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October 13, 2023 File: W2023L4-0001

Mark Cliffe-Phillips
Mackenzie Valley Review Board
200 Scotia Centre
Box 938, 5102-50th Avenue
Yellowknife NT X1A 2N7

Sent by email

Dear Mark Cliffe-Phillips,

Re: Snare Hydroelectric Facility – Notice of Preliminary Screening Determination – Renewal Application for Water Licence – Power – Snare River, NT

The Wek'èezhìı Land and Water Board (Board) met on October 13, 2023 and considered the Application Package from Northwest Territories Power Corporation (NTPC) for Water Licence (Licence) W2023L4-0001 for the Snare Hydroelectric Facility (Project) in accordance with the *Mackenzie Valley Resource Management Act* (MVRMA).

The Board conducted a preliminary screening based on the public record for the proceeding. Based on the evidence provided, the Board is satisfied the screening has been completed according to section 125 of the MVRMA and has decided **not to refer** the changes to the Project to environmental assessment. The Board's Preliminary Screening Determination and Reasons for Decision, as required by section 121 of the MVRMA, is attached.

If the Board does not receive notice of referral to environmental assessment by **October 23, 2023**, it will continue with the regulatory proceeding.

The Board and staff look forward to continued communications throughout the pause period. Please contact Ryan Fequet via <a href="mailto:email

Yours sincerely,

Mason Mantla

Chair, Wek'èezhìı Land and Water Board

BCC'd to: Wek'èezhìi Distribution List

Joshua Clark, NTPC

Attached: Preliminary Screening Determination and Reasons for Decision



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Preliminary Screening Determination and Reasons for Decision

Water Licence Application		
File Number	W2023L4-0001	
Company	Northwest Territories Power Corporation (NTPC)	
Project	Snare Hydroelectric Facility	
Location	Snare River, NT	
Activity	Power	
Date of Decision	October 13, 2023.	

1.0 <u>Decision</u>

In accordance with subsection 124(1) of the <u>Mackenzie Valley Resource Management Act</u> (MVRMA), the Wek'èezhìı Land and Water Board (WLWB or Board) met on October 13, 2023 to make a preliminary screening determination on the renewal Application (the Application) from Northwest Territories Power Corporation (NTPC) (Applicant) for Water Licence W2023L4-0001 (Licence)¹ for the Snare Hydroelectric Facility (Project).²

The Board has determined that some Project activities are exempt from preliminary screening, because they were previously screened or underwent an Environmental Assessment (EA).³ The Applicant has

¹ See WLWB Online Registry Snare Hydro - WL Renewal Application - Cover Letter, Attachments 1-3 - Jul 10 23.pdf

² The Project is the Snare Hydroelectric Facility, which is the proposed development, where "development" is defined in Part 5 of the MVRMA as:

[&]quot;any undertaking, or any part or extension of an undertaking, that is carried out on land or water and includes an acquisition of lands pursuant to the *Historic Sites and Monuments Act* and measures carried out by a department or agency of government leading to the establishment of a park subject to the *Canada National Parks Act* or the establishment of a park under a territorial law."

³ An assessment was carried out under the Environmental Assessment Review Process Guidelines Order for Snare Cascades in 1994, and can be found here: MV2003L4-0014 - NTPC - RERC Report - May 3 94.

proposed new Project activities, however, and the Board has decided not to refer the proposed changes to the Project to the Mackenzie Valley Environmental Impact Review Board (the Review Board) for Environmental Assessment because, based on the evidence, it is the Board's opinion that the proposed changes to the Project will not have a significant adverse impact on the environment or be a cause of public concern.

The Board's determination, including reasons for its decision, are detailed in sections 3.0 and 4.0.

2.0 Background and Scope of Screening

The Snare Hydroelectric Facility is located on the Snare River, approximately 145 km northwest of Yellowknife. The Facility has been providing hydroelectricity since 1948, and currently provides power to the North Slave communities of Yellowknife, Behchokò, Dettah, and N'Dilo. The system includes four separate hydroelectric plants: Snare Rapids, Snare Falls, Snare Cascades, and Snare Forks. These four plants utilize the difference in elevation (63.3m) between Bigspruce Reservoir (above Snare Rapids) and Strutt Lake (below Snare Forks) for electric power production. Currently, NTPC holds a Type A water licence (N1L4-0150) for Snare Rapids, Snare Falls, and Snare Forks facilities, and the Dogrib Power Corporation (DPC) holds a separate Type A water licence (W2014L4-0001) for Snare Cascades.

