



Water Resources Division
Resource Management Directorate
Nunavut Regional Office
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Your file - Votre référence
2AM-DOH1335
Our file - Notre référence
GCDocs# 148011294

June 19, 2026

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's Review of the Licence Amendment and Renewal Application for Hope Bay Project, Type A Water Licence No. 2AM-DOH1335.

Dear Richard,

Thank you for the April 30, 2026 invitation to review the referenced licence Amendment and Renewal, submitted by Agnico Eagle Mining Limited, for Type A Water Licence No. 2AM-DOH1335.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the application pursuant to its mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Crown-Indigenous Relations and Northern Affairs Act* and provides the following Technical Review Memorandum for the Board's consideration.

The applicant shall provide confirmation from the Nunavut Water Board that all outstanding water license fees have been paid in full prior to approval of this application.

If there are any questions or concerns, please contact me at (873) 800-5240 or Pauline.Firmin@rcaanc-cirnac.gc.ca or Andrew Keim at (867) 975-4550 or Andrew.Keim@rcaanc-cirnac.gc.ca.

Sincerely,

Pauline Firmin

Pauline Firmin, M. Sc,
Regional Coordinator

Technical Review Memorandum

Date: June 19, 2026

To: Richard Dwyer – Manager of Licensing

From: Pauline Firmin – Regional Coordinator, CIRNAC

Subject: Crown-Indigenous Relations and Northern Affairs Canada’s Review of the Licence Amendment and Renewal Application for Hope Bay Project, Type A Water Licence No. 2AM-DOH1335.

Region: Kitikmeot Kivalliq Qikiqtani

A. BACKGROUND

The Hope Bay project is a gold mine operation in the Kitikmeot region of Nunavut, operated by Agnico Eagle Mines Limited (Agnico). The property includes three main deposit areas: Doris North, Madrid and Boston. The main camp, Doris, is located at approximately 68° 8’ 18” N and 106° 36’ 30”, and the Madrid deposit is further south at approximately 68° 3’ 41” and 106° 35’ 35”. Boston is licensed under a separate Water License. The project has been in Care & Maintenance since February 2022.

The project currently involves extensive infrastructure, including three underground mine portals, a 400 person camp and milling facilities (upgrades ongoing) at Doris, multiple quarries, ore pads, and fuel farms, and an all-weather road connecting the three project sites. Water management on site involves collection of water via sumps, contact water ponds (CWPs), sedimentation ponds and saline water ponds. Water is then either discharged directly to the tundra, transferred to the Tailings Impoundment Area (TIA), or treated and transported via pipeline to the Roberts Bay marine outfall.

Waste management for the Hope Bay Project involves multiple waste streams:

- Non-hazardous waste is either incinerated, composted, or deposited at the Quarry 2 landfill site.
- Hazardous waste is required to be stored in lined secondary containment until it can be shipped off site.
- Sewage and greywater are treated at the Sewage Treatment Plant, then either discharged to tundra or deposited into the TIA.
- Hydrocarbon contaminated soil is deposited at the landfarm for remediation.
- Sludge, contaminated soil/snow/ice/water, and tailings are deposited in the TIA.
- Waste rock is store on waste rock pads and/or used for mine backfill.

Agnico is seeking an amendment for the existing license, and proposing a new license expiration date of 2048 (22 year license term). The following amendments have been submitted for approval:

- A redesign of ore processing mill at Doris to optimize production to increase capacity up to 8,000 tonnes per day.
- A transition to dry-stacked and filtered tailings.
- An increase of diesel fuel storage at Doris (extra 5 ML), Madrid (extra 10 ML) and Roberts Bay (extra 34 ML).
- An increase in Jet-A fuel storage at Roberts Bay by 2 ML.
- Widening the Windy Road to support mining at Madrid while safely accommodating higher traffic between Doris and Madrid sites.
- An increase in water withdrawal from Doris Lake (Extra 707,125 m³) and Windy Lake (extra 116,070 m³).
- Relocating the Madrid South Portal to Patch 7.
- Two new waste rock stockpiles at Doris.
- Three new waste rock stockpiles and one expanded stockpile at Madrid.
- One new ore stockpile at Pad T at Doris.
- Three new ore stockpiles at Madrid.
- Relocation of the existing overburden stockpile at Madrid North to the proposed Naartok West portal.
- A second overburden stockpile adjacent to CWP 2.
- The addition of a second marine outfall diffuser to Roberts Bay.
- New CWPs at Doris and Madrid.
- A decrease in blasting from 4,633,000 kg/year to 3,650,000 kg/year across Doris, Madrid and Boston (licensed under 2AMBOS-1835).
- Increase in Doris camp size to from 400 people to 800 people, and construction of a 250 person camp at Madrid.
- The addition of seven 5.6 MW diesel generators at Doris and three 1.8 MW diesel generators at Madrid.
- Two new wind turbines at Doris and Madrid.

