

July 12, 2016

Carrie Hayward
Assistant Deputy Minister, Ministry of Natural Resources and Forestry
99 Wellesley Street West
Room 6610, Sixth Floor, Whitney Block
Toronto, ON M7A 1W3
Phone: 416 314-2621
E-mail: Carrie.Hayward@ontario.ca

Dear Ms. Hayward:

Re: Proposed Hydro-electric Generating Station at the Bala Falls

Summary

The proponent is relying solely on the approval they have received from Transport Canada that the dangers their proposed project would create for in-water recreation would be only within the areas encompassed by the existing upstream, and their proposed downstream safety booms. Due to **Transport Canada's; limited mandate and expertise, misinterpretation of information provided by the proponent, and oversights – serious public safety issues remain unaddressed.**

We realize that it would simplify everything if there was no in-water recreation around the Bala falls, but the fact is it is an extremely popular in-water recreational area – and as the Moon River is a navigable waterway, the public has this right. Part of the MNRF's mandate is "*supporting outdoor recreation opportunities*". We ask, **how would the visiting public be informed of the extents of the extreme dangers that the proposed project would create.**

The MNRF's [*Best Management Practices for Public Safety Around Dams*](#) states it is to be expected that people will be boating and swimming in the area and that dam operators are therefore to prepare a *Public Safety Plan*. **We are very troubled that this inexperienced proponent – who has never developed a hydro-electric generating station – has declined to prepare a *Public Safety Plan*.**

- This inexcusable decision means those approving the design – the MNRF and the Ministry Engineer personally – would have greater liability if they did not first determine whether the proposed project could be operated safely.

The proponent committed this proposed project would "[*not generally diminish the public's enjoyment of the area for swimming, boating, fishing ...*](#)". So far, the only relevant information they have provided only shows unaddressed public safety concerns.

We understand that the MNRF is currently assessing the proponent's Plans and Specifications for their Phase 2, Permanent Works for the proposed project. As part of this assessment, and before any further approvals are provided, we suggest that **to fulfill the Ministry Engineer's personal and professional due diligence obligations, the MNRF require that the proponent provide a *Public Safety Plan* which has been found acceptable by the *Royal Life Saving Society Canada*.**

Detail

We would like to thank you for hosting the very helpful meeting with your staff and the proponent on July 5, 2016, the improved communications is most welcome.

We were impressed with your staff's knowledge and their concern that this proposed project be properly executed.

Concerning the proponent's statements at the meeting, we provide the following.

1) Cofferdam lowering plan – issue addressed

This improved communications had the immediate effect and positive outcome of resolving one of our concerns – the cofferdam lowering plan:

- a) We were pleasantly surprised to see that the proponent has apparently abandoned their unapproved construction plan to block all flow through the Bala north channel and instead to revert to the cofferdam extent for which they do have environmental approval and to use a type of cofferdam which could be quickly removed.
- b) It was also very good news that the cofferdam lowering plan now must be implemented in a maximum of 48 hours whereas this requirement was not previously specified in the April 17, 2015 Conditions for MNRF's Phase 1A Temporary Works approval under the Lakes and Rivers Improvement Act.

Assuming our understanding is correct, and if this does become the proponent's new plan, then we will consider this issue addressed and hope this improved communication can continue.

2) Transport Canada approval – misinterpreted and flawed

We were however very disappointed to hear that the proponent is relying solely on Transport Canada's approval under the *Navigation Protection Act* (NPA) as confirmation that the proposed upstream and downstream safety booms would fully delimit the extents of the areas which would be made dangerous by their proposed generating station.

As this would be a misinterpretation of Transport Canada's mandate, assessment, expertise, and approval, confirmation that the proposed project could be operated safely requires input from other third-parties, as detailed below.

We note the following from Transport Canada's assessment, entitled "[Bala North GS – NWPP review](#)", dated September 8, 2012, and authored by Al Robertson, Senior Program Officer (it appears that Transport Canada's June 25, 2014 NPA approval was based mainly on this assessment, please forward to us any newer information you may have from Transport Canada):

- a) **Transport Canada incorrectly assumed summer flow would always be low**
Page 5, Section 5 1.2.4.2: States that flow through the proposed generating station in July and August would be 21 m³/s. While this may be the average flow during these months, it overlooks the fact that due to rain storms the proposed station would also operate at full flow during these months.

