ibid., Section 3.2.3.

3.4.4 Alternatives to the Project

BC Hydro submits that no feasible alternatives to remediating the riprap on the upstream face of the Dam have been identified. BC Hydro maintains that doing nothing and allowing continued erosion of the Dam is not acceptable suggesting that for safety considerations this would eventually lead to the need to lowering the reservoir to below the erosion zone or the decommissioning of the Dam. BC Hydro considers these non-viable responses to address the deteriorated riprap condition because of the significant economic value of the electric generation capability of the Dam. BC Hydro estimates that a one-time emergency reservoir drawdown would result in a loss of approximately 6000 gigawatt hours of energy production due to spill and head losses at a cost of approximately \$160 million.²⁶

BC Hydro submits that as an alternative to rock riprap it considered pre-fabricated concrete structures. However, BC Hydro stopped further evaluation of the concrete option after initial cost estimates suggested the cost would be roughly twice that of rock riprap.

BC Hydro submits that as an alternative to Sand Flat limestone it considered using Portage Mountain East sandstone and that it estimated the construction cost savings to be in the range of \$9.2 million to \$28.6 million, mainly due to the shorter haul route. However, BC Hydro stopped further investigation of the sandstone option because material tests indicated that the sandstone lacked durability and unfavorable drill results which created uncertainty in whether adequate material exists at the quarry site. The durability of the Portage Mountain East and other local sandstone was expected to be similar to the existing sandstone on the Dam which has broken down due to freezing/thaw cycling. BC Hydro estimated if Portage Mountain East sandstone was used the expected life of the upgraded riprap would be in the order of 30 years.²⁷

BC Hydro submits that as an alternative to hauling the riprap from the SFQ by truck it considered barging the riprap via the Williston reservoir. BC Hydro estimates that marine transport option would increase the project cost by \$14 million to \$23 million and add additional risks to the project and thus was eliminated as a viable option.²⁸

BC Hydro submits that its initial empirical analysis indicated that the minimum required diameter of the riprap was 800 millimeters. BC Hydro then conducted a size optimization exercise utilizing speculated computer software. This optimization indicated that a riprap with a minimum diameter of 730 millimeters would meet all target performance criteria for 1/100, 1/1000 and 1/10,000 wind/wave events while 675 millimeter riprap did not.²⁹ BC Hydro estimates the reduction in riprap size from 800 to 730 millimeters reduces the Project cost by \$6 to \$10 million.³⁰

Intervener comments

CEC submits that the Project is suitably described and defined.³¹ CEC submits that the result is that BC Hydro has developed highly appropriate design criteria for the project. CEC recommends that the Commission support and approve of the BC Hydro design criteria for the project.³²

²⁶ Exhibit B-3, BCOAPO IR 1.1.1.

²⁷ Ibid., BCUC IR 6.3-4.

²⁸ Exhibit B-1, Section 3.1.1.

²⁹ Ibid., Appendix D-1, Section 4.5.

³⁰ Ibid., Section 3.2.1.2.

³¹ CEC Final Argument, para 9.

³² Ibid., para 33.

BCOAPO accepts BC Hydro's position that there are no viable alternatives to the Project and that substantial delay will increase risk and potentially increase the overall project costs to ratepayers.³³

3.5 Project timing

BC Hydro submits that it plans to start the construction of the Project in June 2016 and subject to reservoir levels, plans to place the riprap on the Dam in three construction seasons finishing in 2019. BC Hydro submits that the evidence clearly supports the need for the Project at this time stating that the downstream impacts of a breach could include extremely high economic losses affecting critical infrastructure, public transportation, services or commercial facilities, some to severe damage to residential areas, significant environmental impacts, and loss of life. BC Hydro considers the risk of Dam failure as low at this stage but the consequences of failure are extreme. BC Hydro views the Project as an important dam safety project that stops the risks associated with continued erosion from increasing. BC Hydro submits that its legal duty under the Dam Safety Regulations requires it, as owner of the Dam, to properly inspect, maintain and repair the Dam and related works in a manner that keeps the Dam and works in good operating condition³⁴ and that the expected financial impact of a one year delay in the Project is expected to be in the range of \$3.5 to \$5.5 million.³⁵

However, BC Hydro also states that in 2002, when the Dam riprap was in a similar condition as it is now, it initiated a riprap repair project and in 2003 decided to close the project based on the prioritization of other projects.³⁶ To address the safety risk posed by the failing riprap, BC Hydro implemented the Enhanced Surveillance and Response Plan which included the stockpiling of emergency riprap. The Comptroller of Water Rights, who oversees dam safety in the province, accepted the plan and has not ordered or otherwise directed BC Hydro to proceed with the riprap upgrade project as the riprap condition is not characterized as a safety hazard under the B.C. Dam Safety Regulation.³⁷ BC Hydro states its Capital Planning process, project sequencing, and prioritization of resources and available funding are factors in its decision to bring the Project forward at this time.³⁸

BC Hydro submits that it is likely (high probability) that a 10,000-year storm (or much smaller storms) would cause failures of upstream portion of the Dam crest road, and remove significant quantities of Zone 5 material but unlikely the damage would reach the core.³⁹ Such an event could require an emergency reservoir drawdown which BC Hydro estimates would result in a loss of approximately 6000 gigawatt hours of energy production due to spill and head losses at a cost of approximately \$160 million.⁴⁰

Intervener comments

CEC submits that the consequence of allowing the degradation of the Dam face to continue without a more permanent long term solution would be unacceptable. The extreme consequence rating is supported in the evidence and is determinative when combined with the failure mechanism probabilities to make a certain determination of justification for the Project.⁴¹

³³ BCOAPO Final Argument, para 22.

³⁴ BC Hydro Final Argument, p. 5.

³⁵ Exhibit B-1, Section 1.4.1.

³⁶ Ibid., Appendix D-1, p. 1-3.

³⁷ Exhibit B-3, BCUC IR 1.2.

³⁸ Ibid., BCUC IR 4.2.

³⁹ Ibid., BCUC IR 2.4.

⁴⁰ Ibid., BCOAPO IR 1.1.1.

⁴¹ CEC Final Argument, para 23.

CEC submits that in determining the timing for the Project BC Hydro did not conduct explicit cost and benefit trade-offs but rather used its professional judgement with regard to the full array of factors which would influence the appropriateness of the timing for the project. CEC accepts BC Hydro's assessment of the need and the timing for the need being now. CEC notes that the evidence record shows a steady progress of study, analysis, assessment and design work culminating in a clear project definition. The CEC submits that it is entirely appropriate that BC Hydro's best professional judgement be used to determine the timing of the Project is now and the CEC submits that the evidentiary record supports that this is an appropriate judgement.⁴²

Commission determination

While the Panel finds that the record does not support the argument that the current condition of the riprap constitutes a safety hazard that requires an immediate remedy, not repairing the riprap leaves the Dam at risk of significant and costly damage. If the Project was not undertaken, future ratepayers could be burdened with the cost of a major damage event. Therefore, it is in the public interest to undertake this project in order to keep the Dam in a reasonable state of maintenance functioning as originally designed or to modern standards as they evolve over time. The Panel accepts the 1/100, 1/1000 and 1/10,000 design criteria that underlay the project design as reasonable maintenance standard and finds it is appropriate for BC Hydro to proceed with the Project without delay.

3.6 Project costs and impacts

BC Hydro submits that the median (P50) estimate of the Project expenditures is \$137.1 million with the Project expenditures expected to be below \$171.4 million and above \$109.7 million. BC Hydro had a third party expert review its cost estimate, the Project schedule and construction methodology and submitted the resulting report as Appendix E-3 to the Application. The expert report concludes that BC Hydro has developed a well-organized cost estimate relative to AACEI Class 3 estimating criteria and that the cost estimate is realistic relative to presented direct costs and project implementation expenses while the estimate is considered somewhat conservative relative to developed margin requirements and scope contingency allocations.⁴³

BC Hydro submits that the cost estimate has an accuracy range of +25 per cent/-20 per cent and this level of cost uncertainty is consistent with the Project risk and complexity which include:

- geotechnical nature of the Project;
- the technical design and quality requirements for construction activities;
- the requirement for the Dam to remain operational during construction;
- the geographical location of the Dam and the SFQ;
- and that construction activities could be impacted by a number of uncontrollable variables such as reservoir elevations, subsurface conditions and weather.⁴⁴

BC Hydro maintains it has included the appropriate contingencies in the Project cost as a mitigation measure due to the complexity of the Project and that the contingencies provide funding for schedule delays or for loss of up to two full construction seasons due to reservoir elevations and site conditions at the quarry site being different than expected.⁴⁵

⁴² CEC Final Argument, paras 28–29.

⁴³ Exhibit B-1, Appendix E-3, Executive Summary, p. 6.

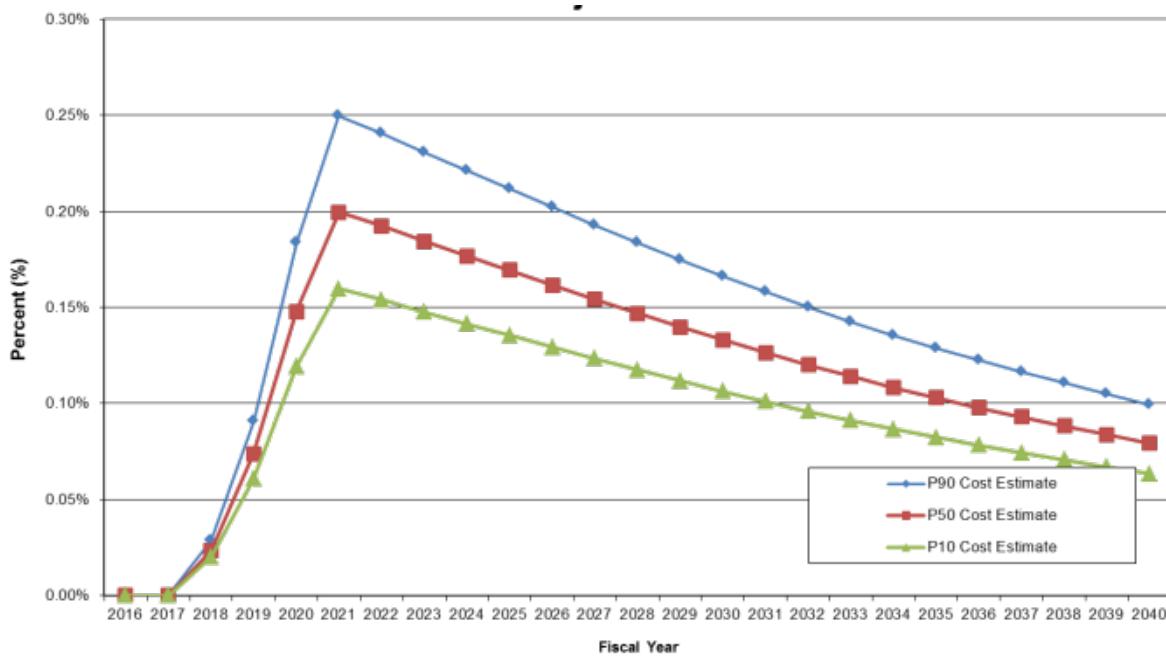
⁴⁴ BC Hydro Final Argument, p. 6.