All proposed activities are set to remain within the existing permitted footprint.

CIRNAC provides the following comments and recommendations pertaining to the application package. A summary of the subjects of recommendations can be found in Table 1. Documents reviewed as part of this submission can be found in Table 2 of Section B. Detailed technical review comments can be found in Section C.

Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	Quality Of Water Sources
R-02	Discharge Criteria
R-03	Summary Table Of Expected Quality And Quantity Of Water And Adaptative Management Criteria
R-04	Method(s) Of Extraction And Operating Of Pump(s)
R-05	Water Management Infrastructure Information
R-06	Prediction Of Climate Trends
R-07	Ice Road
R-08	Management Plans
R-09	Outstanding Information Requests With Commitment From Proponent
R-10	Tailing Volume Comparison and Reconciliation to FEIS
R-11	Waste Rock Quantities and Mining Area Reconciliation to FEIS
R-12	Life of Mine (LOM) Reconciliation with Increased Throughput
R-13	Multiple-Accounts Analysis (MAA) – Tailings Management Strategy Selection
R-14	Dry Stack Tailings Closure Strategy
R-15	Fugitive Dust and Air Quality – Dry Stack Tailings (Operational Phase)
R-16	Updated Tailings Facility Design and Operation
R-17	Justification of Maximum Water Withdrawal Rates (Dry Stack Transition)
R-18	Water Balance Stress Test (Non-Average Conditions)

R-19	No Freshwater Discharge Commitment
R-20	Source Term Conservatism and Sensitivity
R-21	Under-Ice/Seasonal Operations Constraint
R-22	Uncertainty Register And Commitments
R-23	Interim Closure And Reclamation Plan (ICRP) And Security

B. DOCUMENTS REVIEWED AND REFERENCED

The following table (Table 2) provides a list of the documents reviewed under the submission and reference during the review.

Table 2: Documents Reviewed and Referenced

Document Title	Author, File No., Rev., Date
2AM-DOH1335 Water Licence Amendment - Hope Bay Operational Update Main Application Document	Agnico Eagle, January 2026
Application for Water Licence Amendment	Agnico Eagle, January 30, 2026
AMENDED WATER LICENCE NO: 2AM-DOH1335	Nunavut Water Board, August 16, 2013
Appendix 1-A: Evaluation of Change Associated with the Operational Update	Agnico Eagle, January 2026
Appendix 1-B: SIG	Agnico Eagle, No date
Appendix 3-A: Tailings Impoundment Area	SRK Consulting (Canada) Inc., July 2025
Appendix 4-B: Geochemical Characterization of Waste Rock and Ore of Madrid North and Patch 7 Deposits	SRK Consulting (Canada) Inc., December 2024
Appendix 4-C: Analysis of Increased Water Withdrawals at Hope Bay	ERM Consultants Canda Ltd., July 8, 2025
Appendix 4-E: Interim Geochemical Source Term Predictions, Hope Bay Project	SRK Consulting (Canada) Inc., January 2025
Appendix 4-F: Mine Plan Operational Update: Water and Load Balance Model	SRK Consulting (Canada) Inc., V2, July 2025

Document Title	Author, File No., Rev., Date
Appendix 6-A: Aquatic Effects Monitoring Plan	Agnico Eagle, V4, January 2026
Appendix 6-I: Interim Closure and Reclamation Plan Doris-Madrid	Agnico Eagle, V8, January 2026
Appendix 6-L: Quarry Management and Monitoring Plan	Agnico Eagle, V8, January 2026
Appendix 6-O: Waste Rock, Ore and Mine Backfill Management Plan	Agnico Eagle, V12, January 2026
Appendix 6-P: Water Management Plan	Agnico Eagle, V20, January 2026
April 9, 2026, AEM Response to Comments to 2AM-DOH1335 Water Licence Amendment – Operational Update –Information Requests / Completeness Check	Agnico Eagle, April 9, 2026
April 17, 2025 CIRNAC Response to Replies to Information Requests for the Amendment & Renewal Application for the Hope Bay Project,	CIRNAC, April 17 2025
April 24, 2026, AEM Response to Second Round of Comments to 2AM-DOH1335 Water Licence Amendment – Operational Update – Information Requests / Completeness Check	Agnico Eagle, April 24,2026
CIRNAC Response to Round 2 of the Information Request Responses from Agnico Eagle Mining Limited, Hope Bay Project	CIRNAC, May 1, 2026
Licence No: 2AM-DOH1335, Doris-Madrid (Hope Bay) Project; Application to Amend Type A Water Licence by Agnico Eagle Mines Limited; Notice of Application and Commencement of Technical Review	Nunavut Review Board, May 7, 2027
Hope Bay Operational Update 2026 Water Licence Amendment – June 4-5, 2026	Agnico Eagle, June 2026
Guide 4 : Completing and Submitting a Water Licence Application for a New Licence	Nunavut Water Board, July 2015
Guide 7 : Licensee Requirements following the Issuance of a Water Licence	Nunavut Water Board, July 2015

