



Tłıchǰ Government

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November 10, 2023

Mason Mantla, Chair  
Wek'èezhìi Land and Water Board  
via email to [rfequet@wlwb.ca](mailto:rfequet@wlwb.ca)

**Re: Tłıchǰ Government Intervention for Northwest Territories Power Corp Water Licence Renewal**

This is the Tłıchǰ Government's intervention to the Wek'èezhìi Land and Water Board (WLWB) for the Northwest Territories Power Corporation (NTPC) Water Licence Renewal for the Snare Hydroelectric Facility. The Snare Hydroelectric system, along with the Bluefish and Jackfish facilities (which are not in Wek'èezhìi), provides electricity to Yellowknife, Behchokǰ, Dettah and N'Dilo. The Snare Hydro Water Licence expires on May 29, 2024. To continue its operations, NTPC must obtain a renewed licence from the WLWB.

We have participated in the review of the water licence renewal application at every step, including the recent pre-hearing conference. During that meeting, the parties discussed the need for a public hearing. There are some outstanding issues related to the licence renewal application. However, based on the number and seriousness of these issues, it's not clear whether a public hearing is necessary. The Tłıchǰ Government can provide its input on the licence renewal with or without a hearing.

We understand from the pre-hearing conference that, if one or more parties submits an intervention, a public hearing is typically triggered. Although we are submitting an intervention, this is so that if there is public hearing, the Tłıchǰ Government is a full participant and has an opportunity to present before the Board. However, if no other interveners wish to present before the Board, we would not want our intervention alone to trigger a public hearing. In that case, we would look to the Board to advise us on the procedural steps involved.

If there is no public hearing, the Tłıchǰ Government recommends a community session in Behchokǰ with the WLWB and NTPC present, so that Tłıchǰ citizens have an opportunity to hear about and speak to the licence renewal.

We thank NTPC and the WLWB for their diligence in operating and regulating the Snare Hydro facility and we confidently expect that this will continue for many years to come.

**Our recommendations are in bold italics throughout the document below.**

In Tłıchǰ Unity,

for:

Tammy Steinwand-Deschambeault, Director  
Department of Culture & Lands Protection  
Tłıchǰ Government



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## 1 INTRODUCTION

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The Snare hydroelectric system is a series of four electric stations on the Snare River. These stations turn the power of the Snare river into electricity. The Snare Hydroelectric system, along with the Bluefish and Jackfish facilities (which are not in Wek'èezhì), provides electricity to Yellowknife, Behchokò, Dettah and N'Dilo. The Water Licence expires on May 29, 2024. To continue its operations, NTPC must obtain a renewed licence from the WLWB.

One of the four Snare hydroelectric stations, the Snare Cascades Facility, is owned by Dogrib Power Corporation (DPC) but operated by NTPC. DPC holds a separate licence for the Snare Cascades operation. As part of this renewal, NTPC, with DPC's approval, is applying to combine both licences (the DPC and NPTC licences) into one.

We have not identified the potential for significant environmental impacts from this licence renewal. Aside from the Snare Forks breach in 2006, we are not aware of any significant problems or environmental issues with the NTPC and DPC operations, or with the water licence. We have highlighted some of the more important issues related to the application in this intervention. We will also comment on the draft water licence, in consideration of these and other issues.

## 2 MINIMUM WATER LEVELS

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The water licence sets minimum water levels at each hydroelectric station. The licence says that "Exceptions to the minimum can be made only after a written request is filed by the Licensee with the office of the Board and a letter of approval is received from the Board."

NTPC has requested that the minimum water level in the Big Spruce Reservoir (the first station) and the Snare Falls station both be lowered by 0.3 metres (about one foot). The proposed amendment would mean that NTPC would not have to request approval from the Board each time it wishes to lower the minimum water level below the current minimum levels in the licence. Each request requires a public review and Board decision. NTPC says that they would only need these lower levels during low water years, which NTPC says are becoming more common, with climate change.

It is our understanding that lowering the minimum water level at the Big Spruce reservoir allows NTPC to store additional water in the reservoir for electricity generation. A change to the minimum level at Snare Falls is for inspections and maintenance.

NTPC has made three previous requests (2005, 2015, 2023) to lower the minimum water level. In general, lowering water levels in a water body can have some impacts, for example to water quality, fish, and fish habitat. In 2014, to support one of NTPC's requests, Golder analyzed potential environmental impacts of the lower water levels in Big Spruce. Golder concluded that environmental effects are "negligible with small positive effects on water quality because of increased dilution rates



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and small negative impacts on productivity related to decreased relative water residence time in 2015 and reduced surface area of the reservoir.” The Board approved all three of NTPC’s requests.