On June 29, 2023, NTPC submitted the Application to renew its water licences. The Application included a request to combine the two water licences for the facility into one licence (W2023L4-0001). In the Application, NTPC indicated that the "only operational change" to the Project was a proposed reduction to the minimum allowable water level at Bigspruce Reservoir to account for low seasonal water levels, and at Snare Falls Forebay to allow for planned maintenance inspections/activities. NTPC also included a draft licence with the Application which included several of the Board's standard conditions and rationale for proposed changes to the Licence.

NTPC submitted an Engagement Log with the Application that outlines the pre-submission engagement completed prior to submission to the Board. The Engagement Log indicates that engagement with Indigenous and non-Indigenous Governments and Organizations took place from December 2022 until June 2023. The Engagement Log describes that at a minimum, an email was sent to all Affected Parties notifying them of the renewal and that either engagement meetings were scheduled, or follow-up emails were sent.

In the cover letter with the Application, NTPC requested an exemption from preliminary screening because the Project has been screened in the past.⁴ NTPC indicated that no modifications to the Facilities were proposed, and only changes to the minimum allowable water levels in Bigspruce Reservoir (the Reservoir) and Snare Falls Forebay (the Forebay), as well as minor updates to the Surveillance Network Program (SNP), were being proposed.

⁴ See WLWB Online Registry for <u>DPC - Water Licence - Renewal - Reasons for Decision - Aug 11 14</u>

The Application includes proposed changes to the Project. Under Part 1, Schedule 1, section 2.1 of the Exemption List Regulations to the MVRMA, project areas and activities that have already been subject to Part 5 of the MVRMA are exempt from preliminary screening. The new Project activities (i.e., changing the minimum allowable water level in the Bigspruce Reservoir and Snare Falls Forebay) require screening by the Board in accordance with subsection 124(1) of the MVRMA.

In accordance with paragraph 125(1)(a) of the MVRMA, the Board must conduct a preliminary screening of the proposed changes to the Project to determine and report to the Review Board whether, in its opinion, the proposed changes to the Project might have a significant adverse impact on the environment, or might be a cause of public concern. The details of the Board's analysis are set out in section 3.0 below.

2.1 Scope of Screening

Previously Screened or Assessed Areas and Activities:

The environmental effects of the Project have been assessed under several screenings over time. The most recent screenings associated with Licence N1L4-0150 were completed as part of the previous Licence renewal in 1999 and as part of an amendment in 2013. The 1999 renewal included an increase to the flow of water through Snare Forks. An Environmental Screening was completed by Indian and Northern Affairs Canada (INAC) at the time, which concluded that the project was not likely to cause significant adverse environmental effects. The licence was amended in 2013 to increase the maximum water elevation in Snare Forks Forebay. The preliminary screening concluded that there was no likelihood that the change to the project would have significant adverse impact on the environment and no likelihood that the proposed development might be cause of public concern.

Snare Cascades was first licenced in 1994 and underwent a review pursuant to the Environmental Assessment Review Process Guidelines Order. The assessment concluded that the potentially adverse environmental effects that may be caused by the proposal are insignificant or mitigable with known technology and the "proposal may therefore proceed" to the regulatory phase. The current licence for Snare Cascades held by DPC was renewed in 2014 (W2014L4-0001). In the Board's Reasons for Decision on the renewed Licence, the Board stated that the application was exempt from preliminary screening because there were no proposed modifications to the Project.

New Activities:

In the Application, NTPC has applied to lower the minimum allowable water level in the Bigspruce Reservoir and Snare Falls Forebay. NTPC indicated that the lower water levels are necessary due to naturally low water levels in the Snare River, and to facilitate maintenance at Snare Falls. NTPC was

⁵See WLWB Online Registry for NTPC - Water Licence Renewal Type A - Environmental Screening Level - Oct 22 98.pdf

⁶ See WLWB Online Registry for N1L4-0150 - NTPC - Water Licence Amendment - Preliminary Screening Form - Feb 28 13

⁷ See WLWB Online Registry for MV2003L4-0014 - NTPC - RERC Report - Jan 9 04.pdf

⁸ See WLWB Online Registry for DPC - Water Licence - Renewal - Reasons for Decision - Aug 11 14.pdf

previously approved by the Board to lower the water level temporarily in Snare Falls Forebay in 2005,⁹ and in Bigspruce Reservoir in 2015¹⁰ and 2023.¹¹

The licence currently states that the daily mean water levels in Bigspruce Reservoir and Snare Falls Forebay shall not fall below the elevation of 217.9 metres and 201.8 metres, respectively. In the Application, NTPC has proposed to lower the minimum water level by 0.3 meters (i.e., 217.6 metres at Bigspruce Reservoir, and 201.5 metres at the Snare Falls Forebay). NTPC has indicated that this change will allow for operational flexibility without Board approval during low water events, and when maintenance is required at the Forebay.