Document Title	Author, File No., Rev., Date
2025 2AM-DOH1335 Annual Report – Appendix D	Agnico Eagle, March 2026
Hope Bay – 2025 Annual Geotechnical Inspection – Site-Wide	SRK Consulting (Canada) inc., March 25, 2026
Madrid-Boston Project FEIS - Volume 1 Annex V1-7 – Package P5-23 - Hope Bay Project: Windy Lake North Freshwater Intake Preliminary Design	SRK Consulting (Canada) Inc. November 30, 2017
Madrid-Boston Project FEIS – Volume 5 Section 1 – Surface Hydrology	TMAC Resources Inc.
Northern Land Use Guidelines – Access: Roads and Trails	Indian and Northern Affairs Canada
Hope Bay Project: Stream Crossing Preliminary Design Brief	SRK Consulting (Canada) Inc. November 30, 2017
Climate Change Analysis Approach Report, Hope Bay Project	SRK Consulting (Canada) Inc. November 2017

C. RESULTS OF REVIEW

1. Quality Of Water Sources

Comment:

CIRNAC notes that several information gaps related to water quality remain insufficiently addressed. Specifically, CIRNAC notes that a description of the quality of water source(s) and the available capacity, and a description of the quality of the water from each of Windy Lake, Patch Lake, and Doris Lake for each season (summer, fall winter, spring) were not provided.

In response, the Proponent indicated that water quality and available capacity have not changed from the current licence and referred to historical documents available on the public registry. The Proponent referenced historical information from the Madrid Boston FEIS; however, CIRNAC notes that this information does not provide a seasonal breakdown of water quality as required. This information is essential to assess potential changes in water quality, including during critical periods such as freshet and low-flow conditions. CIRNAC further notes that reliance on historical documents and annual reports, rather than providing consolidated and updated information within the application package, limits the ability to efficiently evaluate current baseline conditions and is in contradiction with NWB guidelines Guide 4, section 6 and Guide 7, section 3.

CIRNAC notes that the Aquatic Effects Monitoring Program (AEMP) acknowledges the importance of water quality in the receiving environment and the potential effect of mining activity, stating that: "Water quality in the Mine lakes could be affected by point (treated discharge) and non-point (runoff) sources, and if concentrations of particular water quality variables increase above certain levels (e.g., CCME guidelines for the protection of aquatic life), aquatic life could be affected." (AEMP, section 2.3.2). This statement underscore the importance of providing a clear and current characterization of baseline water quality, including seasonal variability, to support assessment of potential project effects.

CIRNAC further notes that the current licence was renewed in 2013, and relying on information presented when the licence was last issued does not allow for a full understanding of the present conditions of the site. Updated information in the format prescribed by the NWB is necessary. The Proponent is proposing to increase total freshwater withdrawal from 2,033,800 m³/year to 2,916,855 m³/year, alongside expanded mining activities. CIRNAC notes that the absence of a clear, updated, and seasonally resolved description of water source quality and available capacity within the application package limits the ability to assess how conditions may have evolved over time and whether proposed increases in water use are supported by current baseline conditions.

CIRNAC also notes that, while the Proponent referenced annual monitoring data, review of the 2025 Annual Report (Appendix D.1, D.2 and D.3) identified monthly water volume reporting for Windy Lake, Patch Lake, and Doris Lake, but did not identify corresponding monthly water quality data for Patch Lake assessed against CCME guidelines, limiting the ability to evaluate seasonal trends.

CIRNAC further notes that the AEMP proposes that:

“Water quality sampling will be conducted in April and August of each year at the AEMP stations in Aimaokatalok (Deep and West sites), Stickleback, Doris, Patch, Windy, and Wolverine lakes as well as Reference Lake B. All sampling will be conducted annually during the construction and operational phases of the Mine, except in Windy Lake where water quality samples will be collected annually during construction and the first 2 years of operations to verify predictions under the FEIS (NWB Commitment#1; Technical Comment KIA-NWB-08). If the FEIS predictions are confirmed in Windy Lake, sampling will cease until future monitoring for the closure and post-closure phases is developed.” (AEMP section 3.2.2).