⁴⁵ Ibid.

BC Hydro maintains that its cost estimates for the Project provide a reasonable level of cost certainty for the acceptance of the Expenditures. BC Hydro submits that to further improve the overall cost certainty, it has engaged in an Early Contractor Involvement (ECI)⁴⁶ process with the goal of improving scope, schedule, and cost certainty by enabling the joint development of the contract terms and conditions, pricing schedule, detailed construction planning and appropriate mechanisms for risk allocation. BC Hydro submits that as of early May, the ECI process had not resulted in a variance from the submitted Project cost estimate.⁴⁷

BC Hydro also states that the Project will have an impact on its revenue requirements through higher amortization, property tax, and finance charges as shown in Appendix B-3 of the Application. BC Hydro initially performed its rate impact analysis using an amortization period of 100 years, however in response to Commission information requests, the rate impact analysis was later updated to reflect a 50 year amortization period, which matches the remaining accounting life of the Dam.⁴⁸ The cumulative rate impact of the Project is depicted in the graph below.⁴⁹

Figure 5 – Cumulative Rate Impact of the Project



Intervener comments

CEC submits that there is evidence on the record that shows a significant probability that BC Hydro's cost estimate range may be larger than necessary and could appropriately be set as +15% to -20% or in the alternative +20% to -20%. CEC recommends that the Commission consider tightening the range of the estimates and recommends that the Commission approve the cost estimate at P50 \$137.1 with the tighter bounds than BC Hydro has submitted in the Application.⁵⁰

⁴⁶ The ECI process is described in further detail in Exhibit B-1, Section 3.6.2.1.

⁴⁷ BC Hydro Final Argument, p. 7.

⁴⁸ B-3, BCUC IR 12.4.

⁴⁹ B-3, BCUC IR 13.4, Attachment 4.

⁵⁰ CEC Final Argument, para. 44.

Commission determination

The Panel is satisfied that the project cost analysis presented by BC Hydro, backed up by the detailed third party review, provides a sufficient basis upon which to find that the Project cost estimate and methodology to be reasonable particularly in light of the potentially significant upside cost risk that this project is intended to mitigate.

The Panel agrees with CEC position that it is reasonable to expect that BC Hydro can narrow the cost estimate range from what was provided in the Application as it was prepared before the main construction contract had been finalized. However, the Panel finds no basis to tighten the cost estimate range as suggested by CEC. Ultimately, BC Hydro must be able to demonstrate that the costs were prudently incurred when applying to have the Project costs recovered in rate base.

3.7 Project risk

In the Application, BC Hydro identifies the following as key implementation phase risks:

- Quarry productivity or yield at lower than expected;
- Riprap placement at Dam site is slower than expected;
- Riprap placement quality standards cannot be achieved;
- Reservoir elevations result in construction delays; and
- Dam slope or sinkhole stability impact construction activities.

The EEP highlights the risks that the removal of the existing sandstone riprap may destabilize the upstream Dam slope and that construction activities have the potential to damage monitoring instrumentation.⁵¹

BC Hydro submits that it has developed treatment plans to manage the identified risk and that the appropriate contingencies are included in the cost estimate to accommodate cost risks.⁵²

BC Hydro states that two sinkholes were discovered at the Dam in June and July of 1996. The first sinkhole is located on the Dam crest and the second sinkhole is located on the upstream face of the Dam. The sinkholes were repaired in 1997 with compaction grouting in the core of the Dam at controlled pressures.⁵³

BC Hydro states that construction activities on the upstream Dam face could initiate settlement at the sinkhole areas that would result in changes to work procedures/methods (at a minimum) or repair of the damaged slope or sinkholes with increased costs and possible schedule delays.⁵⁴ BC Hydro has developed risk mitigation strategies for working around the sinkholes.⁵⁵

The CEC has reviewed the BC Hydro assessment of the definition and implementation phase risks and agrees with the BC Hydro assessment. The CEC notes the high impact of the ECI process and the importance of the contractor relationship and performance to managing the largest area of uncertainty, being the range in the cost

⁵¹ Exhibit B-11, BCUC IR 2.28.1.1 Attachment 1, pp. 11–12.

⁵² Exhibit B-1, Section 5.3.

⁵³ Ibid., Section 2.2, p. 2-5.

⁵⁴ Ibid., Section 5.3.2.2.

⁵⁵ Ibid., Section 2.2, p. 2-5.

estimates. The CEC supports the BC Hydro proposed plans in using the ECI approach to attempt to achieve a cost-effective implementation phase.⁵⁶

Commission determination

The Panel finds that risk identification and mitigation has been adequate.

3.8 Public consultation

BC Hydro states that its public consultation process for the Project began in 2011 with a newsletter describing the Project being sent to local groups and individuals including news outlets. BC Hydro states it held a public open house on the Project in Hudson's Hope on June 4, 2015 and five individuals attended none of whom expressed any issues or concerns about the Project.⁵⁷

Commission determination

The Panel finds the public consultation has been adequate.

4.0 ABORIGINAL CONSULTATION

As discussed in Section 2.2, BC Hydro, as a Crown actor, has a duty to consult Aboriginal peoples, which is distinct from other public consultation, and the Commission has a duty to assess the adequacy of that consultation. This section provides that assessment by first identifying the First Nations potentially affected by the project, assessing the level of potential adverse impacts, determining a scope of consultation for the potentially affected First Nations, and finally assessing the overall adequacy of BC Hydro's Aboriginal consultation for the Project.

4.1 Treaty 8 First Nations

The Project's location is within the boundaries of Treaty 8. Treaty 8 was signed in 1899 between the Government of Canada and various Aboriginal groups in northern British Columbia, Alberta, and Saskatchewan, and southern Northwest Territories.⁵⁸

The treaty itself is a short document, which includes:

And Her Majesty the Queen HEREBY AGREES with the said Indians that they shall have right to pursue their usual vocations of hunting, trapping and fishing throughout the tract surrendered as before described, subject to such regulations as may from time to time be made by the Government of the country, acting under the authority of Her Majesty, and saving and excepting such tracts as may be required or taken up from time to time for settlement, mining, lumbering, trading or other purposes.

As directed by the Supreme Court of Canada in *R. v. Badger* [1996] 1 S.C.R. 771 historic treaties must be interpreted in the sense that they would have been understood by the Aboriginal groups at the time of the treaty signing.⁵⁹

⁵⁶ CEC Final Argument, paras 90-92.

⁵⁷ Exhibit B-1, Section 4.3.2.

⁵⁸ Ibid., Section 4. 2. 3.

⁵⁹ *R. v. Badger*, [1996] 1 S.C.R. 771, para. 52.

To understand how the treaty would have been understood by the First Nations at the time of signing, one can look to the oral promises made by the treaty commissioners. These oral promises are contained in the September 1899 Report of the Treaty Commissioner and include:

...we had to solemnly assure them that only such laws as to hunting and fishing as were in the interest of the Indians and were found necessary in order to protect the fish and fur-bearing animals would be made, and that they would be as free to hunt and fish after the treaty as they would be if they never entered into it.⁶⁰

The Courts have interpreted the oral promises made at the time of the Treaty 8 signing as a guarantee of continuity in traditional patterns of economic activity and occupation.⁶¹

The Aboriginal groups at the time of treaty signing have formed various First Nations since that time. The present day signatories to Treaty 8 in British Columbia are:

- Blueberry River First Nations (Blueberry River);
- Doig River First Nation (Doig River);
- Fort Nelson First Nation (Fort Nelson);
- Halfway River First Nation (Halfway River);
- McLeod Lake Indian Band (McLeod Lake);
- Prophet River First Nation (Prophet River);
- Saulteau First Nations (SFN);
- West Moberly First Nations (West Moberly).⁶²

BC Hydro states that it consulted the BC government's Consultative Area Database and did not identify any First Nations other than the eight listed in the section above with interests in the Project area. Based on this search, BC Hydro states it initiated consultation with the eight Treaty 8 First Nations in 2011.

Of the eight First Nations, West Moberly and SFN have communities which are the closest to the Project area and McLeod Lake and SFN intervened in this proceeding.⁶³

4.2 Nature of assessment of potential adverse impacts

As per *Haida Nation v. British Columbia (Minister of Forests)*, 2004 SCC 73 (*Haida*) the scope of the duty to consult is determined by assessing the strength of the First Nations' claim to rights and the potential adverse impacts of a proposed project. This results in the scope of the duty to consult being "proportionate to a preliminary assessment of the strength of the case supporting the existence of the right or title, and to the seriousness of the potentially adverse effect upon the right or title claimed."⁶⁴

In the case of established treaty rights no strength of claim assessment is required. The Supreme Court of Canada in the decision *Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage)*, [2005] 3 S.C.R. 388, 2005 SCC 69 (*Mikisew*) provides guidance on determining the scope of the duty for treaty rights. In *Mikisew* the determination of the scope of the duty to consult is "governed by the context" which includes contextual factors such as the specificity of the treaty promises made and "the seriousness of the impact on the aboriginal people

⁶⁰ Report of Commissioners for Treaty No. 8, included in SFN Final Argument, para. 21.

⁶¹ *Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage)*, [2005] 3 S.C.R. 388, 2005 SCC 69, para. 47.