- This oversight is as wrong as assuming there are no hurricanes in Kansas because the average wind speed there is safe.
- Engineering principles require that, for example, bridges be designed for the worst-case scenario that heavy trucks could be bumper-to-bumper in all lanes.

The fact is that the proposed Bala generating station would operate at its full capacity of 96 m³/s about 21 days every summer, so must be safe enough on those days as well.

Either Transport Canada was misinformed that the flow would consistently be low throughout the summer, or they (quite reasonably) do not understand the:

- Operation of hydro-electric generating stations, such as the added dangers of cycling and the day-to-day flow variations.
- Required engineering principle that a design must be safe even for the worst-case situation. For example, in the summer, the proposed station would often operate at full capacity and must be safe to the recreating public on those days too.

The result of this fundamental misunderstanding is that the MNRF cannot rely solely on Transport Canada's approval under the *Navigation Protection Act* that in-water recreation would be safe outside of the proponent's proposed safety booms.

b) Confirmation of above

Page 6, Section 5 3: States of in-water recreation and the proponent's flow and surface water velocities modelling that: "... *velocities under all conditions during the regatta (mid/late summer) are very low.*"

- This confirms that for their NPA assessment, Transport Canada had the misunderstanding that the proposed station would not operate at full flow during the summer.

c) Incorrect unit conversion

Page 6, Section 5 4.1: Incorrectly converts knots to m/s, as the report claims 1 knot is 0.98 m/s and 4 knots is 1.54 m/s. The correct conversions are 1 knot = 0.51 m/s and 4 knots = 2.06 m/s.

- It is very troubling to find such fundamental errors in a detailed document for a high profile issue prepared by a senior staff member (the author retired a few months after preparing this report), who worked in marine safety for Transport Canada – so should well understand knots.

d) Safe water surface velocity exceeded outside of proposed safety booms

Page 6, Section 5 4.4 and Page 7 Section 6 4: A few candidate maximum surface water velocities are presented for traditional recreational watercraft such as canoes and kayaks, and the conclusion is that the maximum safe surface water velocity for inexperienced paddlers is **0.5 m/s**, which is at the lower end of the range velocities presented.

- As the Moon River is often used for stand-up paddleboards, windsurfing boards and other less traditional watercraft, this is well-justified.

At the July 5, 2016 meeting, the proponent stated their proposed upstream and downstream safety boom locations would be as shown in their drawing [Existing Conditions and Proposed Layout, General Plan View](#), dated March 7, 2014,

which they submitted to Transport Canada as part of their application for approval under the Navigation Protection Act.

These proposed safety boom locations have been superimposed on an aerial photograph and the proponent's flow simulations which they provided on the last pages of their 2012 Addendum, as the figure [Proposed safety boom locations and flow simulation](#). We have the following particular safety boom concerns:

■ **Downstream**

The proponent has proposed that their downstream safety boom extend less than 90' downstream from their proposed generating station even though:

- The proponent's flow simulation shows that 90' downstream from their proposed generating station the surface water velocity would be more than 1.5 m/s – which would be more than three times the safe surface water velocity.
- The surface water velocity would continue to be more than 1.5 m/s for a distance of more than 160' outside of the proposed downstream safety boom. This unmarked, unpredictable, and fast water extending down the Moon River, would endanger;
 - Those using the nearby public docks on the Moon River.
 - Those using their private docks.
 - Those using the portage which the proponent plans for the Township's Portage Landing.
 - The general public using this navigable waterway.

■ **Upstream**

There would be surface water velocities more than double the 0.5 m/s maximum at both:

- The heavily-used Town Docks on Bala Bay, which for over 100 years are also the location for the Bala Aquatic Association's annual regatta, which includes fun events for children such as the Hurry Scurry, which is paddling a canoe using only their hands. At other times, there are people floating on inflatable air mattresses and the inevitable motor boats that stall.
 - All would be drawn to the proposed generating station's intake, which would extend 35'-deep.
 - The upstream safety boom would be an extremely dangerous last resort, only helpful if the victim could hang on to it without tiring or panicking in the hope that someone competent notices and doesn't endanger themselves in attempting a rescue. It should be noted the two 2009 Bala drownings were due to this exact situation – the only two people that drowned were those attempting to rescue a child.
- Diver's Point – which as the name suggests is very popular for Scuba diving. The upstream safety boom would not protect or help Scuba divers as they would be below it and this current would be extremely dangerous to them. If sucked into the proposed generating station's intake trash rack they would have no way to even inform anyone, and would certainly be drowned by the tons of water rushing past them every second.

