Bay d'Espoir Penstock 1 Life Extension Project Update

Period Ended May 31, 2025

July 15, 2025

A report to the Board of Commissioners of Public Utilities

Contents

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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 April report,[1] the following plans have been reviewed and accepted by Newfoundland and Labrador Hydro ("Hydro"):

- Penstock Ventilation Plan.

Additionally, Hydro has completed its review of several weld procedures for on-site welding repairs.

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 and delivery of the penstock sections (commonly referred to as "cans") as shown in Figure 1, Figure 2, Figure 3, and Figure 4. Fabrication and coatings have been completed on 22 of 27 cans. Barge load 1a arrived in St. Joseph's Cove on May 3, 2025, as reported last period, and the four cans were successfully transported to the site on May 5, 2025. Barge load 1b arrived in St. Joseph's Cove on May 16, 2025, and an additional four cans were delivered to the site on May 20, 2025. All cans for barge load 2 are completed and ready for load out at the fabrication facility.

[1] "Bay d'Espoir Penstock 1 Life Extension Project Update – Period Ended April 30, 2025," Newfoundland and Labrador Hydro, June 18, 2025.

Figure 1: Can 20 Fabrication Awaiting Coatings

Figure 2: Can 24 Fabrication

Figure 3: Barge 1a Offloading

Figure 4: Can 2–5 in the Marshalling Yard on Site

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

Table 1: Cans Progress to May 31, 2025[2]

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

[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

Site setup and mobilization are now complete. Electrical pole drops were installed in Zones A, B, and C, and Zone B is fully operational with trailers for the lunchroom, mudroom and washroom. The new alternate marshalling yard near the surge tank towers is complete, and staging of the penstock sections has begun, as shown in Figure 5.

Figure 5: Staging of Penstock Sections in Marshalling Yard

1.3 Site Works

In order to track working points for penstock fabrication and installation, and to provide the location of the work along the length of the penstock, stations are used as a reference. The stations begin at the intake structure, 0+00 and continue the full length of the penstock to the powerhouse, station 11+58.[3] The replacement section starts at station 0+65 (Cut 1) and continues to station 4+28 (Cut 2). The refurbishment section starts at station 4+28 and continues the full length of the penstock to station 11+58.

[3] In these references X+Y, X= hundreds of meters, and Y=actual meters. 11+58=1,158 meters from the intake.

On-site construction has progressed into excavation and demolition activities. The bottom halves of the upstream and downstream replacement sections, Cuts 1 and 2, were excavated, with abatement completed on Cut 2. Cut 1 required additional rock removal using a rock buster and vacuum truck due to proximity to the rock face. Excavation of Cans 2 to 16 was completed, and demolition finished on Cans 2 to 11. Drain piping and bedding were installed at Cans 2 to 5, and have commenced at Cans 6 and 7. Cans 2 and 3 were lifted, fitted, and tack-welded into place, with Can 4 lifted into place, and fit-up activities have begun.

Additionally, excavation and removal of Cans 24 to 28 were completed, progressing the scope on both ends of the penstock replacement section.

There are a total of three planned temporary access points to be cut into the existing penstock. Work on all three temporary access points also continued during this period. Excavation for access points 1 and 2 was completed. At access point 3, the cutting of the opening, support frame welding, and installation of stairs and scaffolding tugger frame were completed.

At access points 1 and 2, support frames were welded, stairs and platforms installed, and preparation for internal access began.

Buffing and cleaning of existing welds from station 0+65 to the intake gates continued, with Non-Destructive Examination ("NDE") inspections initiated on the bottom half of the circumferential welds. Additionally, buffing, cleaning and NDE of the existing welds on the lower refurbishment section, station 04+28 to 11+58, was also started.

Figure 6 to Figure 12 show progress within the current reporting period.