⁶² Exhibit B-1, p. 4-4.

⁶³ *Ibid.*, Figure 4-1, p. 4-5.

⁶⁴ *Haida Nation v. British Columbia (Minister of Forests)*, [2004] 3 S.C.R. 511, 2004 SCC 73, para. 39.

of the Crown's proposed course of action. The more serious the impact the more important will be the role of consultation.”⁶⁵

In its final argument, SFN submits that “established rights will require consultation that is more substantial than unproven rights” and “in sum, where a First Nation has established treaty rights, the extent of consultation owed is already at the higher end of the spectrum, and will further depend on : (1) a full understanding of those established rights; and (2) the seriousness of the impacts on the exercise of those rights.”⁶⁶ SFN cites *Chartrand v. British Columbia (Forests, Land and Natural Resource Operations)*, 2015 BCCA 345:

The extent of consultation consistent with the maintenance of the honour of the Crown may be measured by considering the strength of the claim and the potential impact of the Crown action upon the rights or claim asserted. A claim founded upon treaty rights starts from a relatively firm footing. Even before the duty to consult in relation to unproven claims was settled in *Haida*, the Crown acknowledged a duty to consult and accommodate where the government has taken on the obligation of protecting a specific Aboriginal interest or where it seeks to limit an established Aboriginal interest. Treaty claims rightly occupy the high end of the spectrum of claims demanding deep consultation.⁶⁷

In reply to SFN’s argument on the determination of scope of consultation with established treaty rights, BC Hydro submits: “...SFN argues that this one factor (an established treaty right) drives the entire *Haida* analysis. If SFN’s approach was adopted, it would suggest that any decision that operated anywhere in treaty territory was ‘presumptively at the higher end of the spectrum.’ There is no support for this in the case law.”⁶⁸

Commission determination

The Panel acknowledges that, as outlined by the BC Court of Appeal in *Chartrand* above, treaty rights start from a strong footing. As the Supreme Court of Canada stated in *Mikisew* regarding treaty cases, “[t]he question in each case will therefore be to determine the degree to which conduct contemplated by the Crown would adversely affect those rights so as to trigger the duty to consult.” However, the determination of the scope of the duty to consult is governed by the context in each case.⁶⁹ In *Haida*, the court established that “the level of consultation along the spectrum in a given treaty case depends, in part, on the severity of the potential impact on those rights although each case should be approached individually because the level of consultation may change as information is discovered in the consultation process”.⁷⁰

Thus, as per *Haida* and *Mikisew*, the Panel will determine the scope of the duty to consult the treaty First Nations in relation to the Project by first assessing the level of potential adverse impact from the Project.

4.3 Level of potential adverse impacts

As described more fully in previous sections of these reasons for decision, the Project involves quarrying rock from the SFQ area and trucking it to the riprap stockpile site approximately 40 kilometres away.⁷¹

⁶⁵ *Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage)*, [2005] 3 S.C.R. 388, 2005 SCC 69, para. 63.

⁶⁶ SFN Final Argument, paras. 13–14.

⁶⁷ *Chartrand v. British Columbia (Forests, Land and Natural Resource Operations)*, 2015 BCCA 345, para. 72.

⁶⁸ BC Hydro Reply Argument, p. 8.

⁶⁹ *Mikisew*, para. 34.

⁷⁰ *Haida*, para. 45.

⁷¹ Exhibit B-1, Appendix D-2, p. 32.

BC Hydro estimates the quarried material would require 50 round trips per day from June to October for two to three years.⁷² In addition to the trucks carrying quarried material, there are estimated to be about 25 water truck round trips per day using the same routes to mitigate dust.⁷³

The trucks will use the Table and Utah forest service roads which are currently owned and, the majority of which are in use, by Canadian Forest Products Ltd. (Canfor).⁷⁴ The Project will require construction of pullouts every 500 metres on the Table and Utah roads to allow trucks to pass in opposite directions.⁷⁵

The trucks will also use Spur Road which is a 3 kilometre provincial forestry road that was decommissioned in 1996 but will need to be re-activated (cleared) for use in the Project.⁷⁶

The following map shows the SFQ, Spur Road (SR), Table Forest Service Road (TSFR), and Utah Forest Service Road (UFSR).

Figure 6 – Map of Project Area⁷⁷



⁷² Ibid., p. 4-12.

⁷³ Exhibit C5-10, FNITR, p. 30; Exhibit B-18, SFN IR 3.17.3.

⁷⁴ Exhibit B-1, p. 4-15.

⁷⁵ Ibid., p. 4-14.

⁷⁶ Exhibit B-3, BCUC IR 1.22.1; Exhibit B-1, p. 4-15.

⁷⁷ Exhibit B-1, Appendix E-2(a), p. 8 of 95.

MLOA in the above map refers to the Marine Load Out Area which was relevant at the time the marine transport option was being considered but which is not proposed in the Application.

The following pictures provide a sense of the landscape and vegetation in the Project area.

Figure 7 – Table Creek Forest Service Road ⁷⁸



Figure 8 – Spur Road to Potential Quarry Site ⁷⁹



⁷⁸ Exhibit C5-10, FNITR, p. 6.

⁷⁹ Exhibit B-1, Appendix D-2, p. 69.

Figure 9 – Sand Flat Limestone Outcrop⁸⁰



In November 2014, BC Hydro's contractor Ecofor completed an assessment of the environmental impacts of the SFQ, Marine Load Out Area, Spur Road, and the road and marine transportation options.⁸¹ To complete the assessment, Ecofor identified the following Ecosystem Components for study and assessed the potential adverse impacts on these Ecosystem Components and mitigation options to reduce any impact:

- fish and fish habitat
- water quality
- vegetation
- migratory birds and waterfowl
- terrestrial wildlife
- wetlands
- air quality
- fossils
- cultural heritage resources.⁸²

The Ecofor report found a number of potential impacts on the Ecosystem Components but concluded that all impacts could be mitigated. A sample of the identified impacts and mitigations are shown below:

⁸⁰ Exhibit B-1, Appendix D-2, p. 71.

⁸¹ Ibid., Appendix E-2(a), p. 7 of 95.

⁸² Ibid., p. 10 of 95.

Table 2 – Sample of Potential Adverse Impacts and Mitigations from Ecofor Report⁸³

Common Name	Evaluation		
Bull trout (identified by Project team)	Bull trout are provincially blue listed species. They are present in Williston Reservoir and could be present in some of the fish bearing watercourses that are tributary to Williston Reservoir.		
Species	Potential Risk	Mitigation	Significance
Bull trout	Sedimentation into watercourses degrades water quality affecting aquatic organisms (food source) and or affecting the health of bull trout	Contractor will prepare a sediment and erosion control plan that will outline construction measures and best practices to prevent erosion and sediment entry into watercourses.	Mitigatable
Activity	Potential Risk	Potential Impact	Mitigation
SFQ Site preparation	Alteration to drainage patterns of identified NCD and NVC watercourses	No impact to fish expected	N/A
	Sedimentation into small watercourses	Impact to aquatic organisms	Contractor's Sediment and Erosion Control Plan
ROADS			
Road widening	Sedimentation into small watercourses	Impact to aquatic organisms	Contractor's Sediment and Erosion Control Plan
			Mitigatable

BC Hydro contracted for an Archaeological Impact Assessment for the SFQ in 2012 which found no archaeological or cultural heritage resources in the area.⁸⁴ However “BC Hydro acknowledges that there is a possibility that archaeological and cultural heritage features may not be known as the AIA subsampled moderate to high archaeological potential areas, which is standard based on the approved methodology.”⁸⁵

BC Hydro summarizes the following potential impacts identified by First Nations and its response or mitigation measures:

⁸³ Exhibit B-1, Appendix E-2(a), pp. 34, 35, and 36 of 95.

⁸⁴ Ibid., p. 4-11.

⁸⁵ Exhibit B-3, BCUC IR 1.16.1.

Potential impacts:	BC Hydro's response or proposed mitigation measures include: ^{86,87,88,89,90,91}
Development and restoration of the SFQ which has cultural and historical significance	<ul style="list-style-type: none"> • The Archaeological Impact Assessment found no archaeological or cultural heritage resources in the SFQ; • A Quarry Reclamation Plan was sent to First Nations in December 2014; • BC Hydro will continue to consult on reclamation plans; • A suitable Archaeological Chance Find Procedure will be developed and implemented in the case of an archaeological or culturally significant finding; • The legal requirement under the approved Quarry Permit is to reclaim SFQ back to an environment that is suitable for wildlife.
Impacts to wildlife and fish	<ul style="list-style-type: none"> • Specific mitigation measures for wildlife impacts described in the Ecofor report; • Caribou Mitigation Plan; • Fish Mitigation Plan; • Sediment and Erosion Plan; • Osprey Mitigation Plan.
Dust impacts from truck volume	<ul style="list-style-type: none"> • Dust Mitigation Plan.
Impacts to First Nations' safe passage on roads	<ul style="list-style-type: none"> • Traffic Management Plan.
Loss of medicinal and traditional plants near the roads	<ul style="list-style-type: none"> • BC Hydro organized a site visit with First Nations in 2015 to look for medicinal and traditional plants.
Increased public access to the area	<ul style="list-style-type: none"> • All roads to be used are existing forestry roads; • Public access to Spur Road and the SFQ site will be restricted by installing a gate and employing a security guard. As well Spur Road will be deactivated at the end of the Project by digging water bars or trenches and/or placing heavy logs on the road.

As discussed in later sections of these reasons, SFN completed a Traditional Knowledge and Use Study that identified five Valued Components and assessed the impact on each of these. BC Hydro submits that the Project activities will result in the impacts identified below or that any potential impacts to the Valued Components will be mitigated as follows:

- Hunting and trapping - some minimal and temporary disruption to wildlife and no residual impacts on the quantity or quality of wildlife with the appropriate mitigation measures;
- Gathering plants and medicines – clearing will be restricted to the SFQ area which will be reclaimed after

⁸⁶ Exhibit B-3, BCUC IR 1.16.1.

⁸⁷ Exhibit B-1, p. 4-15.

⁸⁸ Exhibit B-18, BCUC IR 3.31.2.