No other changes were proposed to the Project.

2.2 Public Record and Regulatory Proceeding

To assist the Board in its preliminary screening determination for the Project, the Board distributed the Application for public review on July 10, 2023, inviting reviewers to provide comments and recommendations on the Application and the preliminary screening (e.g., on impacts and mitigation measures) using the Online Review System (ORS). Comments were due August 14, 2023, with responses from the Applicant due August 28, 2023. The Board received comments and recommendations from Tłįchǫ Government (TG), Government of the Northwest Territories – Environment and Climate Change (GNWT-ECC), Environment and Climate Change Canada (ECCC), and Transport Canada (TC). ¹² Board staff also submitted comments and questions for the purposes of clarification.

Since there were no requests to extend the reviewer comment deadline, the Board is satisfied that a reasonable period of notice was given to affected communities and First Nations, as required by subsection 63(2) of the MVRMA.

The Board is also satisfied that notice of the Application was provided to the Tłıcho Government and that a reasonable period of time was provided for the Tłıcho Government to make representations to the Board in accordance with section 63 of the MVRMA.

⁹ See WLWB Online Registry for N1L4-0150 - NTPC - Snare Hydro - Repairs - Forebay Lowering - Aug 15 05

¹⁰ See WLWB Online Registry for N1L4-0150 - NTPC - Exception to Minimum Water Levels - Board Directive and Reasons for Decision - Jan 30 15.pdf

¹¹ See WLWB Online Registry for N1L4-0150 - NTPC - Request for Exception to Minimum Water Levels - Decision Letter - Apr 20 23.pdf

¹² See WLWB Online Registry for Snare Hydro - Review Summary Table - Aug 28 23.

2.3 Technical Session

A Technical Session was held on September 26, 2023, to help identify and clarify issues raised by Parties. The topics included the proposed change to the minimum allowable water level and discussing the potential impacts and mitigations.¹³

3.0 Potential Impacts and Proposed Mitigations

Table 1 below summarizes:

- the potential impacts of the proposed changes to the Project;
- the concerns that were identified during the regulatory proceeding and how the Applicant addressed those concerns;
- the proposed and potential mitigations for the potential impacts; and
- the Board's analysis of the potential impacts and proposed mitigations.

¹³ A copy of the transcript from can be found on the Board's registry: <u>Snare Hydro - WL Renewal -Technical Session - Transcript - Sep 26 23</u>

Table 1: Potential Impacts and Proposed Mitigations for the Proposed Changes to the Project

Potential Impact	Activity	Proposed Mitigations Description of measures to reduce potential impacts, including consideration of cumulative impacts and climate change.	Board Analysis and Determination
Changes to the water level in the Reservoir and Forebay	Drawdown in the Reservoir and Forebay	 The Applicant noted the following as part of the Application: Water levels in the reservoirs are maintained year-round, minimum water levels do not overlap with critical spawning periods for fall spawning fish, and water levels are regulated through the water licence. 14 A desktop study in 2014 was conducted to predict environmental effects that might result from temporarily lowering the water level by 0.3 m in Bigspruce Reservoir. The study determined that the potential impacts from this change are negligible because the 0.3 m water level drop and the resulting decrease in reservoir surface area, volume, and turnover rate (i.e., water residence time) are all relatively small and within the normal variation. 15 The Applicant described the following mitigations and considerations in response to Review Comments: The additional drawdown of the reservoir would only occur during low water years, and for a short duration (i.e., before the reservoir level begins to increase again with freshet) (response to WLWB comment 14). The additional drawdown of the Forebay would only occur during planned maintenance activities for a short period of time during the open water season (response to WLWB comment 14). The proposal to lower the allowable minimum water levels in the Bigspruce Reservoir and the Snare Falls Forebay by 0.3 m will have no impact on downstream riverine habitats as the change in flow downstream will be negligible from current operations (response 	The lower water levels will be used infrequently and for a limited period of time. NTPC indicated that the lower limits would only be used in the Reservoir during low water events, and in the Forebay when there is planned maintenance. From a previous desktop assessment on the potential impacts from lowering the water level by 0.3 m, NTPC indicated that impacts to the environment would be negligible and within the normal variation. NTPC also indicated that there could be impacts downstream during low water events if water needs to be stored at the current levels instead of being released. Given the lower allowable water level in Bigspruce Reservoir would only be applied during low water events, the Board could consider including conditions in the Licence that restrict the minimum level to only low water events and/or limit when throughout the year the lower limit could be applied (e.g., avoiding critical spawning periods). Similarly, the Board could consider including conditions in the Licence that limit drawdown at the Forebay to planned maintenance activities.

