

Analysis of BC Hydro's Proposed Changes to the Halfway River Bridge Design for the Site C Clean Energy Project

October 2018

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1 Introduction

BC Hydro (the proponent) is in the early construction phase of developing a dam and 1,100-megawatt hydroelectric generating station on the Peace River in northeastern British Columbia (B.C.). The Site C Clean Energy Project (the Project) will be the third in a series of dams on the Peace River. Construction of the Project began in summer of 2015 and is anticipated to be completed in 2024.

The Project was subject to both the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) and the B.C. *Environmental Assessment Act*. The environmental assessment was conducted by a joint review panel established by the former Minister of the Environment and the Government of B.C. The former Minister issued a Decision Statement under CEAA 2012 for the Project on October 14, 2014, (re-issued on November 25, 2014) following a Governor in Council decision allowing the Project to proceed.

The Decision Statement contains over 80 legally binding conditions, which include mitigation measures and follow-up program requirements that the proponent must comply with throughout the life of the Project. The Provincial Ministers of Environment and of Forests, Lands and Natural Resource Operations issued an Environmental Assessment Certificate under the provincial *Environmental Assessment Act* on October 14, 2014, which contained a Project Description and 77 legally binding conditions.

On August 3, 2018, the proponent informed the Canadian Environmental Assessment Agency (the Agency) of proposed changes to the design of the Project with respect to the Halfway River Bridge as described in section 4.3 of the Environmental Impact Statement submitted by the proponent in January of 2013. The proponent also formally applied to amend the provincial Environmental Assessment Certificate. This is the second project design change for which the proponent has provided information to the Agency. The first was related to the generating station and spillway for which the Agency conducted an analysis and determined that no changes to the 2014 Decision Statement were required. The report on the Agency's analysis of the first design change was posted on the Canadian Environmental Assessment Registry on June 12, 2018.

The Agency conducted an analysis of the proposed Project changes and the potential adverse environmental effects of those changes, and considered comments from federal, provincial, municipal governments and Indigenous representatives, to determine:

- whether the changes constitute a new or different designated project that may require a new environmental assessment; and
- whether any changes may be required to the mitigation measures and follow-up requirements in the environmental assessment set out as conditions in the Decision Statement.

This report provides a summary of the proposed Project changes, an analysis of whether these changes may result in adverse environmental effects that may not have been considered in the original environmental assessment, and consideration of whether existing mitigation measures and follow-up requirements set out as conditions in the Decision Statement are still applicable or need to be modified.

The Agency is of the view that the proposed Project changes do not constitute a new or different designated project that may require a new environmental assessment, and that the mitigation and

follow-up requirements included as conditions in the Decision Statement remain relevant without any requirement for changes.

2 Proposed Project Design Changes

The proponent is proposing changes with respect to the design of the Halfway River Bridge. These changes could alter the initial assessment of adverse environmental effects to the following valued components: fish and fish habitat, migratory birds and species at risk, current use of lands and resources for traditional purposes, and archaeological and heritage resources. The proposed design changes (Figure 1) include:

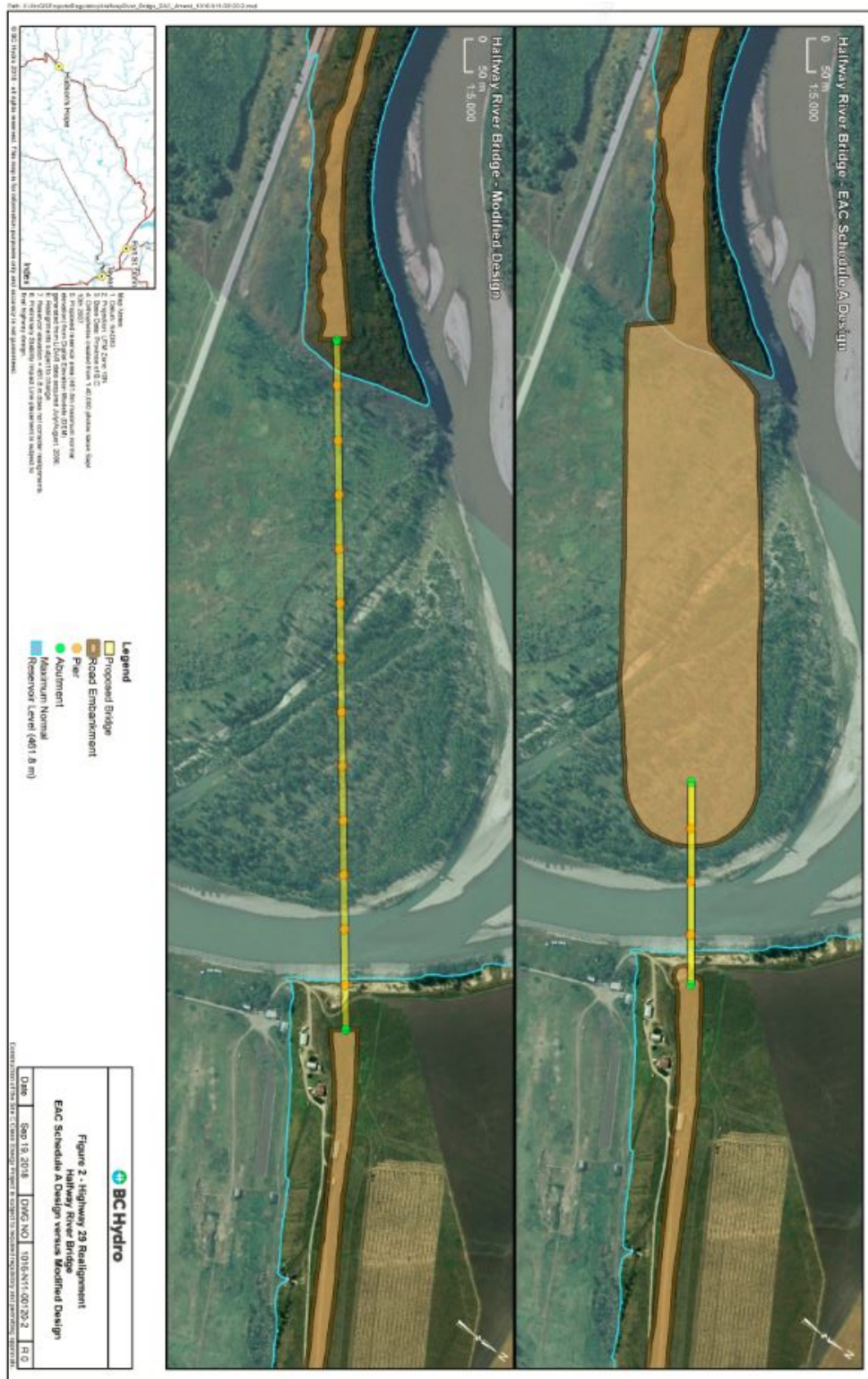
- longer bridge span, from 305 metres to 1,042 metres
- elimination of the 640 metre causeway
- increased number of piers, from three to twelve piers

The Halfway River Bridge design was changed from the original 2015 design after detailed geotechnical investigations identified a zone of highly weathered shale between gravel and shale bedrock at the Halfway River crossing. The proponent then undertook a slope stability analysis and determined that the presence of this weathered shale layer would significantly impact the stability of the causeway embankment of the previous design. Alternate designs were assessed and found to be not viable due to cost and potential impacts. Based on these analyses, the proponent determined that the most appropriate alternative was a longer bridge option with no causeway. B.C.'s Ministry of Transportation and Infrastructure has endorsed the revised bridge design.