⁸⁹ Exhibit B-1, pp. 4-11 – 4-15.

⁹⁰ Exhibit B-3, BCUC IR 1.22.2.

⁹¹ Exhibit B-18, SFN IR 3.8.1.

use; studies show that no rare vegetation exists in the SFQ area and that similar vegetation is available for gathering surrounding the Project area, and a Dust Control Plan will be developed;⁹²

- Fishing and water – the Project does not pose serious harm to fish; a Sediment and Erosion Control Plan will be developed and water quality in all fish bearing streams will be monitored;
- Cultural continuity – temporary and seasonal lack of access to SFQ site and forestry roads; there will be temporary lack of access to Utah Road which may disrupt some access to Carbon Lake (a site identified as significant for SFN); other access routes to Carbon Lake will not be affected; a Traffic Management Plan will be developed.⁹³

The majority of BC Hydro's mitigation measures will be planned and delivered through its Environmental Management Plan (EMP) which clarifies environmental roles and responsibilities, identifies the potential environmental impacts in the Project area, and identifies best practices for environmental management and work procedures that will be followed to minimize environmental risks. More specific and detailed plans to address the requirements in the EMP will be contained in site specific Environmental Protection Plans (EPPs) that will be developed by BC Hydro's contractor for the Project. Although the EPPs will be developed by BC Hydro's contractor, all will be approved by BC Hydro before they are implemented.⁹⁴

BC Hydro states it will share the EMP with First Nations and will consider feedback received to modify the plan. BC Hydro will share any requested EPPs with First Nations and, similar to the EMP, will consider feedback from First Nations and make modifications to the draft EPP prior to finalizing.⁹⁵

As well, BC Hydro and its Project contractor intends to have an environmental monitor to review and audit compliance with the EPPs.⁹⁶ If the environmental monitors identify non-compliance with the EPP BC Hydro has the ability to stop work, issue a notice to its contractor requiring compliance in a reasonable amount of time, or terminating the contract.⁹⁷

Regarding cumulative impacts, BC Hydro states that no residual effects are expected because all potential effects from the Project are mitigable after the EMP is implemented, the SFQ is reclaimed and Spur Road is deactivated.⁹⁸ BC Hydro did not undertake a cumulative effects assessment because it states it relies on "provincial and federal regulatory guidelines which direct that a cumulative effects assessment is triggered where residual effects remain."⁹⁹

However, BC Hydro states it recognizes First Nations' concerns about the adequacy of land available for the exercise of their Treaty rights due to the rapid development in Treaty 8 territory. BC Hydro states it did consider the historical context of past impacts to understand the new potential impacts from the Project; an example of which is the concern about cumulative effects on caribou, including the Moberly caribou herd which has significantly declined in numbers, for which Ecofor undertook a specific assessment of potential impacts on caribou.¹⁰⁰

⁹² BC Hydro Final Argument, p. 15.

⁹³ Ibid., p. 16.

⁹⁴ Exhibit B-3, BCUC IR 1.23.1.

⁹⁵ Exhibit B-3, BCUC IR 1.23.4; Exhibit B-18, BCUC IR 3.29.1.1.

⁹⁶ Exhibit B-3, BCUC IR 1.23.5.

⁹⁷ Exhibit B-18, BCUC IR 3.29.1.2.

⁹⁸ Exhibit B-3, BCUC IR 1.21.1; Exhibit B-1, p. 4-15.

⁹⁹ Exhibit B-3, BCUC IR 1.20.1.

¹⁰⁰ Exhibit B-3, BCUC IR 1.20.2.

Considering cumulative impacts, BC Hydro maintains its view that the impacts are low because there will be no permanent impact on the availability of land on which First Nations can practice their treaty rights, there are no anticipated impacts on the Moberly caribou herd, and Spur Road will be deactivated after the Project which will limit public access.¹⁰¹

4.3.1 First Nations' identified impacts

On April 15, 2016, the SFN Traditional Knowledge and Use Study (SFN TUS) and the First Nations' Independent Technical Review (FNITR) were completed and submitted as evidence in this proceeding.¹⁰²

To complete the SFN TUS, 54 SFN members were interviewed. The SFN TUS shows "that the Project is situated in an area of high importance to SFN knowledge, use, and occupancy. Use and occupancy are at particularly high levels south along and around the Johnson Creek Road, Utah FSR, and areas surrounding Carbon Lake."¹⁰³

The SFN TUS looked at Valued Components and where these were exercised. The findings were that all Valued Components studied were exercised within the Project Area, the Local Study Area (LSA – within 5 km of the Project) and the Regional Study Area (RSA – within 25 km of the Project).

Table 3 – SFN TUS Valued Components Summary¹⁰⁴

Valued Components	Within 250 m of the proposed Project (footprint)		Within 5 km of the proposed Project (LSA)		Within 25 km of the proposed Project (RSA)	
	# of reported values	% of reported values	# of reported values	% of reported values	# of reported values	% of reported values
Hunting and trapping	61	39%	144	44%	746	36%
Gathering plants and medicines	32	20%	51	13%	220	11%
Fishing and water	25	16%	64	16%	345	17%
Cultural continuity	40	25%	110	27%	773	37%
TOTAL	158	100%	402	100%	2,084	100%

The TUS also found the Project would likely result in adverse impacts to SFN lands, use of lands, practice of Treaty rights and wellbeing.¹⁰⁵ Potential adverse impacts from the Project include:

- Dispersal of animals from Project related noise;
- Disruption of animal movement from Project related disturbances (e.g. road construction);
- Increased access to recreational hunters and increased hunting activity due to road upgrades;
- Increased risk of chemical contamination from the interaction of wildlife with water use for dust suppression, road compaction, and fire suppression, and blasting;

¹⁰¹ BC Hydro Final Argument, pp. 17–18.

¹⁰² Exhibit C5-10.

¹⁰³ Ibid., SFN TUS, Executive Summary, p. 2.

¹⁰⁴ Ibid., SFN TUS, p. 21.

¹⁰⁵ Ibid., SFN TUS, Executive Summary, p. 4.

- Physical damage to plant and medicine habitats from road widening, construction, and traffic;
- Deterioration of fish habitat and streams from sedimentation, dust, and erosion;
- Loss of enjoyment and connection to the land; and
- Loss of opportunities for teaching and learning traditional knowledge and the SFN way of life due to declines in animal and plant quantities and quality and due to barriers of access.¹⁰⁶

In addition to the SFN TUS, the FNITR was completed. It is a joint study on behalf of Doig River, McLeod Lake, SFN, and West Moberly which was initiated with the purpose of providing an independent review of the potential impacts of the Project on Aboriginal and Treaty rights.¹⁰⁷

The FNITR concluded that the Project would likely “impair the ability of First Nations people to exercise their Aboriginal and Treaty rights to hunt, fish, trap and carry out other traditional activities in the preferred locations and by their preferred means.”¹⁰⁸

The study identified negative impacts of the Project including:

- Impacts to water quality, fish, and fish, riparian and wildlife habitat through sediment accumulation in streams and sensitive ecosystems;
- Impacts to wildlife through the alteration of habitat and displacement and disturbance;
- Impacts to First Nations’ use and enjoyment of the land and to vegetation and wetland structure from dust emissions at the quarry site and along the access roads.¹⁰⁹

The FNITR also claimed Ecofor’s environmental study contained “gaps and deficiencies that render the conclusions on potential Project impacts unsound and that the construction of the Project requires additional mitigation measures.”¹¹⁰ The FNITR proposes 17 specific workplans to address and mitigate identified impacts.¹¹¹ The FNITR also claims BC Hydro’s cumulative impacts assessment focuses on residual effects and excludes assessment of existing cumulative effects.¹¹²

SFN summarizes the potential impacts of the Project as follows:

SFN members exercise their treaty rights, including hunting, trapping, fishing, and gathering of plants and medicines within and near to the Project footprint. SFN members hunt and trap for moose, deer and elk, grizzly bear, wolf, lynx, rabbit and grouse, and value wildlife habitat and use of a number of game trails. The Project footprint overlaps with streams, creeks and watercourses relied on for fishing by SFN members...Additionally, SFN members rely on the area to support the cultural continuity of SFN members’ ceremonial sites, spiritually important areas, burials and permanent and temporary habitation sites...¹¹³

¹⁰⁶ Exhibit C5-10, SFN TUS, Executive Summary, pp. 3–4.

¹⁰⁷ Ibid., Executive Summary, p. i.

¹⁰⁸ Ibid., p. iii.

¹⁰⁹ Ibid., pp. ii, iii.

¹¹⁰ Ibid., p. ii.

¹¹¹ Ibid., pp. v-vi.

¹¹² Ibid., Executive Summary, p. v.

¹¹³ SFN Final Argument, para. 67.

Project activities will restrict or prohibit SFN's access to the roads used for hauling. Along the [Forest Service Roads], SFN members exercise subsistence practice in relation to harvesting plants and medicines, including collecting berries, firewood, mushrooms and fungi. Cultural continuity and the preservation of SFN heritage, or traditional "mode of life" as referred to Treaty 8 Commissioners Report, will also be adversely impacted. This means that the Project will interfere with, or inhibit, the intergenerational transfer of knowledge and skills, such as occurs by visiting the location of traditional resources or sites used for the harvesting of cultural important items or other culturally important sites.¹¹⁴

McLeod Lake also completed a Knowledge and Use Study which concluded that its members use the Project area extensively for hunting, trapping, fishing, gathering berries and plants, camping, travelling, teaching traditional knowledge and performing ceremonies. The Knowledge and Use Study also concluded that the Project is likely to negatively impact the practice of McLeod Lake's treaty rights.¹¹⁵

4.3.2 BC Hydro's response to FNITR

BC Hydro submits that it has planned for further mitigations based on the results of the FNITR including:

- Providing First Nations with a trucking schedule to facilitate safe access to the Project area;
- Measuring turbidity levels in the nine fish bearing streams in the Project area to monitor water quality;
- Planning and undertaking vegetation removal in riparian areas to avoid windthrow risk;
- Providing First Nations opportunities to work as environmental monitors; and
- Contractually prohibiting BC Hydro's Project contractor from hunting or fishing in the Project area while engaged in employment activities for the Project.¹¹⁶

BC Hydro also states that it will consult on other mitigation measures suggested in the FNITR including:

- planned truck traffic stoppages to accommodate First Nations' traditional activities;
- informing the Project Contractor of First Nations' interest in avoiding the use of the three creeks for water withdrawal so the contractor can consider this in its Dust Mitigation Plan and EPP for road upgrades.¹¹⁷

BC Hydro states it cannot accept some mitigation measures from the FNITR but has provided a response to those it cannot accept. For example, regarding water withdrawals from the three streams it has a permit to withdraw from, BC Hydro states it "continues to believe, that there may be times during the course of the Project where drawing water from the three permitted creeks instead of the Williston Reservoir will reduce water truck traffic and its accompanying potential impacts."¹¹⁸

¹¹⁴ SFN Final Argument, para. 68.