¹⁴ See WLWB Online Registry for <u>Snare Hydro - WL Renewal Application - Environmental Studies Summary Screening-Level Environmental Assessment - Jul 10 23</u>

¹⁵ See WLWB Online Registry for N1L4-0150 - NTPC - Exception to Minimum Water Levels Request - Nov 17 14, Appendix C.

		 to WLWB comment 15). The Applicant noted the following as part of the Technical Session: The alternative to keeping the water in the reservoir at the current depth would result in diminishing flows downstream and potentially impacting the downstream environment.¹⁶ It is not NTPC's intention to use the lower limits annually. The current Licences include conditions that limit the allowable minimum water levels: In Water Licence N1L4-0150, Part C, Condition 2(a) limits the water level to falling below 217.9 metres. In Water Licence W2014L4-0001, Part C, Conation 2(a) limits the water level to falling below 181.88. 	Based on the described mitigations and options available to the Board, it is the Board's opinion that the proposed change will not have a significant adverse impact on the environment and will not be a cause of public concern.
Impingement and entrainment of fish at intakes and spillway gates	Drawdown in the Reservoir and Forebay	 The Applicant noted the following as part of the Application: The intakes are typically positioned at depths in the Forebay where fish densities would be relatively low.¹⁷ Potential effects to fish (i.e., fish entrainment) from spilling out the spillway would be restricted to the period of temporary shutdown; although actual entrainment rates and fates of entrained fish are not known, risk of fish entrainment may be highest on the Snare 5B Spillway where the upstream channel is confined and relatively high velocities during spilling events may direct fish through spillway.¹⁸ The Applicant noted the following as part of the Technical Session: Fish entrainment is expected to be low or negligible for two reasons: the Snare River system is a low productivity system with low density fish populations; and the intakes are located in deeper spots that are not necessarily attractive locations for fish.¹⁹ 	be relatively low given this would be poor fish

¹⁶ See WLWB Online Registry for <u>Snare Hydro - WL Renewal -Technical Session - Transcript - Sep 26 23.pdf</u>

¹⁷ See WLWB Online Registry for <u>Snare Hydro - WL Renewal Application - Environmental Studies Summary Screening-Level Environmental Assessment - Jul 10 23</u>

¹⁸ Ibid.

¹⁹ See WLWB Online Registry for <u>Snare Hydro - WL Renewal -Technical Session - Transcript - Sep 26 23.pdf.</u>

		 NTPC was asked during the Technical Session whether it would quickly withdraw water at Snare Falls when the Forebay would need to be lowered for maintenance, and whether quick withdrawal rates could leave fish stranded. NTPC indicated that the withdrawal rates would be gradual over several days to get to the drawdown limit. 20 NTPC indicated that it generally only operates the 5B Spillway when they can't keep up with the high volume of water coming into the plant due to high water levels; however, they try and anticipate when they will need to use the spillway so that the flow increases gradually. 21 The current Licences do not include conditions that restrict flow rates; however, NTPC has proposed to restrict the diversion flow rate to 200 m³/s in the draft Licence included in its Application. 	high velocity spill events and allow for a more gradual release of water through the spillway. In the renewed Licence, the Board could consider including conditions in the Licence that restrict withdrawal rates to avoid withdrawing water too quick and potentially impacting fish. Based on the described mitigations and options available to the Board, it is the Board's opinion that the proposed change will not have a significant adverse impact on the environment and will not be a cause of public concern.
Changes to the surface water quality	Drawdown in the Reservoir and Forebay	 The Applicant noted the following as part of the Application: The impacts of lower minimum water levels at Bigspruce Reservoir and Snare Falls have been considered by the WLWB through previous exemptions.²² Minimal changes in water levels will reduce the likelihood of increased mercury concentrations caused by inundation events.²³ Post-impoundment water quality studies of the Snare River system did not suggest large impacts to water quality.²⁴ In the desktop assessment submitted to the Board in 2014,²⁵ NTPC indicated the following: Decreases in water residence time (i.e., how long the water stays) 	Based on NTPC's desktop assessment, the changes to water quality in the Reservoir and Forebay are predicted to be negligible because the decrease in surface area and reservoir volume would be small enough that an impact to productivity is not likely measurable. Similarly, given the reduced retention time would be for a limited time, impacts to productivity would likely be negligible. Based on the described mitigations, it is the

²⁰ Ibid.

