Bay d'Espoir Penstock 1 Life Extension Project Update

Period Ended April 30, 2025

June 18, 2025

A report to the Board of Commissioners of Public Utilities

newfoundland labrador hydro

Contents

List of Appendices

1.0 Progress to Date

As part of ongoing project execution activities, the following update outlines the current status of key project plans, engineering deliverables, penstock fabrication progress, and site works.

Development, submission, and review of key project plans and procedures are actively underway to meet deliverable requirements. Since the March report,[1] the following plans have been reviewed and accepted by Newfoundland and Labrador Hydro ("Hydro"):

- Project Execution Plan;
- Asbestos Management Plan; and
- Excavation Plan.

Additionally, Hydro has completed its review of a number of weld procedures for both on-site welding as well as shop fabrication.

Plan submission and review timelines are being actively managed and are tracking in accordance with agreed timelines as per the contract agreement.

1.1 Fabrication

The contractor continues to advance the fabrication of the penstock sections (commonly referred to as "cans") as shown in Figure 1, Figure 2, Figure 3, and Figure 4. Due to a change in availability of the original barge proposed for transporting the cans to site, barge load 1 that was originally transporting eight cans has been split into two separate loads of four cans each. All eight cans have been fully fabricated, coated, and are ready for shipment. The first barge was successfully loaded and departed the fabrication facility on April 26, 2025; it arrived at the offloading site in St. Joseph's Cove on May 3, 2025. The revised barging plan has no impact on the overall schedule.

[1] "Bay d'Espoir Penstock 1 Life Extension Project Update – Period Ended March 31, 2025," Newfoundland and Labrador Hydro, May 15, 2025.

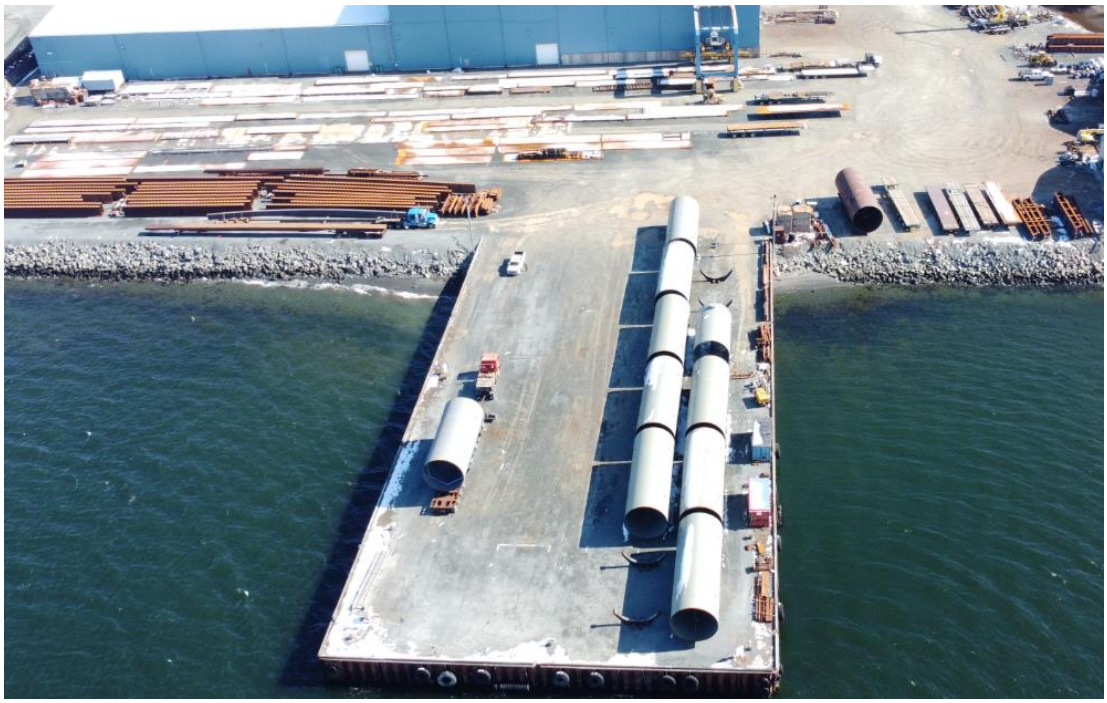


Figure 1: Laydown Area Storage (Complete and Awaiting Loadout)

Figure 2: Barge 1a Loadout

Figure 3: Barge Loadout – Cans 2,3,4 and 5

Figure 4: Fabrication – Can 20

Engineering work and the development of shop drawings for various can segments are nearing completion, with submissions under review for approval. A summary of progress through the reporting period is provided in Table 1.