It is unclear how limiting monitoring in Windy Lake to the first two years of operations if FEIS predictions are confirmed would evaluate potential changes in water quality over the full duration of operations, considering the AEMP explicitly mentions that *“During Madrid North construction and operations, Mine activities have the potential to affect Windy and Glenn lakes (direct and indirect potable water use. [...] These lakes will be monitored during Madrid North construction and operations.”* (AEMP, section 3.1.2). A similar statement is present regarding monitoring need of Windy Lake during Madrid South construction and operations. In addition, sampling limited to two time periods annually may not capture key seasonal conditions such as freshet or low-flow periods, or detect short-term or episodic water quality changes.

Recommendation:

(R-01) CIRNAC recommends that the Nunavut Water Board ensure that the roponent provide a description of the quality of water source(s) and the available capacity, and provide a description of the quality of the water from each of Windy Lake, Patch Lake, and Doris Lake for each season (summer, fall winter, spring), in the format prescribed by the NWB guidelines, to support assessment of baseline conditions and potential project effects.

CIRNAC also recommends that the Nunavut Water Board ensure the licence conditions require long-term, seasonally representative water quality monitoring of freshwater sources impacted by project activity over the life of mine—including construction,

operations, and the full term of the licence—to support ongoing evaluation of baseline conditions and potential project-related effects.

2. Discharge Criteria

Comment:

CIRNAC notes that it requested information regarding the rationale for all discharge criteria applicable to the current licence, including a description of how they were developed, what reference material was used in the development of the discharge criteria and how they will prevent negative effects to the receiving environment.

In response, the Proponent indicated that “Agnico Eagle has not proposed any changes to discharge criteria in this Water Licence Amendment” and “all information not proposed to change are available on NWB registry, and have been reviewed and approved by the Board and CIRNAC Minister.”, therefore considered that the existing discharge criteria should not be subject to review and the Proponent did not share the information requested by CIRNAC regarding the discharge criteria. This response is in contradiction with NWB Guide 7, section 3.

CIRNAC further notes that the Aquatic Effects Monitoring Program (AEMP) identifies that the “*Mine has the potential to affect freshwater surface water quality directly due to the discharge of treated water during operations and indirectly due to runoff of site and mine contact water and the use of explosives (i.e., nitrogen inputs) during the construction and operations phases*” (AEMP, Section 2.1.2).

Given the potential for project-related effects to freshwater quality, CIRNAC notes the importance of ensuring that discharge criteria remain current and protective of the receiving environment under the proposed amendment and licence renewal conditions. CIRNAC notes that several discharge criteria currently included in Licence 2AM-DOH1335, including Part F, Section 5(b), Section 18(a), and Section 18(b), do not appear to include the full suite of currently applicable CCME freshwater quality guidelines.

CIRNAC notes that since the issuance of the current licence in 2013, multiple CCME freshwater quality guidelines parameters have been revised and/or established based on updated toxicological and environmental effects information. As scientific understanding and environmental risk frameworks evolve over time, CIRNAC notes that discharge criteria developed under previous site conditions may not fully reflect current best practices or the most up-to-date thresholds intended to protect aquatic ecosystems and receiving waters.

Recommendation:

(R-02) CIRNAC recommends that the Nunavut Water Board include within the Licence the full suite of relevant and current CCME freshwater quality guidelines applicable to project discharges to ensure continued protection of the receiving environment under the proposed amendment and renewal conditions.

3. Summary Table Of Expected Quality And Quantity Of Water And Adaptive Management Criteria

Comment:

CIRNAC notes that it requested a summary table of the expected quality and quantity of waters, over time in all sumps, monitoring stations, and discharge points (including tundra discharge points), along with i) if applicable, adaptive management criteria to benchmark if mitigation/contingency are to be implemented, ii) if applicable, water quality criteria, and iii) management action.

In response, the proponent has referenced the Doris-Madrid Water Management Plan and the Water Load Balance Model (WBWQM). However, the information provided does not include a summary table of expected water quality and quantity over time for all sumps, monitoring stations, and discharge points (including tundra discharge points), as requested.

A baseline prediction of water quality and quantity throughout the site is important to compare against collected data, to determine whether models and predictions were accurate.

CIRNAC observes that the WBWQM presents predicted water quality and quantity at end-of-pipe discharge to Roberts Bay (Section 5; Tables 5-1 to 5-3), but does not provide comparable predictions at intermediate locations (e.g., sumps, contact water ponds, local collection points, or tundra discharge locations). Furthermore, adaptive management criteria, water quality criteria, and corresponding management actions are not presented in a consolidated format.

CIRNAC is concerned that without presenting water quality and quantity estimates, adaptive management criteria and water quality criteria, it will not be possible to detect early warning signs of water management issues. In case of unplanned discharge or spill, this increases risk to the receiving environment.