²¹ Ibid.

²² See WLWB Online Registry Snare Hydro - WL Renewal Application - Cover Letter, Attachments 1-3 - Jul 10 23.pdf

²³ See WLWB Online Registry for <u>Snare Hydro - WL Renewal Application - Environmental Studies Summary Screening-Level Environmental Assessment - Jul 10 23</u>

²⁴ Ibid.

²⁵ See WLWB Online Registry for N1L4-0150 - NTPC - Exception to Minimum Water Levels Request - Nov 17 14.pdf Appendix C.

		in the reservoir) will theoretically result in colder temperatures	Poard's opinion that the proposed shangs will
		and decreased nutrients within the reservoir, as the water	_
		column will have less time to stratify and flushing rates and	
		stratification will be reduced. The net impact will be a slight	concern.
		decrease in available nutrients, reducing primary productivity.	
		However, because the decrease in surface area and in reservoir	
		volume and water retention times are very small, the impact on	
		productivity is not likely measurable and within the natural	
		annual variation caused by variable flows, snow cover, and runoff	
		events.	
		• Questions related to changes to surface water quality were not raised	
		during the public review nor at the Technical Session.	
			As per the information provided during the
	Drawdown in the Reservoir and Forebay	During the public review, Transport Canada commented that "it	Technical Session, no new Navigable Waters
		appears that additional project works associated with the facility may	Act authorizations are required at this time
		occur in a navigable waterway(s)" (TC comment 1). Transport Canada	given no new works in a navigable waterway
		recommended that NTPC follow up with them to determine if the	were proposed with the Application.
Changes to navigable water		Project is in compliance with the Navigable Waters Act.	
		During the Technical Session, NTPC indicated it had used Transport	Given no new works have been proposed, and
		υ θου ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο ο	therefore no changes to navigable waterways,
			it is the Board's opinion that the proposed
		, ,	change will not have a significant adverse
		, , ,	impact on the environment and will not be a
			cause of public concern.
		information. Transport Canada did not attend the Technical Session.	cause of public concern.

²⁶ See WLWB Online Registry for <u>Snare Hydro - WL Renewal -Technical Session - Transcript - Sep 26 23.pdf</u>

3.1 Consideration of Potential Impacts

Based on the potential impacts and proposed mitigations identified above in Table 1, the Board considered whether the changes to the Project might have a significant adverse impact on the environment. In general, impacts of the changes to the Project on the environment can be mitigated through the use of licence conditions of two general types:

- 1. conditions in the existing Licences, including requirements for management and monitoring plans, with revisions where necessary; and
- 2. new or unique conditions that may be needed to mitigate potential impacts of the changes to the Project that may not be addressed by the conditions in the existing Licences, and which may be from the Board's standard conditions list or established by the Board as per the LWB <u>Standard Process for Creating New Conditions</u>.

These conditions may include requirements for management and monitoring plans that provide detailed information regarding the implementation of mitigation measures and the evaluation of their effectiveness. The conditions will be discussed in further detail by all Parties through the regulatory proceeding and will be finalized by the Board following completion of the regulatory proceeding.

3.2 Consideration of Public Concern

In addition to considering the potential impacts of the changes to the Project, the Board considered whether the changes to the Project might be a cause of public concern. Based on the evidence provided during the regulatory proceeding thus far, the Board did not identify any comments or issues that indicate that the Project is a cause of public concern.

4 Conclusion

The Board has reviewed all the evidence received during the regulatory process with respect to the Preliminary Screening of the proposed changes to the Project. Based on the evidence, it is the Board's opinion that the proposed changes to the Project will not have a significant adverse impact on the environment or be a cause of public concern, as set out in paragraph 125(1)(a) of the MVRMA. The Board has therefore decided not to refer the proposed changes to the Project to Environmental Assessment and will resume the regulatory proceeding.

Mason Mantla, Chair

Wek'èezhìi Land and Water Board

October 13, 2023

Date