Table 1: Cans Progress to Date[2]

ME APR, 25		Fabrication		Coatings	
Barge	**Can #**	**In-Progress**	**Complete**	**In-Progress**	**Complete**
1a	2 (Elbow)		X		X
	3		X		X
	4		X		X
	5		X		X
1b	6		X		X
	7		X		X
	8		X		X
	9 (Elbow)		X		X
2	10		X		X
	11		X		
	12		X		X
	13		X		X
	14		X		
	15 (Elbow)		X		
	16		X		X
	17		X		X
	18		X		
3	19	X			
	20	X			
	21	X			
	22				
	23	X			
	24	X			
	25 (Reducer)				
	26				
	27				
	28				

[2] Can 1 is no longer required due to a change in the splice location. However, because fabrication shop drawings had already been initiated prior to this change, the numbering sequence of the cans was not updated. As a result, Can 1 will be skipped in the final numbering.

1.2 Mobilization

Mobilization activities, including tree cutting, grubbing, and initial site setup, commenced on March 27, 2025. Significant progress has been made in establishing the onsite infrastructure. In Zone A (the main office and lunch trailer area) all trailers including the lunchroom, mudroom, and wash car are fully installed, powered, and operational. In Zone B (the lower trailer area), grubbing and grading have been completed, and trailers are staged adjacent to the surge tanks, ready for final placement. Zone C (the marshalling yard) was also grubbed and graded; however, due to the presence of unsuitable fill material, an alternate storage location near the surge tank towers, on a previously developed lot, was identified, approved, and is undergoing preparation work. Electrical permits have been secured for pole drops in all three zones, and general upgrades to the site access roads are ongoing. Figure 5 and Figure 6 show the current site configuration.

Figure 5: Main Office Complex (Zone A)

Figure 6: Clearing – Lower Trailer Area (Zone B)

1.3 Site Works

Excavation and asbestos abatement activities are underway as part of the execution scope as seen in Figure 7, Figure 8, Figure 9, and Figure 10. The top halves of Cuts 1 and 2, located at the beginning and end of the penstock replacement section, have been excavated and abated. Additionally, the top half of the first 100 meters of the penstock, encompassing Cans 2 through 8, has been excavated, along with the completion of excavation at Temporary Access Point 3. Wharf construction at St. Joseph's Cove resumed and is substantially complete, ready for offloading of the first barge load of cans.

Figure 7: Start of Penstock Excavation

Figure 8: Excavation of First 100 m – Cans 2–8

Figure 9: Asbestos Abatement Cut 1

Figure 10: St. Joseph's Cove Wharf Construction

2.0 Project Risks and Mitigations

2.1 Key Risks and Mitigations

A summary of key risks identified during the planning and execution of the project, as well as associated mitigations and status, are provided in Table 2.

Table 2: Key Risks[3,4]

Risk Title/Description	Mitigations	Status
Ability of penstock near toe of dam that was unable to be replaced to meet project performance expectations, including service life and removal of operational restrictions.	Hydro is working with the EPCM[5] Consultant to assess alternative refurbishment options to achieve performance outcomes without replacing this section.	Open – discussions are ongoing with the EPCM Consultant regarding mitigations and options, as further outlined in Section 2.2.
Delay in penstock transportation.	Schedule developed to include float for weather events, barge offloading structure constructed early, conducted route survey to identify any restrictions/issues with ground transportation.	Open – requirements included in the contract, bathymetry survey conducted for barge offloading structure and data provided to barge supplier. Hydro will continue to monitor as work progresses.
Damage to penstock during transportation.	Contractor to obtain the required information for load and barging tie-down and engage a third-party engineering firm to perform required calculations for proper loading and fastening of material on the barge. Procure and roll additional steel plate material.	Open – requirements included in the contract, marine engineering calculations completed and provided to barge supplier. Hydro will continue to monitor as work progresses.
Quantity/scope of weld repairs in the refurbishment section is higher than estimated.	Begin cleaning and inspection of the refurbished section as early as possible. If required, increase resources for repairs, adjust shift durations and/or add a second shift.	Open – requirements reflected in Contractors' schedule. Hydro will continue to monitor as work progresses.

[3] This table is intended to highlight only key risks that may impact project success. Hydro uses a more comprehensive project risk register to facilitate risk management. Hydro regularly updates the risk register, and should a risk escalate in ranking or a new high risk be identified, it will be added to this table in future updates.
[4] Risks which have been shown as closed in a previous report have been removed.
[5] Engineering, Procurement and Construction Management ("EPCM").

Risk Title/Description	Mitigations	Status
Penstock coating quality and/or application efficiency.	Quality concerns are to be mitigated by the Contractor implementing a quality assurance/quality control program, development of an Inspection Test Plan, and using National Association of Corrosion Engineers-qualified inspectors to perform testing on the surface preparation/blasting and coating application, as well as including on-site manufacturer support of the coating product. Contractors with previous experience in applying the specified coating are to be selected. Robotic blasting and coating application methods are to be used to mitigate quality concerns and provide more certainty on application rates. Backup equipment to be on site in case of breakdown.	Open – requirements included in the contract and reflected in the Contractors' schedule. Hydro will continue to monitor as work progresses.