As an example, the 2025 Site-Wide Geotechnical Report has identified at the Doris Sediment Pond that *“Several holes and cuts noted in liner”, “repairs are needed[...] to prevent water from leaking through the cuts when the pond is full”, “avoid discharging*

water into these areas where water may bypass and flow onto rock fill below the liner” (page 3-3). This illustrates that there is a possibility for infrastructure to be damaged, causing the risk of unplanned discharge.

Adaptive management criteria would allow site operators to detect changes and react before harm to the environment can occur and not rely on waiting until exceedances are detected at end-of-pipe discharge at Roberts Bay before taking action. This is of particular importance in the context of potential unplanned discharges, infrastructure performance issues, extreme weather events and at tundra discharge points, where effluent may enter groundwater and surface water flow systems.

Recommendation:

(R-03) CIRNAC recommends that the Nunavut Water Board ensure that the proponent provides a summary table of the expected quality and quantity of waters, over time in all sumps, monitoring stations, and discharge points (including tundra discharge points), along with i) if applicable, adaptive management criteria to benchmark if mitigation/contingency are to be implemented, ii) if applicable, water quality criteria, and iii) management action, in the format required by NWB Guidelines.

4. Method(s) Of Extraction And Operating Of Pump(s)

Comment:

CIRNAC notes that it requested a description of the method(s) of extraction” and a description of the operating capacity of the pump(s) used.

In response, the Proponent indicated that no updates were required as no changes to the existing infrastructure were proposed. CIRNAC notes that this approach appears inconsistent with NWB guidelines, guide 7 section 3 and guide 4, section 5, block 13.

CIRNAC notes that the method of water extraction and the operating capacity of pumps are key factors influencing withdrawal rates, potential drawdown of source water bodies, and possible physical effects such as turbidity and increased total suspended solids. Access to this information is required to assess potential impacts to source water bodies and the receiving environment.

CIRNAC further notes that, in the second round of IR responses, the Proponent referred to historical documents for the intake at Windy Lake and Doris Lake located on the NWB registry. However, this information was not provided in the format requested by the Board and, in some cases, could not be located within the referenced materials (e.g., pumping capacity for the Doris intake). Reliance on dispersed historical documentation limits the ability to efficiently assess the application within prescribed review timelines. In addition, no information was linked regarding the Patch Lake intake, despite the Doris-Madrid

Water Management Plan indicating that “*Additional freshwater is pumped from Doris Lake or Patch Lake to the process plant*” (section 3.2.10).

CIRNAC also notes that the *Hope Bay Project: Windy Lake North Freshwater Intake Preliminary Design* indicates:

“As a component to the Phase 2 application, a new freshwater intake will be required to increase efficiency in supply of freshwater to the 400 person Doris Camp. The design draw for potable water supply is 300 L/person/day resulting in a freshwater demand equal to 120,000 L/day for the intake.” (Section 1.1)

The assumption for the design draw for potable water supply that was used when the camp was of 400 people was a freshwater need of 120 000 L/day, which is what the current infrastructure was designed for. Using the same assumption of 300 L/person/day, there would be a fresh water demand of 315 000 L/day at the intake (300 L/person/day x 1050 persons) given the planned increase in camp size. If CIRNAC were to only rely on the information put forward by the proponent regarding freshwater intake, which is that the current intake was designed to supply 120 000 L of freshwater per day, then CIRNAC would have serious concerns as to the infrastructure’s capacity to supply a camp requiring 315 000 L/day. This illustrates that current infrastructure, even if no change is proposed, needs to be reevaluated in the context of the current amendment application, as some fundamental assumptions, such as camp size and fresh water need, have changed since the projects component was reviewed and approved.

CIRNAC notes that, without clear and consolidated information on all methods of water extraction currently in use, the operating capacity of associated pumping systems, and the planned capacity of any additional infrastructure, it is not possible to assess whether the existing and proposed systems are sufficient to support the requested increases in water use under the requested amended licence conditions.

Recommendation:

(R-04) CIRNAC recommends that the Nunavut Water Board ensure that the proponent provides a description of the method(s) of extraction and a description of the operating capacity of the pump(s) used to support assessment of potential impacts associated with increased water withdrawals and evolving operational conditions.

5. Water Management Infrastructure Information

Comment:

CIRNAC notes that several information gaps related to existing on-site infrastructure remain unresolved, including:

- An indication of whether existing storage reservoirs are in a natural channel. If applicable, provide plan and profile drawings of the reservoir including the size of the drainage basin upstream of the reservoir, topographical plan showing the drainage area boundary, number of hectares flooded, surface area of the reservoir at full capacity, storage capacity, and details of shoreline protection (
- A plan showing representative cross sections of the reservoir.
- A description of all watercourse crossings including pipelines, bridges, culverts or roads. CIRNAC recommends that the description include the water crossing's purpose and a cross section of the crossing including elevations.
- A description of any watercourse trainings including channel and bank alterations, culverts, spurs, erosion control, and artificial accretion, and its purpose (
- A description of any diversions including ditches and dikes and their purposes.