2.1 Agency's Analysis of Changes

The *Regulations Designating Physical Activities* under CEAA 2012 identify the physical activities that constitute designated projects that may require an environmental assessment. On their own, the proposed Project design changes are not physical activities described in the Regulations. Consequently, the Agency determined that the changes do not constitute a new or different designated project that may require a new environmental assessment.

Figure 1. Conceptual Drawing of Halfway River Bridge Design Change



Source: Letter from BC Hydro to Canadian Environmental Assessment Agency dated August 3, 2018

3 Potential Adverse Environmental Effects from Proposed Project Changes

The following is an analysis of whether any of the changes to the Halfway River Bridge design would require modifications to the mitigation measures and follow-up requirements set out as conditions in the Decision Statement. The analysis focused on potential environment effects as defined in section 5 of CEAA 2012 and potential effects on species at risk listed in the *Species at Risk Act* (SARA).

3.1 Fish and Fish Habitat

Effects to fish and fish habitat were assessed during the initial environmental assessment of the Project and mitigation measures were developed. The Decision Statement includes conditions in relation to fish and fish habitat.

3.1.1 Proponent's Assessment

The proponent identified that the the elimination of the causeway will result in a smaller overall impact to riparian and terrestrial habitat, and thus the conclusions of the Environmental Impact Statement with respect to fish and fish habitat are considered unchanged. A detailed assessment of the instream impacts of the piers in the final bridge design will be undertaken by the proponent prior to construction of the bridge.

3.1.2 Agency's Analysis and Conclusions

The Agency accepts the proponent's determination that the design changes to the Halfway River Bridge would not result in any additional adverse environmental effects to fish and fish habitat as assessed in the environmental assessment. The Agency is therefore not proposing any changes to the mitigation measures previously identified in the environmental assessment.

Fisheries and Oceans Canada reviewed the information provided by the proponent on the bridge redesign and indicated that they had no significant concerns with the proposed amendment as long as mitigation measures to avoid serious harm to fish, such as those specified in conditions set out in the Decision Statement, are implemented during the works, undertakings or activities associated with construction of the Halfway River Bridge.

3.2 Migratory Birds and Species at Risk

Migratory birds and federally listed species at risk could be affected by the design changes. Both were assessed during the environmental assessment, and the Decision Statement includes related conditions.

Subsection 79(2) of SARA requires the identification of the Project's adverse effects to SARA listed wildlife species and their critical habitat. If the Project is carried out, SARA requires that measures be taken to avoid or lessen those effects and that such effects be monitored.

3.2.1 Proponent's Assessment

The proponent noted that the proposed modification of the Halfway River Bridge design is not expected to cause any additional adverse environmental effects to migratory birds and species at risk as assessed through the initial environmental assessment. This is due to the smaller overall riparian and terrestrial footprint of the new design.

3.2.2 Agency's Analysis and Conclusions

Environment and Climate Change Canada reviewed the information provided by the proponent on the bridge design changes and recommended the proponent install bat roosting design features or structures over the bank or land, as opposed to over water and if design modifications are not feasible, install bat boxes as per the B.C. Community Bat Program. The proponent responded that as per the provincial Site C Vegetation and Wildlife Bat Mitigation and Monitoring Program they will be installing 124 bat roost boxes based on the designs described in the B.C. Community Bat Program. Environment and Climate Change Canada indicated that it is satisfied with this response.

Environment and Climate Change Canada also advised the proponent to prevent damage or destruction of any active Bank Swallow nests should they be present in the Project area. The proponent responded that the changes to the Halfway River Bridge design are not expected to cause any additional effects on Bank Swallows beyond those predicted in the Environmental Impact Statement and that pre-construction surveys would be conducted as per the *Migratory Birds Convention Act*. Environment and Climate Change Canada indicated that it was satisfied with this response.

The Agency accepts the proponent's determination that the design changes to the Halfway River Bridge would not result in any additional adverse environmental effects to migratory birds and species at risk as assessed through the initial environmental assessment. The Agency is therefore not proposing any changes to the mitigation measures previously identified in the environmental assessment.