¹¹⁵ Exhibit B-14, pp. 4–5.

¹¹⁶ Ibid., pp. 7–8.

¹¹⁷ Ibid., pp. 8–9.

¹¹⁸ Exhibit B-18, SFN IR 3.17.1.

4.3.3 BC Hydro's position on the assessment of impacts

BC Hydro assesses the potential impacts of the project to be low for the following reasons:

- The majority of work will be on previously disturbed lands;
- The trucking and quarrying activities are temporary and seasonal;
- There will be no permanent taking up of lands;
- The primary water source will be the Williston reservoir and withdrawals are not expected to have a residual effect. As well the water from streams will be taken in accordance with water permits BC Hydro has already received from other government agencies;
- The Ecofor report found that all impacts can be mitigated. That mitigation will occur through the EMP and EPPs;
- After mitigation there will be no residual impacts from the Project; and
- No heritage or archaeological sites have been identified at the SFQ or road sites.¹¹⁹

SFN assesses the potential impacts as serious and are in the mid to high range.¹²⁰ This position is based on the following:

- The SFN TUS shows that SFN members practices their treaty rights in a concentrated way in the Project area and it is therefore an area of significant traditional use for the SFN.¹²¹
- The Project is a large scale industrial mining operation based on the volume of riprap that will be quarried, the vegetation that will be cleared, the roads that will be widened and the 80 road pullouts constructed.¹²²,
- The quarrying will cause permanent changes to the landscape; and¹²³
- The fact that potential impacts may be temporary does not necessarily mean they are at a low level.¹²⁴

Commission determination

Based on the evidence before it, the Panel assesses the potential adverse impacts of the Project on the Treaty 8 rights to be low. This is based on a number of factors. First, while there will be a significant amount of truck traffic and quarrying activity for the Project, the trucking and quarrying will be temporary (2-3 years) and seasonal. During the time work is occurring it may cause temporary disruption to the exercise of treaty rights.

As well, while the SFQ will be quarried and thus the rock features changed permanently, the site must be reclaimed back to a state suitable for wildlife at the conclusion of the Project. First Nations will be able to exercise their treaty rights on the SFQ after it has been reclaimed. Thus the potential adverse impact to treaty rights of the quarrying is temporary.

¹¹⁹ BC Hydro Final Argument, pp. 13-14.

¹²⁰ SFN Final Argument, para. 73.

¹²¹ Ibid., para. 57.

¹²² Ibid., para. 58; Exhibit B-18, SFN IR 3.19.3

¹²³ SFN Final Argument, para. 60

¹²⁴ Ibid., para. 32

BC Hydro has also implemented extensive mitigation measures through the EMP and EPPs. Thus the temporary and seasonal potential impacts that may occur will be lessened through the mitigation strategies planned.

Regarding cumulative impacts, while both BC Hydro and SFN acknowledge that Treaty 8 territory has undergone rapid development, this does not cause the assessment of the new impacts from this Project, which are temporary and seasonal, to be greater than low.

4.4 Scope of BC Hydro's duty to consult

BC Hydro assesses the scope of the duty to consult to be at the lower end of the *Haida* spectrum based on the "framework set out in Treaty 8 and BC Hydro's conclusion that the Project will have limited and temporary adverse impacts on [SFN]."¹²⁵ BC Hydro submits that the Project, a dam safety Project, is "precisely the type of Crown action contemplated by the 'taking up' clause in Treaty 8."¹²⁶

SFN submits that the level of consultation required is at the middle of the *Haida* spectrum and that BC Hydro's analysis of a scope at the low end is incorrect and based on two legal errors, that BC Hydro misunderstood the nature and scope of SFN's treaty rights and that it incorrectly assessed the severity of potential adverse impacts.¹²⁷

In support of its position, SFN submits that established treaty rights are located at the higher end of the *Haida* spectrum and the potential impacts of the Project are significant.¹²⁸

SFN does acknowledge that the temporary nature of the Project and the mitigation measures planned may cause the scope of duty to consult to be at the middle of the *Haida* spectrum but not at the lower end.¹²⁹

Commission determination

The Panel has considered the framework set out in *Haida* and *Mikisew* that consultation in a treaty case is determined by the context, including an assessment of the severity of potential impacts on treaty rights. Based on this framework and the Panel finding that level of potential impact from the Project on Treat 8 rights is low, the Panel finds that the scope of duty to consult First Nations for the Project is at the lower end of the *Haida* spectrum.

4.5 Adequacy of BC Hydro's consultation

BC Hydro first notified all Treaty 8 First Nations about the Project in the December 2011 letter to the Chiefs of the First Nations.¹³⁰ The letter provided a project overview and proposed investigations and schedule for the Project.¹³¹

Subsequent project updates were sent to all Treaty 8 First Nation Chiefs on March 28, 2012, August 28, 2012, March 3, 2012, January 27, 2014, December 19, 2014 and August 14, 2015. These updates provided further

¹²⁵ BC Hydro Final Argument, p. 11.

¹²⁶ Ibid., p. 12.

¹²⁷ SFN Final Argument, para. 49.

¹²⁸ Ibid., paras. 74, 51.

¹²⁹ Ibid., para. 55.

¹³⁰ Exhibit B-1, p. 4-19.

¹³¹ Ibid., Appendix F, pp. 48–50.

information on the Project details and informed of any changes to the Project plan provided in earlier updates.¹³²

On November 25, 2015, BC Hydro provided a copy of the initial Commission order for the proceeding which established the preliminary regulatory timetable for the Commission's review of the Project including information on how First Nations could participate in the proceeding.¹³³

In addition, BC Hydro consulted individually with all the BC Treaty 8 First Nations as detailed below.

4.5.1 SFN

BC Hydro met with SFN a number of times including February 7, 2012, March 20, 2012, and August 10, 2014. At the March meeting SFN inquired about capacity funding and expressed a preference for the marine transport option and interest in reclamation planned for the SFQ site. In August 2014, SFN also confirmed it would participate in the FNITR.¹³⁴

SFN also participated in a number of site visits including May 20, 2012 at the SFQ site, June 2012 for two archaeological assessments site visits, June and August 2014 site visits to do field work for the Archaeological Impact Assessment with Ecofor, and September 2014 to the SFQ site.

On January 21, 2015, BC Hydro met with SFN, McLeod Lake, and West Moberly. BC Hydro met with these three First Nations again on May 14, 2015 as part of consultation meetings with Ministry of Forests, Lands and Natural Resource Operations (FNLRO). In the May 14, 2015 meeting, SFN expressed concerns about truck traffic and SFN and West Moberly specified that they would like funding to complete a TUS.¹³⁵

On May 20, 2015, SFN provided BC Hydro with a proposal for its TUS which it then revised on October 7, 2015, and BC Hydro accepted on October 9, 2015.

In September 2015 approximately 40 Elders from SFN, McLeod Lake, and West Moberly were given a presentation on the Project by BC Hydro and participated in a site visit to the Project Area. On October 14 and November 6, 2015, BC Hydro met again with SFN, McLeod Lake, and West Moberly to discuss the Project.¹³⁶

After the Application was filed with the Commission, SFN actively intervened in this proceeding.

BC Hydro and SFN signed a capacity funding agreement effective February 9, 2016.¹³⁷

On February 15, 2016, BC Hydro met with SFN, McLeod Lake, and West Moberly for a Treaty 8 Quarterly Update meeting where the parties discussed the Project.¹³⁸

On February 16, 2016, SFN wrote to BC Hydro with a list of mitigation measures stemming from the FNITR. BC Hydro responded on March 10, 2016 indicating the proposed measures that were already addressed, the measures BC Hydro expected to be addressed in the EPPs, and the measures BC Hydro required more

¹³² Ibid., Appendix F, pp. 54–93.

¹³³ Exhibit B-14, Appendix C-5, p. 1.

¹³⁴ Exhibit B-1, p. 4-26.

¹³⁵ Ibid.

¹³⁶ Ibid., p. 4-27.

¹³⁷ Exhibit B-14, Appendix C-1, p. 3.

¹³⁸ Ibid., Appendix C-3, p. 3.

information on. SFN indicated to BC Hydro that they were not satisfied with these responses and on April 19, 2016 BC Hydro revised its responses and provided them to SFN.¹³⁹ On April 21, 2016, BC Hydro, Ecofor, SFN, and SFN's consultants that completed the FNITR and the SFN TUS held a meeting to discuss the proposed mitigation plans. BC Hydro states that it offered further capacity funding to SFN at this meeting.¹⁴⁰

4.5.2 McLeod Lake

BC Hydro met with McLeod Lake for the first time regarding the Project on February 10, 2012. That month BC Hydro and McLeod Lake agreed to capacity funding.

McLeod Lake participated in site visits with BC Hydro to the Project area in 2012, 2014 and 2015 and attended two archaeological assessment site visits in June 2012 to the SFQ site. In June and August 2014 McLeod Lake participated in field work for the Archeological Impact Assessments.