CIRNAC also notes that these requests are linked to additional outstanding information gaps regarding water withdrawal infrastructure (see technical comments – R-04).

The proponent indicated that this infrastructure is already approved and therefore has not re-submitted the requested information or identified specific document references in the public registry. This approach appear to be in contradiction with NWB guidelines.

The Hope Bay Project has undergone multiple amendments and renewals throughout its lifespan. Under earlier licenses, processes, life of mine, camp size, water need, environmental conditions and production rate at the mine site may be substantially different. For example, the mine was originally only intended to have a two year production life in 2006, with an extended mine life of 4-6 years approved in 2011.

Much of the existing water management infrastructure—such as reservoirs, contact water ponds, watercourse crossings, culverts, and diversion structures—was designed and constructed more than a decade ago. As such, the current infrastructure on site was reviewed and approved under different assumptions regarding life of mine, expected climate conditions, size of mining activity, size of camp, etc. If CIRNAC had reviewed the application at the time the existing infrastructure was approved with the assumptions of the current planned project activity as part of this amendment and renewal application, the infrastructure may not have been judged as sufficient, for example infrastructure such as water withdrawal infrastructure (see technical comment- R-04), or the Doris Contact Water Pond.

The Doris Contact Water Pond relies on permafrost conditions for containment, with the 2025 Site-Wide Geotechnical Report (Section 3-2) noting that the pond floor is already “*undulating due to active layer deepening,*” and that water retention depends on maintaining the permafrost tie-in. According to the Climate change analysis approach report prepared for the previous proponent (TMAC) in 2017, “*At the Project site,*

permafrost is regionally predicted to be thermally sensitive to climate change, with low physical response resulting from thaw (Smith and Burgess, 2004). Permafrost; however, will be locally thaw-sensitive where ice-rich soils and massive ground ice are present” (section 4.4.1)

“Widespread increases in active layer depth are projected for most permafrost regions. The thin active layer of permafrost responds immediately to temperature changes, and climate change is likely to accelerate the increase in depth due to increasing air temperatures and changes in surface conditions.” (section 4.4.2)

These are the key design assumptions that are sensitive to changing environmental conditions, such as permafrost condition, that may evolve between the time the infrastructure was approved and the end of the of mine life.

Similarly, water crossings and access infrastructure originally designed for smaller-scale operations (e.g., lower camp capacity and throughput) may now be subject to increased usage and associated risks (e.g., sedimentation, erosion, or spills). Culverts and drainage structures designs based on earlier climate datasets may not reflect current or projected precipitation variability associated with longer mine life scenarios. As an example, the Northern Land Use Guidelines – Access: Roads and Trails indicate that culverts should be designed *“to ensure that they are sized to accommodate the entire stream channel width and the highest annual flows.”* (section 4.4.2). However, culverts designed and constructed in 2010 (such as culvert for the all-weather access road) with an intended 6 year operating life, may not be adequate to handle the highest annual flow predicted into the 2040s. As a reference, the Climate change analysis approach report prepared for the previous proponent (TMAC) in 2017 identified that for climate factors such as frequency of rainfall, heavy rain and total rainfall, an increase was predicted from current conditions at the time of the report to the 2041 to 2070 period and that *“Increasing temperature, precipitation, and heavy rainfall trends to 2100 and increasing storm intensities in the 2011-2040 time period suggest that storms [and flood] are increasing.”* (table 5.1; section 4.4.4, section 4.2.4, section 4.2.6)

In addition, the increase in mine activity might bring added weight and wear and tear on water crossing infrastructure due to the use of potentially heavier machinery and more frequent travel than what was assumed when they were originally designed and approved. As an example, the Hope Bay Project: Stream Crossing Preliminary Design Brief prepared for the previous proponent (TMAC) in 2017 identified the design criteria for stream crossing the Madrid-TIA All-Weather Road. As a general criteria, it indicates that *“To be consistent with crossings on existing roads (SRK, 2017a) crossings will be designed for loaded CAT 773 haul trucks.”* (Section 3) As per this statement, the stream crossings were designed with a specific upper weigh limit of trucks that may use the road in mind. However, much higher payload trucks are available to be used on mine sites.

The assumption of CAT 773 haul truck being the upper weight need of the road was made prior to the proponent proposing a significant increase in mining activity, which may result in machinery requiring a higher payload capacity and/or more frequent travel.