As long as impacts to fish, and in particular fish spawning, are avoided, we support the licence amendment to the minimum water levels. We anticipate that, if necessary, the licence can place restrictions to protect fish, although it is not yet clear what these restrictions would be, if any. NTPC proposed restrictions for Snare Rapids related water levels in September, and for Snare Falls, a maximum of 14 continuous days between May 1 and October 31. We will follow this issue during the remainder of the proceeding.

**The TG supports the proposed amendments to lower the Snare Rapids and Snare Falls minimum water levels if fish and fish habitat are protected.**

### 3 DAM SAFETY

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The NTPC hydroelectric system has many dams on the Snare River to store water for power generation. Failure of these dams could affect people, fish, and wildlife downstream. Independent dam safety reviews have found that there are no significant deficiencies related to dam safety. However, there are some issues that may benefit from new or amended licence conditions.

- The crest (top) of the dams can fall over time, so NTPC regularly tops them up. An independent review of the 2006 Snare Forks dam breach accident identified that one of the key lessons learned was that NTPC must maintain dam crests to design elevations. Since then, dam safety reviews have also revealed that some dam crests were below the design elevations. **The Board may wish to consider a licence requirement that NTPC maintain the dam crests to design elevations at all times.**
- In the 2018 independent Dam Safety Review, the review engineer concluded that: "It is recommended that an update to the freeboard analysis be conducted to consider the directionality of the wind events in the calculation. In addition to the freeboard requirements the results from this analysis would also be required to conduct a review of the adequacy of the erosion protection material on the upstream slopes of the water reading structures." This recommendation was assigned a high priority. (Freeboard is the distance between the top of the dam crest and the water elevation.) Similarly, the review engineer concluded that "The potential for over topping of the structures should be reviewed after update or review of the Inflow Design Flood (IDF) levels and freeboard requirements." NTPC has indicated that a Probable Maximum Flood Study is ongoing. But it’s already been five years since the review engineer made the recommendation. Also, it’s not clear whether NTPC’s PMF Study would fully satisfy the DSR recommendations. **The Board should consider whether a licence condition(s) is needed to require a freeboard analysis, review of the inflow design floods, and verification of erosion protection.**



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- In response to WLWB Information Request #8, NTPC proposed a definition for the dam safety engineer. NTPC’s proposed definition is limited to ensuring the design is maintained. The definition should focus on dam safety. The 2006 Lessons Learned Report from the Snare Forks dam breach recommended that NTPC create a role for a dam safety engineer, which NTPC has done. That report said the dam safety engineer should be “responsible for the safe operation of all dams” and that the role of the dam safety engineer is “to ensure that all dams and related hydraulic structures are maintained and operated in a manner that minimizes risk to public safety, the environment and NTPC Operations”. Also, the Lessons Learned Report for the 2006 dam breach recommended the dam safety engineer should be responsible for communicating dam safety procedures to NTPC Operations. **The TG recommends that the definition of dam safety engineer focus on dam safety.**

## 4 CLIMATE CHANGE

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Climate change may impact the operations of the Snare Hydroelectric Facility and the licence conditions in the future. Water chemistry, water flow, water levels, infrastructure, and more could all be impacted. Changes in the water balance induced by climate change could affect the inflow design floods for dams, dam classes, flood inundation routes, and more. If fish spawning window restrictions are added to the licence to protect fish during low water levels, these windows could change in a warmer climate.

If the Board sets a long licence term (e.g., 20 years or more), NTPC should occasionally assess whether climate change has or is likely to have environmental impacts or affect how well the licence conditions are working.

**We recommend that the licence include a requirement to periodically (e.g., every 10 years) submit a report on how climate change has or is predicted to affect a) environmental impacts of the Snare Hydroelectric Facility and b) the efficacy of the licence conditions.**

## 5 CLOSURE AND RECLAMATION

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The NTPC water licence requires an abandonment and restoration plan. (These plans are now called closure and reclamation plans in the Mackenzie Valley). The most recent version of this plan on the WLWB Online Registry is dated February 1, 2007. That plan includes a brief description of partial and full closure of the facilities. This information provides useful context for what eventual closure would involve. NTPC submitted an updated closure and reclamation plan with the licence application that only addresses temporary closure, but not partial or complete closure.

Unlike a major mine, the Snare hydroelectric facilities are very long-term facilities, with an indefinite lifespan, dictated by the need to provide power to residents. Engagement and traditional knowledge should play a key role in partial or complete closure, in a way that protects fish, people, and wildlife, and ensures cultural uses can continue for generations after closure. This engagement and traditional



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knowledge work could take several years. We want to avoid a situation where there is not enough time to engage and provide Traditional Knowledge related to closure of one or more of the facilities.

At the same time, detailed closure planning for a facility that may not close for many decades or more may not be a good use of resources. We will continue to consider whether any changes are needed to the licence to address this issue.

## 6 WATER LICENCE TERM

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NTPC has requested a water licence term of 39 years. The WLWB requested comments on this issue, and we submitted comments on November 3, 2023.