2.2 Geotechnical Assessment and Execution Planning

As indicated in previous reports, the adjustment to relocate the splice location will result in a short section of the existing penstock, approximately 17 meters, remaining in place. Hydro, in collaboration with the EPCM consultants, has been further developing alternatives to refurbish this section of penstock to ensure it meets project performance criteria, including expected service life and the removal of any existing operational restrictions. During this reporting period alternatives were further defined, and additional focus was placed on enhanced inspection coupled with application of a semi-structural lining system. Activities included interaction with liner vendors to review specific lining options, determination of hydraulic losses of these options, and investigation into appropriate requirements for the enhanced inspection.

Additional Non-Destructive Testing ("NDT") may be required on the existing welds in this penstock section in order to optimize the design of some of the options. If required, this will be completed in conjunction with the other NDT testing that will be carried out in this section as part of the project scope. Therefore, the potential impact on project cost and schedule remains under evaluation with the

Engineering Consultant and will depend on the final refurbishment strategy selected. Hydro will continue to provide updates in subsequent reports, until a preferred refurbishment approach is selected and any cost and schedule impacts are confirmed.

3.0 Project Schedule

The Contractor's Milestone Schedule is included in Appendix A. Based on current progress, the Contractor remains on schedule to meet the project's approved milestones and overall timeline for project completion in the fourth quarter of 2025.

4.0 Project Budget

The Board of Commissioners of Public Utilities approved a revised project budget of $65,876,021. Hydro is progressing the work in alignment with the approved budget, with no deviations noted for the reporting period. The project remains on track to meet approved cost and schedule targets, and Hydro continues to actively manage risks to maintain compliance with all regulatory requirements.

5.0 Project Expenditures

As of April 30, 2025, the project expenditure forecast remains consistent with the approved project budget. Appendix B provides further detailed cost information, including an overview of costs incurred to April 30, 2025. Please note that Appendix B has been redacted as it contains commercially sensitive information.

6.0 Conclusion

As of the end of the reporting period, the Penstock 1 Life Extension Project remains on track to meet approved cost and schedule targets, and Hydro continues to actively manage risks to maintain compliance with all regulatory requirements.

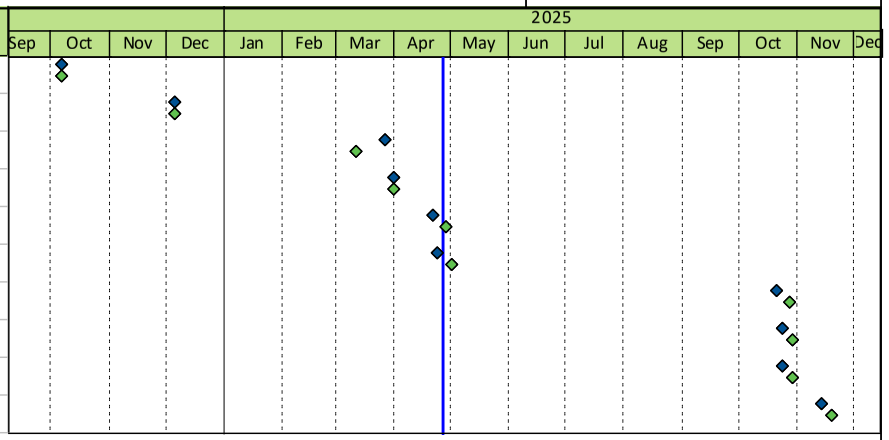
Appendix A

Project Schedule Milestone Table

BDE Penstock No. 1 Refurbishment
Project Schedule

Data Date: 27-Apr-25
Print Date: 14-May-25

Activity Name	Baseline	Forecast	Variance
LNTP Execution Approval	07-Oct-24	07-Oct-24 A	0d
Contract Award	06-Dec-24	06-Dec-24 A	0d
Mobilization to Site	12-Mar-25	27-Mar-25 A	-11d
Penstock Site Handover to Contractor	01-Apr-25	01-Apr-25 A	0d
Start of Replacement Section Works	28-Apr-25	22-Apr-25 A	6d
Start of Refurbishment Section Works	01-May-25	24-Apr-25 A	6d
Completion of Refurbishment Section Works	28-Oct-25	21-Oct-25	6d
Completion of Replacement Section	29-Oct-25	24-Oct-25	4d
Completion of Construction Works	29-Oct-25	24-Oct-25	4d
Completion of all Works and Demobilization	19-Nov-25	14-Nov-25	5d



Notes:

1 The Project Schedule Report presents a forecast that indicates a variance against the baseline. Forecasts are data-driven and subject to fluctuation as the project evolves. The variance represents a snapshot of the project's schedule status at a specific point in time. As progress continues and additional information becomes available, adjustments will be reflected accordingly.
2 Asterisks in the milestone schedule serve as visual indicators of scheduling constraints, which are integral to the Critical Path Method in project scheduling. These constraints are highlighted because the milestone table is an embedded component of the overall project schedule.
3 Blue line in the milestone schedule represents the project status date.

◆ Milestone
◆ Baseline MS

Layout:MP:PEN1_PUB Report MS
Filter:TASK filter: MP_PEN1_PUB MS Table.

Appendix B

Detailed Cost Information

Redacted

Redacted