Reservoirs and storage ponds approved for shorter operational periods may also face increased hydrological variability during the increased life of mine, including changes in upstream drainage areas or runoff conditions, potentially affecting storage capacity and performance.

CIRNAC considers that, without the requested information provided in the current application and clearly cross-referenced, it is not possible to assess whether the existing infrastructure remains suitable under the conditions proposed within the current amendment, including extended mine life, increased operations, increased camp size and changing environmental conditions. Without this, CIRNAC cannot fulfill its mandate of water management and stewardship, reviewing and assessing water-related applications, reports, studies, and designs and providing recommendations and technical advice to the Nunavut Water Board on projects that involve freshwater.

Recommendation:

(R-06) CIRNAC recommends that the Board ensure that the Proponent provide complete information regarding :

- a) Existing storage reservoirs;
- b) Watercourse crossings including pipelines, bridges, culverts or roads;
- c) Watercourse trainings including channel and bank alterations, culverts, spurs, erosion control, and artificial accretion;
- d) Diversions including ditches and dikes and their purposes.

6. Prediction Of Climate Trends

Comment:

CIRNAC notes that the proponent is using the SSP2-4.5 climate scenario for their climate trends modelling. To justify this model, the proponent indicated that the “*SSP2-4.5 climate scenario was the most appropriate given the timeline of the modelling (2030’s to 2040’s). In general, IPCC’s SSP models are relatively similar in this century up until the 2070’s when they begin to diverge. A sensitivity analysis of flowrates was completed to directly compare SSP2-4.5 to SSP5-8.5, and this analysis concluded that process water discharge increased by 2.9% and saline discharge increased by 0.02%. From a water quality standpoint, concentrations varied by – 3.9% to 4.9%.*”

CIRNAC also notes that the proponent has stated in section 3.1 of the main application document that “*Agnico Eagle will continue exploration activities with the objective to extend mine life beyond the life of mine.*” Indicating the possibility that project activity and operations may extend past the current timeline of 2043.

While Agnico’s sensitivity analysis suggests limited differences between SSP2-4.5 and SSP5-8.5 over the operational period for process water and saline discharge, these results do not necessarily indicate inconsequential trends in other areas relevant to current concerns (e.g. permafrost stability). The full analysis comparing SSP2-4.5 and SSP5-8.5 was not provided as part of the application package. In addition, it does not account for the closure and post-closure period, which many of the decisions made during the construction and operations phase of the life of mine will affect.

As part of the June 4 and 5 working group meeting , the proponent indicated the “*SSP5-8.5 would be considered for long term modelling (i.e., ICRP).*” (Hope Bay Operational Update 2026 Water Licence Amendment). This indicates that using SSP5-8.5 is relevant to long term modelling of climate conditions on site. However, management strategy decisions taken during the construction and operation phase may have an effect during the closure and post-closure phases. For example, key design elements rely on the long-term preservation of current permafrost conditions, including placement of waste rock and contaminated materials within permafrost to limit contaminant mobility (Waste Rock, Ore and Mine Backfill Management Plan; Section 2.5.1.2), and the filtered tailings design concept, which assumes encapsulated tailings will freeze and maintain frozen conditions over time (TIA Filtered Tailings Conceptual Design Assessment; Section 3). Both of these examples are management strategies that are currently in place that will affect closure and post-closure management strategies, which will extend past the 2040s and the timeline of modelling under SSP2-4.5.

Given this, CIRNAC supports evaluating a high-emissions scenario as a necessary step to ensure that robust long-term containment strategies under plausible upper-bound climate conditions are in place and that prediction of climate trends adequately captures potential risks to closure and post-closure performance extending beyond the proposed life-of-mine.

Recommendation:

(R-06) CIRNAC recommends that the Nunavut Water Board ensure that the proponent provides a description of the predicted future climate trends at the project site, including worst-case scenario projections using the Intergovernmental Panel on Climate Change’s Shared Socioeconomic Pathway – Representative Concentration Pathway 5-8.5.

7. Ice Road

Comment:

CIRNAC notes the Proponent indicated during the June 4–5 working group that ice road construction is not planned for regular operations but may occur for exploration activities, and that water withdrawal for winter ice road construction remains authorized under Part E, Item 1 of the licence and unchanged under the Amendment. As this authorization is retained, CIRNAC considers ice road construction to remain a relevant component of the licensed activities.

CIRNAC further notes that the application package does not include information on anticipated water withdrawal volumes or construction, monitoring, and safety practices for ice roads. Without these details, CIRNAC is unable to assess the potential for waterbodies drawdown or risks of sedimentation, spills, or other impacts to freshwater resources associated with ice road construction.