Figure 6: Excavation and Demolition Cans 2 to 8

Figure 7: Excavation and Demolition Cans 9 to 11

Figure 8: Demolition Cans 9 to 11

Figure 9: Placement of Can 2

Figure 10: Placement of Cans 3 and 4

Figure 11: Cut-out for Temporary Access Point 3

Figure 12: Construction of Temporary Access Points 1 and 2

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[4,5]

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[6] 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	Open – requirements included in the contract, bathymetry survey conducted for barge offloading structure and data provided to barge supplier. The

[4] 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.
[5] Risks which have been shown as closed in a previous report have been removed.
[6] Engineering, Procurement and Construction Management ("EPCM").

Risk Title/Description	Mitigations	Status
	identify any restrictions/issues with ground transportation.	mitigations have successfully resulted in the on-time delivery of two barge loads of penstock to date, significantly reducing the risk associated with this scope. 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. Two barge loads of cans have been successfully loaded, secured and transported to site with no damage. Mitigation efforts have proven successful, and the remaining risk associated with this task has been significantly reduced. 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. The work required to sufficiently clean the existing welds for inspection has proven more difficult and labour intensive than Contractor originally anticipated, which in turn has increased the duration of this scope. The Contractor has implemented a recovery plan to address the increased effort to complete the work. Hydro will continue to monitor as work progresses.
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	Open – requirements included in the contract and reflected in the Contractors' schedule. Hydro will continue to monitor as work progresses.

Risk Title/Description	Mitigations	Status
	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.	

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 the penstock to ensure it meets project performance criteria, including expected service life and the removal of any existing operational restrictions. During this reporting period, collaboration with liner vendors continued to further define design parameters and requirements for a liner system application. Enhanced inspection options were also further reviewed, and a recommendation for phased array ultrasonic testing inspection on the longitudinal weld joints was proposed.

The additional Non-Destructive Testing ("NDT"), if required, will be completed in conjunction with the other NDT testing that will be carried out in this section as part of the project scope, currently anticipated to occur mid-July. 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. It is still anticipated that the required refurbishment work in this section will be completed within the current construction window, and it will not impact the planned return to service of the assets. 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 progress to the end of May, 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 May 31, 2025, the project expenditure forecast continues to track below the approved project budget; however, Hydro anticipates that the forecast will increase in a future reporting period as a result of potential approval of change requests that are currently undergoing internal review.

Appendix B provides further detailed cost information, including an overview of costs incurred to May 31, 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 achieve the project deliverables, meet approved cost and schedule targets, and Hydro continues to actively manage risks to maintain compliance with all regulatory requirements.

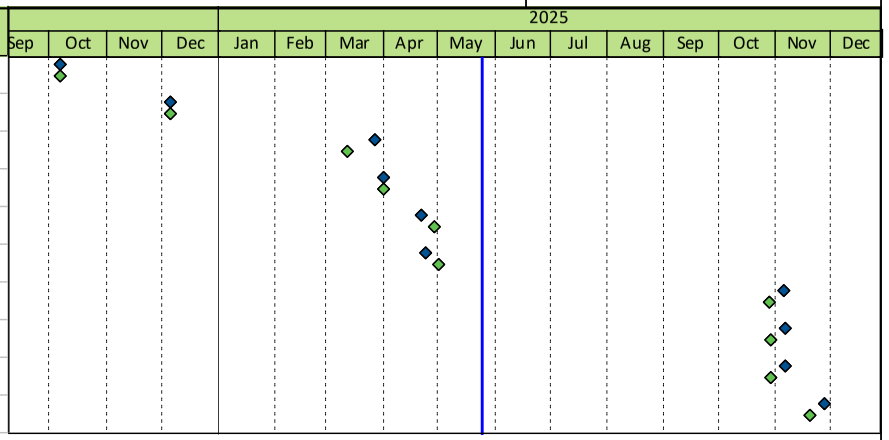
Appendix A

Project Schedule Milestone Table

BDE Penstock No. 1 Refurbishment
Project Schedule

Data Date: 25-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	05-Nov-25	-8d
Completion of Replacement Section	29-Oct-25	06-Nov-25	-6d
Completion of Construction Works	29-Oct-25	06-Nov-25	-6d
Completion of all Works and Demobilization	19-Nov-25	27-Nov-25	-7d



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

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