In May 2015, McLeod Lake, West Moberly and SFN met with BC Hydro as part of FNLRO's consultation regarding the Project.¹⁴¹

In September 2015 approximately 40 Elders from McLeod Lake, West Moberly and SFN participated in a site visit to the Project Area. On October 14 and November 6, 2015, BC Hydro met again with McLeod Lake, SFN and West Moberly to discuss the Project.¹⁴²

BC Hydro states that McLeod Lake identified potential impacts related to stream obstruction, wildlife impacts, and loss of medicinal plants.¹⁴³

On January 20, 2016, BC Hydro and McLeod Lake signed a capacity funding agreement, including funding for a TUS.¹⁴⁴

On February 15, 2016, BC Hydro met with McLeod Lake, West Moberly, and SFN for a Treaty 8 Quarterly Update meeting where the parties discussed the Project.¹⁴⁵

McLeod Lake intervened in the proceeding on the Application. As part of its intervention, Mr. Davis, Land Referral Officer for McLeod Lake, attended the first procedural conference where he stated McLeod Lake's position on the Project as:

So, it's late in the game, there are potentials for impacts, we're well aware of that. However, Hydro has said, yeah, let's stop and we'll look at these mitigations and we'll do some adaptive monitoring plans, and we'll get this stuff figured out down the road. So, I'm happy with that. So, yeah, let's get going on this project.

My concern is if something pops up on this TLUS or FNITI that nobody foresaw, this is going to cause problems, yes or no? But I have to go back to the main view, safety. That dam fails, we're

¹³⁹ Ibid., pp. 18–19.

¹⁴⁰ Ibid., p. 19.

¹⁴¹ Exhibit B-1, p. 4-29.

¹⁴² Ibid., p. 4-27.

¹⁴³ Exhibit B-1, pp. 4-24 – 4-25.

¹⁴⁴ Exhibit B-14, Appendix C-2, p. 3.

¹⁴⁵ Ibid., Appendix C-3, p. 3.

all hooped. We'll die up there. You guys will lose your power, but we will die up there. We'll lose our land, we'll lose lots. So, I go back to the safety issue, let's take care of that first.¹⁴⁶

On April 15, 2016, McLeod Lake completed its Knowledge and Use Study which was submitted as evidence in this proceeding on April 27, 2016.¹⁴⁷

4.5.3 West Moberly

BC Hydro first met with West Moberly regarding the Project on February 8, 2012. In May 2015, West Moberly, McLeod Lake, and SFN met with BC Hydro as part of FNLRO's consultation regarding the Project.¹⁴⁸ On October 14, 2015 BC Hydro met again with West Moberly, McLeod Lake and SFN. West Moberly indicated they wanted a TUS but at the date of the application BC Hydro states it has not yet received a proposal. On November 6, 2015, BC Hydro met again with West Moberly, McLeod Lake and SFN.

West Moberly also participated in two archaeological assessment site visits in June 2012, field work in June and August 2014 for the Archeological Impact Assessments, and site visits to the SFQ site in September 2014 and July 2015. In September 2015 approximately 40 Elders from West Moberly, McLeod Lake, and SFN participated in a site visit to the Project Area.¹⁴⁹

On December 15, 2015, BC Hydro met with West Moberly and they expressed significant concern about the land transport option rather than the marine option. In its response, BC Hydro provided further information on why the marine option was not viable.¹⁵⁰

BC Hydro and West Moberly met again on January 11 and March 24, 2016.¹⁵¹

On February 15, 2016, BC Hydro met with West Moberly, McLeod Lake and SFN for a Treaty 8 Quarterly Update meeting where the parties discussed the Project.¹⁵²

On March 29, 2016, BC Hydro emailed to confirm its offer of capacity funding for a TUS if West Moberly provided a proposal.¹⁵³

Throughout its consultation, BC Hydro states that West Moberly identified the following potential impacts from the Project: impacts to caribou, increased public access during hunting season, increased truck traffic, impacts to stream crossings, and cumulative effects.¹⁵⁴

4.5.4 Doig River

BC Hydro first met with Doig River regarding the Project on June 19, 2012.¹⁵⁵ Doig River participated in site visits to the Project area in 2012, 2014 and 2015. BC Hydro and Doig River met again on April 29, 2015 with FNLRO

¹⁴⁶ Transcript Volume 1, p. 46.

¹⁴⁷ Exhibit B-14-1.

¹⁴⁸ Exhibit B-1, p. 4-29.

¹⁴⁹ Ibid., p. 4-30.

¹⁵⁰ Exhibit B-14, Appendix C-3, p. 2.

¹⁵¹ Ibid, Appendix C-3, p. 4.

¹⁵² Ibid, Appendix C-3, p. 3.

¹⁵³ Ibid, Appendix C-3, pp. 4-5.

¹⁵⁴ Exhibit B-1, p. 4-31.

¹⁵⁵ Ibid., p. 4-19.

and Ecofor and discussed raptor nest management and potential impacts to water quality. BC Hydro and Doig River met again on September 22, 2015 where Doig River confirmed interest in participating in the FNITR, capacity funding and procurement opportunities.¹⁵⁶

BC Hydro and Doig River met again on January 15, 2016. At the meeting Doig River made information requests which BC Hydro responded to on January 26, February 19 and February 2, 2016 by email.¹⁵⁷

BC Hydro states it has responded to the potential impacts raised by Doig River including a concern raised about mercury levels rising in Williston Reservoir. In its response, BC Hydro commissioned an expert opinion regarding methylmercury which concluded that there would be no significant increases as a result of the Project.¹⁵⁸

4.5.5 Blueberry River, Fort Nelson, Halfway River and Prophet River

BC Hydro met with Blueberry River on January 26, 2012. Blueberry River also participated in site visits to the Project area in 2012, 2014 and 2015. BC Hydro states that Blueberry River did not identify any potential impacts from the Project.¹⁵⁹

BC Hydro met with Fort Nelson on February 6, 2012. Fort Nelson requested to be provided project updates which BC Hydro states it has done. BC Hydro also states that Fort Nelson has deferred consultation to the southern Treaty 8 First Nations because the Project is in that region.¹⁶⁰

BC Hydro met with Halfway River on January 25, 2012, February 5, 2014, June 1, 2015 and September 2, 2015. BC Hydro states that Halfway River raised concerns about traffic during quarrying and dust impacts on wildlife. BC Hydro states it informed Halfway River that traffic and dust management plans would be required EPPs of the contractor.¹⁶¹

BC Hydro states that Prophet River participated in field work for the Archaeological Impact Assessments in June and August 2014 done by Ecofor and has raised no concerns about the Project. BC Hydro has requested meetings with Prophet River but no meeting has yet been held.^{162,163}

4.5.6 Positions on the adequacy of consultation

BC Hydro submits that consultation and accommodation have been adequate.¹⁶⁴ It submits that there are severe potential consequences of a dam breach, which could occur if the Project is not undertaken and that all potentially affected First Nations directly benefit from the Project because of the resulting decreased safety and environmental risks.¹⁶⁵

¹⁵⁶ Ibid., p. 4-20.

¹⁵⁷ Exhibit B-14, Appendix C-4, p. 1.

¹⁵⁸ Exhibit B-1, p. 4-20 – 4-21.

¹⁵⁹ Ibid., p. 4-19.

¹⁶⁰ Ibid., p. 4-21.

¹⁶¹ Ibid., pp. 4-22 – 4-23.

¹⁶² Ibid., Appendix F, p. 27 of 93.

¹⁶³ Ibid., p. 4-25.

¹⁶⁴ BC Hydro Final Argument, p. 8.

¹⁶⁵ Ibid., pp. 7–8

BC Hydro submits that it commenced consultation when the Project was “in its infancy” in December 2011.¹⁶⁶

Regarding SFN, BC Hydro submits that it has consulted in good faith, provided capacity funding for the SFN TUS and FNITR, carefully considered each mitigation measure requested in the FNITR, incorporated several of these measures into the Project, and provided rationale for those measures it did not accept. As well, BC Hydro submits that it continues to consult on the mitigation measures requested.¹⁶⁷ As well, through the Commission’s regulatory process, SFN has been provided the opportunity to, among other things, file evidence, and express its interests directly to a decision maker.¹⁶⁸

BC Hydro submits:

...the depth of information provided in BC Hydro’s substantive responses to each of the Requested Mitigation Measures [in the FNITR] supports that BC Hydro gave serious consideration to the individual requests made...

The fact that BC Hydro has not accepted all of the Requested Mitigation Measure and continues to consult on those that are outstanding does not mean consultation is inadequate. The duty to consult is a procedural protection, it does not guarantee a substantive right of accommodation.¹⁶⁹

BC Hydro admits that the EMP could have been provided to SFN earlier but the EMP was reviewed as part of the FNITR and it will be amended to address concerns raised about Caribou critical habitat and operational wildlife protection and monitoring.¹⁷⁰

BC Hydro further submits that as an agent of the Crown, it must balance safety, First Nations, ratepayer interests, environmental interests and more when making decisions on the Project.¹⁷¹

BC Hydro states that it acknowledges that it and SFN disagree on the adequacy of BC Hydro’s response to the mitigation measures requested in the FNITR but that this disagreement is not a basis on to find the honour of the Crown has not been maintained. BC Hydro cites *Haida*, para. 45: “the Crown is bound by its honour to balance societal and Aboriginal interests in making decisions that may affect Aboriginal claims. The Crown may be required to make decisions in the face of disagreement as to the adequacy of its response to Aboriginal concerns. Balance and compromise will then be necessary.”¹⁷²

Regarding its consultation with McLeod Lake, BC Hydro states it has been responsive to the First Nations’ information and capacity requests. BC Hydro provided capacity funding to support McLeod Lake’s review of the Project including engaging consultants for a Knowledge and use Study and the FNITR.¹⁷³

Regarding the remaining six Treaty 8 First Nations, BC Hydro states it notified all early in the Project and that it provided the First Nations detailed information about the Project throughout the consultation process, considered First Nation feedback about potential impacts, and responded to requests received.¹⁷⁴

¹⁶⁶ Ibid., p. 9.

¹⁶⁷ Ibid., pp. 9–10.

¹⁶⁸ BC Hydro Final Argument, pp. 21–22.

¹⁶⁹ Ibid., p. 27.

¹⁷⁰ Ibid., p. 22.

¹⁷¹ Exhibit B-18, SFN IR 3.11.2.

¹⁷² BC Hydro Final Argument, p. 34.

¹⁷³ Ibid., p. 35.

¹⁷⁴ Ibid., p. 37.