3.3 Current Use of Lands and Resources for Traditional Purposes

The proposed changes to the Project could impact Indigenous peoples by affecting the current use of lands and resources for traditional purposes. Current use was assessed during the initial environmental assessment and the Decision Statement includes related conditions.

3.3.1 Proponent's Assessment

Design changes to the Halfway River Bridge are anticipated to result in reduced interactions with biophysical resources; therefore no additional effects on the current use of lands and resources beyond those predicted in the Environmental Impact Statement are anticipated. The proponent concluded that the effects assessment on activities including hunting, fishing and trapping activities would remain the same as what was assessed during the environmental assessment.

3.3.2 Agency's Analysis and Conclusions

The Agency accepts the proponent's determination that the design changes to the Halfway River Bridge would not result in any additional adverse environmental effects to current use of lands and resources for traditional purposes as assessed through the initial environmental assessment. The Agency is therefore

not proposing any changes to the mitigation measures previously identified in the environmental assessment.

3.4 Archaeological and Heritage Resources

The proposed changes to the Project could impact Aboriginal peoples by affecting archeological and heritage resources. Archeological and heritage resources were assessed during the initial environmental assessment and the Decision Statement included related conditions.

3.4.1 Proponent's Assessment

The proponent predicted that changes to the Halfway River Bridge design are not anticipated to have any adverse effects on archaeological and heritage resources. The footprint for the new design is almost entirely contained within the footprint of the original design and the majority of this area was already assessed during the initial environmental assessment. The proponent predicted that the proposed design changes would not affect the conclusions in the environmental assessment regarding the effects of the Project on archaeological and heritage resources.

3.4.2 Agency's Analysis and Conclusions

The Agency accepts the proponent's determination that the design changes to the Halfway River Bridge would not result in any additional adverse environmental effects on archaeological and heritage resources as assessed through the initial environmental assessment. The Agency is therefore not proposing any changes to the mitigation measures previously identified in the environmental assessment.

4 Consultation with Indigenous Groups

Indigenous groups were defined in the Decision Statement as "Reservoir Area Aboriginal groups" and "Immediate Downstream Aboriginal groups." Reservoir Area Aboriginal groups include: Saulteau First Nations, Blueberry River First Nations, West Moberly First Nations, Doig River First Nation, McLeod Lake Indian Band, Halfway River First Nation, and Prophet River First Nation. Immediate Downstream Aboriginal groups include: Horse Lake First Nation, Métis Nation British Columbia, Kelly Lake Métis Settlement Society, Duncan's First Nation, and Dene Tha' First Nation. As the Agency does not expect the changes to the Project design to affect the Decision Statement, no consultation was sought on this analysis document.

As part of the provincial process to consider the series of Environmental Assessment Certificate amendment applications for the Project, the Environmental Assessment Office (EAO) created a technical working group made up of representatives from provincial, federal and local government agencies, and Indigenous groups.

The EAO requested comments on the proponent's amendment application for the Halfway River design change from the technical working group, which included several of the Indigenous groups listed above, from July 24, 2018 to August 14, 2018. The Agency was satisfied with the level of detail provided by the proponent in responding to concerns raised. The Agency considered all of these discussions as part of its analysis of the Project design changes. At an August 28, 2018 working group meeting, a representative

from Doig River First Nation questioned the process undertaken to consider any potential changes to the Decision Statement. The Agency described the process and referred to the analysis in the previous project change analysis document to show how potential changes to the conditions set out in the Decision Statement are reviewed. If the Agency found that the changes to the Project could adversely affect the environment in a way that was not assessed during the environmental assessment, additional mitigation measures or follow-up may be required and adjustments to the Decision Statement would be made.

5 Conclusion

Considering the potential adverse environmental effects of the proposed Project changes, and in light of views received through the EAO technical working group, the Agency determined that it is not necessary to change the mitigation measures and follow-up requirements set out as conditions in the Decision Statement.