The proponent has stated both as part of their environmental assessment and at the July 5, 2016 meeting that the only dangerous areas would be within their proposed safety booms, but this would not be true and must be addressed.

e) **Inadequate upstream safety boom location**

Page 9, Section 13 2: States that the current location of the **upstream safety boom** would be acceptable for the proposed generating station. This conclusion appears to be in error, as follows.

As noted at **Page 5, Sections 5.1.1** and **5.1.2.1**, this conclusion is based on the calculation of exclusion zones found in the AECOM report entitled "*Guidance Document for Water Control Structures*", which provides three methods; *Point of No Return*, *Drawdown*, and *Spillway*. These are each detailed on the last page of the MNRF's [Public Safety Measures Plan, Bala Falls Dams, March 2011](#).

- Reviewing these calculations shows that Transport Canada perhaps was not aware that the proposed generating station would be **remotely operated**, as this changes the result of the *Drawdown* calculation, and would require the upstream safety boom to be farther upstream.
- Also, Transport Canada neglected to account that the intake for the proposed station would extend upstream of the Bala north dam, so the **upstream safety boom would need to be moved upstream by an equal amount**.

Due to these two oversights, Transport Canada arrived at an incorrect conclusion. Properly applying these methods shows that the upstream safety boom would need to be relocated farther upstream, which would infringe on Purk's Place's riparian rights and prevent this business from renting boats.

The author of this Transport Canada report was Al Robertson, who was away for a period of time before issuing this assessment, then retired soon afterwards, so he may not have been as focussed on the complexities of this proposed project as could be.

3) Transport Canada – did not check sides of proposed downstream safety boom

A further example that Transport Canada's approval is not assurance that the water would be safe outside of the proposed safety booms is as follows.

- Reference is made to the proponent's scale drawing entitled [Existing Conditions and Proposed Layout, General Plan View, dated March 7, 2014](#), which they submitted to Transport Canada as part of their application for approval under the Navigation Protect Act.
- a) Examining the above drawing shows that the north side of the proposed downstream safety boom would be only ten feet from the side of their proposed powerhouse – which where the water exiting is the most turbulent and dangerous.
- **This turbulent water would be deadly**, the minimum flow would be at least twice the 10 m³/s which caused the [2008 drowning at the Wilson's Falls generating station](#).
 - And the proposed station's flow of full capacity (which would occur for about 21 days each summer) would be **ten times** the Wilson's Falls generating station's deadly flow.
- b) The situation would be even worse for the south side of the proposed downstream safety boom – where it would be anchored at the side of the proposed generating station, and:

- Therefore less than a foot from the full-force tailrace flow as it exits the proposed generating station.
- Not even encompass the full width of the excavated tailrace area, where the water would be extremely turbulent due to the invert becoming shallower.

Transport Canada was likely not informed by the proponent of their most inexplicable plan to locate portage points along the shoreline directly south of their proposed generating station's tailrace, thereby encouraging in-water recreation in this most dangerous location.

The proponent has stated (both for their environmental assessment, and at the July 5, 2016 meeting) that the water would be safe outside of their proposed safety booms.

It is simply common sense that treacherously turbulent and proven-deadly water does not become safe just one or even ten feet away from water with at least twice the flow that caused the 2008 drowning at the nearby Wilson's Falls generating station.

This area is extremely popular for every type of in-water recreation, including stand-up paddle boards, windsurfing boards, inflatable air mattresses, swimming, Scuba diving, and wading. The proponent's plans show they would not even attempt to protect these people.

We cite this example not to request some tinkering with the extents of the proposed downstream safety boom but rather as yet another example that Transport Canada's approval is inadequate to show that the proposed generating station could be operated safely.

4) Transport Canada – had no responsibility to assess ...

a) Impacts to boating on the Moon River

The last example of misinterpretation of [Transport Canada's June 25, 2014 approval under the Navigation Protection Act](#) is to consider what this approval actually states, which is: "*Our assessment of your work has determined that it is not likely to substantially interfere with navigation*", of note:

- The *Navigation Protection Act* received Royal Assent on December 14, 2012 and came into force on April 1, 2014, so Transport Canada's assessment and approval for this proposed project was under the *Navigation Protection Act* and not under the predecessor *Navigable Waters Protection Act*.
- This is significant as the ***Navigation Protection Act* does not apply to the Moon River**, as it is not listed in the Schedule of navigable waters.