SFN was the only First Nation to submit final argument in this proceeding. In it, SFN argues that BC Hydro failed to appropriately determine the scope of consultation and failed to adequately consult and accommodate SFN.¹⁷⁵

Specifically, SFN's position is that BC Hydro failed to consult about the Ecosystem Components that were selected and studied for in the Ecofor report. SFN submits that there is no evidence that BC Hydro advised the First Nations that it was commissioning the Ecofor report and that BC Hydro's failure to consider SFN views on the selection of the Ecosystem Components shows that BC Hydro has not consulted in good faith with the intention of substantially addressing SFN concerns.¹⁷⁶

In reply, BC Hydro argues that Ecofor's selection of Ecosystem Components was informed by a number of sources including First Nations. BC Hydro also acknowledges that having SFN's preferred Valued Components prior to undertaking the Ecofor report would have been helpful had it been available to BC Hydro in 2014 but that the standard required in consultation is reasonableness not perfection. However, BC Hydro submits that any deficiencies in consultation on the Ecofor report "were addressed through the completion of the FNITR, the TUS and the ongoing consultation on mitigation measures to address the potential impacts to [Valued Components] identified therein."¹⁷⁷

SFN also submits that BC Hydro failed to address impacts from trucking and that BC Hydro's proposed further mitigations of providing the trucking schedule to First Nations and developing a communication plan do not address SFN's concerns or requests set out in the FNITR including requests to stop truck traffic at dusk, reduce speed to 30 km/hour, and to use a pilot car.¹⁷⁸

SFN also submits that BC Hydro has failed to demonstrably integrate SFN concerns into the EMP. SFN states that BC Hydro responded that it was in the process of updating its EMP but that "those updates would address only two of the several matters raised in the FNITR (i.e. 'caribou critical habitat' and 'operational wildlife protection')."¹⁷⁹

SFN argues that BC Hydro's "rejection of SFN's request to limit withdrawal to the Williston Reservoir reveals that convenience was a determining factor for [BC Hydro] in determining its approach to water withdrawals, rather than legitimate concerns about SFN's rights or impacts on the environment."¹⁸⁰

SFN submits that the SFN TUS details specific uses of creeks in the Project area including subsistence fishing and that rather than engaging with SFN respecting these concerns, BC Hydro provided a response that there may be times when drawing water from the three permitted creeks will reduce truck traffic and traffic impacts.¹⁸¹

Based on its position that consultation has been inadequate, SFN submits that the Commission must reject the section 44.2 expenditure schedule.¹⁸²

¹⁷⁵ SFN Final Argument, para. 7.

¹⁷⁶ SFN Final Argument, paras. 77, 85 and 88.

¹⁷⁷ BC Hydro Reply Argument, pp. 16–17,

¹⁷⁸ SFN Final Argument, paras. 90–93.

¹⁷⁹ Ibid., paras. 100, 103.

¹⁸⁰ Ibid., para. 123.

¹⁸¹ Ibid., paras. 126–128.

¹⁸² Ibid., para. 195.

In reply BC Hydro argues “[w]ith respect, SFN has confused two concepts:

- The law requires that SFN be provided ‘an opportunity to express their interests and concerns, and to ensure that their representations are seriously considered and, wherever possible, demonstrably integrated into the proposed plan of action’.
- The law does not require that the Crown adopt, without amendment, very detailed and specific mitigation strategies and operational constraints proposed by a First Nation as a means to address their interests and concerns.”¹⁸³

BC Hydro submits that its response table to the FNITR clearly supports BC Hydro’s position that it has “seriously considered the concerns raised by SFN and has, where possible in light of the current stage of the Project, ‘demonstrably integrated’ those concerns into its plan of action with respect to the development of the Project in order to minimize impacts.”¹⁸⁴

Commission determination

The Panel finds BC Hydro’s consultation has been adequate to the point of this decision. In *Haida* the court sets out that in cases where the scope of the duty to consult is low, the consultation required may only be to “give notice, disclose information, and discuss any issues raised in response to the notice.”¹⁸⁵ This Panel finds that BC Hydro has exceeded the consultation required of a scope of duty to consult at the lower end of the spectrum and that its consultation is better characterized as in the medium range of the spectrum. This is based on the following:

- BC Hydro informed First Nations of the Project in 2011 when the Project was in an early stage;
- BC Hydro met with First Nations multiple times to provide Project updates and ask about concerns;
- BC Hydro offered capacity funding to the First Nations who requested it which was used to support First Nations participation in the consultation and to complete the FNITR and TUS;
- While BC Hydro had assessed the potential adverse impacts of the Project through the Ecofor report, BC Hydro became fully informed of the potential adverse impacts of the Project through the FNITR and SFN TUS;
- BC Hydro responded to First Nations’ concerns in a timely way and in writing throughout the consultation process, most notably with the detailed response to SFN regarding the FNITR mitigation measures, responses such as commissioning a methyl mercury expert option for Doig River, and written responses to concerns raised by McLeod Lake and West Moberly;
- BC Hydro has implemented extensive mitigation measures to address the potential adverse impacts of the Project. Most mitigation measures will be implemented through the EPPs which BC Hydro will continue to consult with First Nations on; and
- BC Hydro will continue to consult with First Nations until the Project is complete.

The Panel agrees with BC Hydro that the law requires the Crown to seriously consider First Nation concerns and wherever possible integrate those into the proposed plan but that the law does not require the Crown to adopt all the specific mitigation strategies put forward by First Nations. The Panel finds that while BC Hydro did not adopt all the mitigation strategies put forward in the FNITR, the evidence is that it did consider all, implemented

¹⁸³ BC Hydro Reply Argument, pp. 19–20.

¹⁸⁴ Ibid., pp. 20–21.

¹⁸⁵ *Haida*, para. 43.

those that worked within the balance of all interests in the Project, and provided a response as to why others would not be implemented.

While finding consultation adequate, the Panel does note that consultation may have been more meaningful for First Nations if BC Hydro or Ecofor consulted with First Nations on the selection of the Ecosystem Components on which the environmental report was based prior to the environmental study being undertaken and included the components important to First Nations in its study. The Panel agrees with BC Hydro that the Ecosystem/Valued Components important to the First Nations have now been studied through the FNITR but it appears that consultation could have been more meaningful and responsive if BC Hydro had incorporated First Nations in the selection of these Components for its environmental review early in the process.

The Panel notes that BC Hydro's position in this proceeding was that despite the fact that it had agreed to a TUS and the FNITR and provided funding for both, BC Hydro's initial proposal for the review process for this proceeding omitted the inclusion of these studies. This omission was remedied by the regulatory timetable set by this Commission but the Panel notes that this position taken by Hydro may have given an impression that these studies were of lesser value than they were.

5.0 EXPENDITURE SCHEDULE APPROVAL

As outlined in Section 2 in these reasons, in determining whether the capital expenditure schedule is in the public interest, the Panel must consider:

- the adequacy of Aboriginal consultation;
- the interests of persons in British Columbia who receive or may receive service from the BC Hydro;
- BC's energy objectives;
- BC Hydro's applicable integrated resource plan; and
- any guidelines or targets prescribed under Section 19 of the *Clean Energy Act*, of which there currently are none.

Commission determination

BC Energy Objectives

The Panel finds that the Project supports BC's Energy Objectives, in particular objectives (a), (c), (e) and (f), because it:

1. Assists in achieving electricity self-sufficiency for BC, by ensuring the continuance of the Dam and the associated GMS generating facility is the single largest generation facility in the BC Hydro system;
2. Contributes to the generation of at least 93 percent of the electricity used in BC from clean or renewable energy because the Dam and the associated GMS generating facility is the single largest generation facility in the BC Hydro system and produces clean electricity from a renewable source;
3. Ensures that BC Hydro's ratepayers receive the benefits of the heritage assets; and
4. Helps to ensure that the authority's rates remain among the most competitive in North America by significantly reducing the risk of significant and costly damage if a major damage event occurs.

BC Hydro's Integrated Resource Plan

Section 1 of the *Clean Energy Act* classifies the generating and storage assets commonly known as GM Shrum (GMS) as heritage assets. The Dam is a storage asset of the GMS generating facility. BC Hydro's most recent Integrated Resource Plan (2013 IRP) was approved by the Provincial Government on November 25, 2013. BC Hydro's baseline forecast energy and capacity load resource balances are respectively shown in Tables 1 and 2 of Appendix 9A of the 2013 IRP. The baseline forecasts include the existing and committed hydroelectric heritage assets and shows them contributing at a constant level throughout the planning period.

The Public Interest

For the reasons outlined in Sections 3 and 4, the Panel finds that the project is in the public interest. BC Hydro has developed a suitable design and well defined plan with sufficient risk mitigation measures, BC Hydro has appropriately considered the alternatives, the Project costs are justified and reasonable and the consultation is adequate.

The Panel also considered the interests of BC Hydro's customers, BC Hydro's applicable Integrated Resource Plan and BC's Energy Objectives. Pursuant to section 44.2 of the *Utilities Commission Act*, the part, not relating to the Emergency Stockpile Riprap, of British Columbia Hydro and Power Authority's (BC Hydro) expenditure schedule (Expenditure Schedule), which has in total a median (P50) estimate of \$137.1 million for the W.A.C. Bennett Dam Riprap Upgrade Project (Project), is accepted.

The expenditure for the emergency stockpile is discussed below.

6.0 ISSUES ARISING

6.1 Riprap stockpile

BC Hydro submits that as part of the Project, an additional 8,000 cubic meters of limestone riprap will be quarried from the SFQ, trucked to the Dam site and stockpiled for possible future maintenance or emergency use.¹⁸⁶ BC Hydro's estimate of the direct cost of the riprap stockpile is provided confidentially in the Application.¹⁸⁷

BC Hydro maintains that the Dam is expected to require future repairs to the riprap, and that it would be prudent to stockpile the riprap now rather than trying to source riprap at some time in the future under a reactionary scenario with additional permitting costs and risks.¹⁸⁸ However, BC Hydro also stated the riprap is expected to last in the order of 50 years or longer without the benefit of repair¹⁸⁹ and that without the benefit of a functioning riprap layer no specific critical zone erosional events have been noted since 1998.¹⁹⁰

BC Hydro submits that the new limestone riprap stockpile can, if required, be used in case of emergency to stabilize the Dam though there is no safety requirement or guideline requiring such a stockpile.¹⁹¹ BC Hydro also states that as part of the existing Enhanced Surveillance and Response Plan developed in 2002 it has stockpiled

¹⁸⁶ Exhibit B-1, Section 3.2, p. 3-7.

¹⁸⁷ Ibid., Appendix D-1, Table 7, p. 8-3.

¹⁸⁸ Exhibit B-3, BCUC IR 9.2.

¹⁸⁹ Ibid., BCUC IR 9.2.2.

¹⁹⁰ Ibid., BCUC IR 2.1.

¹⁹¹ Ibid., BCUC IR 9.2.1.

6,700 cubic meter sandstone riprap and maintains a list of contractors and sources of additional rock for emergencies.¹⁹²

BC Hydro submits that the Commission has the authority under section 44.2(3) of the UCA to accept or reject the Expenditure Schedule and that while in some cases rejection of a part of a capital expenditure schedule may be appropriate, such is not the case where the capital expenditure schedule consists of a single project as in this case. BC Hydro submits that partial acceptance of the expenditures would materially alter the scope, schedule, and cost of the Project and that these decisions properly rest with BC Hydro and are not appropriate for a section 44.2 determination.¹⁹³

CEC supports BC Hydro's plans for the existing riprap stockpile and for stockpiling the upgraded riprap for future unknown event response as may be required.¹⁹⁴

Commission determination

The Panel finds the further stockpiling of riprap is not in the public interest. **The part of the Expenditure Schedule concerning the Emergency Stockpile Riprap, which relates to the stockpiling of 8,000 cubic meters of riprap for potential future use, is rejected.**

The Panel does not accept BC Hydro's argument the Commission may not reject parts of an expenditure schedule where the capital expenditure schedule consists of a single project. To accept BC Hydro's argument could result in either: a diminishment of the Commission oversight responsibility or the procedurally inefficient rejection of a schedule which the Commission would otherwise find in the public interest. The Panel does accept that the rejection of part of a line item expenditure may result in the alteration of scope, schedule and/or cost of projects and have consequences for the utility. However, the weighing of the consequences of rejection is appropriately done on a case-by-case basis and is one of the considerations the Commission takes into account when determining whether a part of an expenditure schedule is in the public interest.

It is BC Hydro's evidence that the Sands Flat limestone riprap will have an expected performance life "in the order of 50 years or longer without the benefit of repair."¹⁹⁵ As discussed in Section 3.4, by choosing limestone riprap with a minimum diameter of 730 millimeters the riprap will meet performance criteria for 1/100, 1/1000 and 1/10,000 wind/wave events. While recognizing that an extreme wind/wave event could require the addition or replacement of some riprap, the Panel notes that the Dam face has been relatively stable since 1998 without fully functioning riprap or filter layers. In the event that BC Hydro does require riprap for maintenance the evidence suggests that though such a response could be characterized as "reactionary," it would not likely be urgent, disruptive to operations or unnecessarily costly. The Panel further notes that the existing stockpile of 6,700 cubic metres of sandstone riprap will be maintained at the site for any future required use.¹⁹⁶

The Panel accepts that stockpiling additional riprap as part of the Project may result in savings in permitting and mobilization costs should repairs be needed that require additional riprap above and beyond that available from the existing sandstone riprap stockpile. The Panel finds that based on the evidence of the performance criteria of the limestone riprap, the additional stockpile is not required from a safety perspective to meet a potential emergency situation. The stockpile can be viewed as a financial insurance policy, incurring costs now to potentially avoid greater costs in the future. Given the uncertainty of future costs and the low probability of

¹⁹² Exhibit B-1, Section 3.2, p. 2-8.

¹⁹³ BC Hydro Final Argument, Section 2.2, p. 4.

¹⁹⁴ CEC Final Argument, para 101.

¹⁹⁵ Exhibit B-3, BCUC IR 1.9.2.2

¹⁹⁶ Exhibit B-3, BCUC IR 1.9.1

needing the additional stockpile, the Panel's finds that creating the stockpile does not provide sufficient value to ratepayers. The Panel notes that the riprap stock pile is peripheral to the project scope and its rejection should not have a material impact on the project schedule.

6.2 BC environmental assessment reviewable project criteria

SFN submits that the SFQ "will have a production capacity of $\geq 250\,000$ tonnes/year of quarried product" and therefore is a "reviewable project" under the BC *Environmental Assessment Act*, and as per the criteria for Construction Stone and Industrial Mineral Quarries¹⁹⁷ contained in the *Reviewable Projects Regulation*. SFN submits that the $\geq 250\,000$ tonnes per year threshold is to be calculated, not based on the amount of rock to be used BC Hydro for placement on the dam, but rather by the amount of rock to be excavated at the quarry and that the amount of rock to be excavated is in fact 1,560,200 tonnes of in-situ limestone.¹⁹⁸ SFN infers that the Environmental Assessment Office incorrectly interpreted the BC *Environmental Assessment Act* as evidenced in its reply email¹⁹⁹ to BC Hydro confirming that the Project does not meet the reviewable project criteria.²⁰⁰ SFN submits that if a proponent has failed to secure an environmental assessment certificate, that Section 9 of the BC *Environmental Assessment Act* prevents government agents that administer other enactments from issuing approvals for the proponent's project under those enactments.

SFN goes on to cite case law in support of its position, specifically *Fort Nelson First Nation*²⁰¹ in which the British Columbia Supreme Court set aside a decision of the Environmental Assessment Office which confirmed that a project did not meet the reviewable project criteria for sand and gravel pits because the Environmental Assessment Office improperly excluded waste material in its assessment of production capacity.

BC Hydro submits that the amount of material to be transported from SFQ will be below 250,000 tonnes per year and therefore the Project does not trigger an environmental assessment under the Canadian Environmental Assessment Act or the BC Environmental Assessment.

In its reply, BC Hydro notes that the *Fort Nelson First Nation* decision was issued six months after the EAO decision on the Project, and questions the applicability of the decision given that the decision interprets the criteria in Table 6 for Sand and Gravel Pits, and not the criteria in Table 6 for 'Construction Stone and Industrial Mineral Quarries'. BC Hydro submits that these questions are not appropriately before the Commission as the Commission's power within the current regulatory process does not include the authority to review the actions of other decision makers and is limited to accepting or rejecting the Expenditure Schedule.

Commission determination

The Panel does not accept SFN's argument that waste was improperly excluded from production capacity and thus project is a "reviewable project." BC Hydro submitted an exchange of letters and emails with the Environmental Assessment Office in response to SFN information request 3.24.1. The Panel finds that the Project description in the exchange is consistent with the Application and notes that the Environmental Assessment Office states that based on that description the Project does not meet the criteria for a reviewable project. There is no evidence on the record which contradicts the Environmental Assessment Office's decision and the Panel is satisfied that the Project has been reasonably classified as a non-reviewable project.

¹⁹⁷ BC Regulation 370/2002, Table 6.

¹⁹⁸ SFN Final Argument, paras 149-151.

¹⁹⁹ Exhibit B-18, SFN IR 3.24.1, Attachment 1, p. 5.

²⁰⁰ SFN Final Argument, para 173.

²⁰¹ *Fort Nelson First Nation v. British Columbia (Environmental Assessment Office)*, 2015 BCSC 1180 (CanLII).

7.0 PROJECT REPORTING REQUIREMENTS

BC Hydro proposes that it submit semi-annual progress reports to the Commission on the Project schedule, costs and any variances from the updated Project cost estimates following procurement activities and approved by the Board prior to implementation, and any difficulties the Project may be encountering. Within six months of substantial completion of the Project, BC Hydro proposes it file a final report including reclamation of the SFQ, comparing Project costs, an updated Project cost estimate following procurement activities and approved by the Board prior to implementation, and to provide variance explanations for any material variance in costs or schedule.²⁰²

BC Hydro submits that the individual construction activities (quarrying, hauling and riprap placement) are scheduled for five months or less each year.²⁰³

Commission determination

The Panel notes that the project costs submitted were prepared before the construction contract had been finalized and that some adjustments to the cost estimates are likely to occur prior to the start of major construction activities.

The Panel finds, given the relatively short annual construction window, that annual reporting of progress adequately balances the Commission duty to stay informed and the cost consideration in providing more frequent reporting for regular reporting. However, in the event the Project runs into difficulties the Panel finds that a year (or six months) as insufficient notification and therefor the Panel finds conditional 30 day notification of material variances appropriate for the circumstances.

The Panel notes that the cost of the riprap stockpile is small compared to the overall project cost and seeks assurance in future rate applications that the cost is not contained within a separate line item.

Therefore, the Panel directs BC Hydro to file with the Commission:

- a) An updated and detailed Project cost estimate and schedule (Updated Reporting Baseline) consistent with BC Hydro's Board approval with explanations of all material cost and schedule and variances to the P50 base estimate information filed in the Project application, by June 30, 2016.
- b) Annual progress reports on the Project schedule, costs and any variances from the Updated Reporting Baseline, any difficulties that the Project has encountered and any material changes to the identified risks. The form and content of the annual progress reports will be consistent with other BC Hydro capital project progress reports filed with the Commission. The annual progress reports will be filed by February 15 until the final completion report is filed.
- c) Within 30 days of identification, the cost or schedule variance resulting from any individual project difficulties that are expected to result in: 1) cost increases greater than \$5 million over the P50 base estimate in the Updated Reporting Baseline or 2) major construction activities requiring additional construction seasons beyond the four scheduled.

²⁰² Exhibit B-1, Section 1.1.2.

²⁰³ Ibid., Appendix C.

- d) Within 6 months of substantial completion of the Project including the reclamation of the Sand Flat Quarry, a final report that shall include: 1) a complete breakdown of the final costs of the Project, 2) a comparison of these costs to Updated Reporting Baseline and 3) an explanation of all material cost and schedule variances.**
- e) In future revenue requirement applications that include requests to recover Project expenditures, a statement confirming that no expenditures relating to Emergency Stockpile Riprap were included or BC Hydro shall explain otherwise.**

DATED at the City of Vancouver, in the Province of British Columbia, this 13th day of July 2016.

Original signed by:

D. M. MORTON
PANEL CHAIR / COMMISSIONER

Original signed by:

N. E. MACMURCHY
COMMISSIONER

Original signed by:

H. G. HAROWITZ
COMMISSIONER