Therefore:

- Transport Canada has and had no obligation to assess impacts the proposed project would have on any activities in or on the Moon River.
- The proponent, and therefore the MNRF, has no indication or information that Transport Canada assessed the expected impacts the proposed project would have on any of the public's activities in or on the Moon River.

b) Impacts to swimming and other in-water recreation

As MNRF's [Best Management Practices for Public Safety Around Dams, August 2011](#) states: "*Recreational use of waterways (e.g. boating, swimming, etc.) is assumed to occur*", the impacts on swimming and other known in-water

recreational activities such as Scuba diving and wading must be considered both upstream and downstream.

- Transport Canada has no mandate or expertise for such in-water activities.
- Therefore, Transport Canada did not assess, and their approval does not consider the safety of in-water recreation upstream or downstream of the proposed generating station.

Therefore, Transport Canada's approval under the *Navigation Protection Act* is completely inadequate for the proponent's – and MNRF's – needs. **The Ontario government needs other third-party input and expertise to fulfill the Ministry Engineer's due diligence obligations** for assessing the Plans and Specifications for this proposed project.

5) Transport Canada – unintended application of their approval

The above comments about omissions from Transport Canada's assessment is not a criticism of their work. Rather these comments show that Transport Canada's approval under the *Navigation Protection Act* is not intended for the needs of the proponent and for the purpose the proponent claims.

Therefore Transport Canada's approval:

- a) Cannot be the sole justification that in-water recreation would be safe outside of the proposed safety booms.
- b) Does not show the proposed generating station could be operated safely.

6) MNRF liability and Ministry Engineer's personal and professional responsibility

We have the following concerns.

a) The Ministry Engineer:

- Has the delegated authority to provide the final MNRF approval. As this would enable construction of the proposed generating station, this approval requires careful assessment and due diligence.
- Is an Ontario Professional Engineer, so is bound by the PEO [*Professional Engineering Practice*](#) guideline which requires he has:
 - *“identified all actual or potential hazards to the interests of the client, employer or public associated with the work ...*
 - *communicated the risks to all affected parties.”*

The Ministry Engineer therefore has a personal and professional responsibility to ensure the extreme dangers which would be created by this proposed project are addressed. Rather than this, so far, the MNRF simply states that people shouldn't be in the water in the area around the Bala falls. This does not address the reality of the situation as:

- The site is extremely visible to passers-by and constantly visited by tourists, many new to the area (as noted on page 5 of MNRF's [*Public Safety Measures Plan, Bala Dams, March, 2011*](#)).
- Section 3 of the *Public Lands Act* requires that shoreline frontage such as at Margaret Burgess Park continue to be available for recreational purposes and to enable the public to get to and from the water.

- There are many ways the areas which would be made dangerous by the proposed project would be accessed by the public; from private land and docks, from municipal land and docks, from Crown land, and from the navigable waterway.

Our question is **how would visitors to the area be informed of the dangers** which would be created by the proposed project.

- While adequate safety measures have been implemented at the MNRF's hundreds of other dam and generating sites, it appears due to the Bala area's complicated shoreline ownership and geography, this would not be possible for the proposed project.

If the MNRF does not require the proponent to document how they would inform and protect the public of the extreme dangers this proposed project would create, then the Ministry Engineer would have the responsibility for dangers over which he has no control, as follows:

- If the MNRF approved the construction of a generating station which has not been shown could be operated safely, the MNRF would be unnecessarily exposing itself and the Ministry Engineer to liability.
- The MNRF's [Best Management Practices for Public Safety Around Dams, August 2011](#), begins (emphasis added): "*The Lakes and Rivers Improvement Act (LRIA) provides the Minister of Natural Resources with the legislative authority to govern the design, construction, operation, maintenance and safety of dams in Ontario.*"

The MNRF therefore has a responsibility to determine whether the proposed generating station could be operated safely.

Given the information provided above that Transport Canada's approval is not to be interpreted that this proposed project could be operated safely, the MNRF requires third-party expert input, **before** any further approvals are issued, to demonstrate that the Ministry Engineer fulfilled the due diligence obligations required of Professional Engineers licensed to practice in the province of Ontario.

- b) Page 14 of the MNRF's [Public Safety Measures Plan, Bala Dams, March 2011](#), requires:

- "... prior to operational changes, visual surveillance to ensure no persons are in the dangerous water area and to warn persons to stay clear while changes affecting water flow and level are made."
- That this informal procedure: "*should be added to the operating procedure in the [Muskoka River Dam Operation Manual] to ensure that all operators follow the same practice*".

However, **the proponent would not meet this requirement**, as their proposed generating station would:

- Not have a local Operator or sirens or other way of notifying those in the water before dangerous flows would begin.
 - The proponent's plan (as stated for their environmental assessment and again at the July 5, 2016 meeting) is to simply ramp-up their proposed generating station operation over some period of time. If this was adequate warning, then the current dam stop-log operations (taking many minutes to

remove each stop-log) would have already have been itself considered adequate warning.

- Be remotely- and automatically-controlled, often starting cycling operation at about noon on summer days, further adding to the extreme danger.

The proponent's claim that remote video cameras could provide the required visual surveillance is not credible:

- Many cameras would need to be installed to cover the required areas, all would need to be working all the time.
- The remote Operator would need to reliably and consistently watch all cameras for five or ten minutes every time while the proposed station operation ramped-up, to ensure people notice and stay away. This could not be assured as the Operator would have other responsibilities.
- What would the Operator do if people were seen to be recreating in areas which would become dangerous:
 - Wait until they left, which could be hours.
 - Begin station operation at minimum flow hoping they notice and leave – but this flow would be at least twice that which caused the Wilson's Falls generating station drowning, so would also be impractical.

This shows why a third-party validated *Public Safety Plan* is needed before any further approvals are provided – all of this needs to be thought through and designed in advance, rather the current irresponsibly-unacceptable plan of hoping to figure it all out later. This would not meet the professional and personal responsibility of the Ministry Engineer.

- c) The proponent's current plan to build first and hope to figure out the public safety later might be acceptable were there are no nearby public activities. But this particular proposed location is unique in that it would be unprecedented to:
- Locate a generating station as close to private docks and public docks.
 - Locate a generating station In the middle of an extremely popular in-water recreational area.
 - Operate such a hydro-electric generating station in cycling mode, where it would begin operation at about noon on summer days, without warning or local operator present.

The MNRF's [*Best Management Practices for Public Safety Around Dams, August 2011*](#), **advises that a *Public Safety Plan* be prepared**. Yet despite this and the many above unusual and unprecedented public safety concerns, **the proponent has declined to do so**.

At the July 5, 2016 meeting the MNRF reported it has no authority to require the proponent to prepare a *Public Safety Plan*. However, the MNRF's and Ministry Engineer's due diligence requires more information on the above public safety concerns.

As addressing the above concerns could require design changes, we suggest and request that before any further approvals are provided, the MNRF require a *Public Safety Plan* determined to be acceptable by the *Royal Life Saving Society Canada*.

7) Unprecedented dangers require Best Management Practices

The dangers that would be created by this proposed generating station would be unprecedented, yet:

- a) The proponent's staff and the involved MNRF staff have no experience with the above unprecedented characteristics of this proposed generating station and site and the resulting extremely dangerous situations which would be created.
- b) There has been no assessment of this proposed project by an authority with in-water recreation expertise.
- c) The proponent has declined to provide a *Public Safety Plan* to identify the dangers which this proposed project would create and how they would address these.
 - That the proponent refuses to follow the MNRF's *Best Management Practices for Public Safety Around Dams* is extremely troubling.
 - **As the proponent has stated they will not follow the MNRF's best management practices, what practices would they be following – and without any experience, they cannot be trusted to be handling this adequately.** Their stated plan is to see if they can figure it out after their proposed station begins operation. This would be completely irresponsible.

Conclusion

The proponent and MNRF have no experience with the unprecedented and complicated situation which would be created by the proposed project to build a hydro-electric generating station at the Bala falls. For public safety, the proponent is relying solely on the approval they received from Transport Canada, but this approval is not intended for, and is inadequate for, this purpose.

We therefore suggest and request that the MNRF not provide any further approvals until the proponent has provided a *Public Safety Plan* which has been found acceptable by the *Royal Life Saving Society Canada*, as they are the only recognized authority in Canada with the required expertise.

I look forward to your response. Please let me know if in advance of this you could arrange that I meet with your technical staff in Peterborough, I would appreciate the opportunity to discuss this further directly with them.

Sincerely,



Mitchell Shnier, on behalf of SaveTheBalaFalls.com

Cc: Kory Preston, Ministry of Natural Resources and Forestry, Kory.Preston@ontario.ca