Recommendation:

(R-07) CIRNAC recommends that the Nunavut Water Board ensure that the proponent indicates the quantities of water required for ice road construction and provides a description of the methods of ice road construction, monitoring and safety.

8. Management Plans

Comment:

CIRNAC notes that information gaps related to management plans remain, including:

- An updated water management plan that demonstrates consistency between the text and its flow diagram. CIRNAC recommends using the same names for facilities between the text and the flow diagram to ensure comparability.
- A Spill Contingency Plan, the Dam Emergency Plan, and the Emergency Response Plan to address all phases of the project including construction, operation, and care & maintenance. (as required by section 7-22 of the SIG).

CIRNAC understands that the Proponent has indicated that these plans will be updated later in the licensing process or prior to operations. However, CIRNAC is concerned that, as currently submitted, the Doris-Madrid Water Management Plan contains internal inconsistencies between the written description and the flow diagram, which prevent a clear understanding of water management pathways, including flow routing, storage locations, treatment systems, and discharge points. As such, CIRNAC is unable to fully assess the potential effects on receiving waters.

CIRNAC further notes that the proposed project includes multiple distinct phases (care and maintenance, construction from 2027–2029, operations from 2030–2043, closure from 2044–2047, and post-closure thereafter), under a licence proposed to extend to 2048. Given this timeline, CIRNAC considers management and emergency response plans applicable to each phase a relevant requirement to the current review.

CIRNAC also notes that emergency response requirements may vary significantly by phase (e.g., differences in personnel availability during construction, or increased volumes of water and waste during operations), and that phase-specific planning is necessary to understand how spill prevention and response measures will be implemented.

Without updated, internally consistent plans that reflect current and proposed site conditions and clearly distinguish between project phases, CIRNAC is unable to evaluate whether water management and emergency response measures are adequate.

Recommendation:

(R-08) CIRNAC recommends that the Board ensure that the Proponent provides complete information in accordance with NWB guidelines Guide 7 and Guide 4, to support the assessment of potential impacts to water resources regarding:

- a) An updated water management plan that demonstrates consistency between the text and its flow diagram;
- b) A Spill Contingency Plan, a Dam Emergency Plan, and an Emergency Response Plan to address all phases of the project including construction, operation, and care & maintenance.

9. Outstanding Information Requests With Commitment From Proponent

Comment:

CIRNAC notes that, during the June 4–5 working group meeting, the proponent committed to provide additional information in response to several outstanding Information Requests. However, at the time of writing, CIRNAC has not received follow-up information.

CIRNAC reiterates the following Information Requests:

IR-08c) CIRNAC recommends the Applicant provide a detailed depiction of the drainage patterns within the solid waste disposal area(s).

CIRNAC notes that the information requested in IR-08c is necessary to understand site drainage pathways within solid waste disposal areas and to assess the potential for leachate migration to adjacent waterbodies.

IR-14) CIRNAC recommends the Applicant provide the mean annual flood, maximum summer flood and mean summer flood in cubic metres per second for Doris Lake outflow, Patch Lake outflow, and Windy Lake outflow

CIRNAC notes that flood flow statistics for key lake outflows are required to evaluate hydrological conditions, including high-flow scenarios, and to evaluate the potential effects of water withdrawals on receiving environments.

IR-25) CIRNAC recommends that the Applicant provide the composition, chemical characteristics and quantity generated for all waste types produced as a part of this project. CIRNAC requests that these quantities take into account the projected increase in camp production and personnel under the Construction and Operational Phases.

CIRNAC notes that the characterization of waste (including composition, chemical properties, and quantities) is necessary to assess potential impacts to freshwater resources and to evaluate whether proposed waste management systems are appropriately designed for current and projected site conditions, including increased camp capacity and production rates.

IR-37a) CIRNAC recommends that Agnico provide a detailed list of proposed proximal sources, a map of the sources, and volume measurements of each source to ensure none of these sources are drawn down during periods of operation in winter conditions under ice.

IR-37b) CIRNAC recommends that Agnico clarify what measures it will take to minimize the impacts of withdrawals from 'proximal sources' on water levels and flow rates.

CIRNAC notes that the Proponent has indicated an intention to withdraw up to 60,000 L of water from proximal sources but has not identified specific source waterbodies, volumes per source, or mitigation measures. CIRNAC considers that this information is necessary to assess the potential for localized impacts (e.g., reduced water levels, altered flow regimes, etc.), and to understand how mitigation measures would be applied to protect these waterbodies.

Recommendation:

(R-09) CIRNAC recommends that the Nunavut Water Board request clarification from the Proponent on the status of commitments made during the June 4–5 working group and inquire whether responses to IR-08c, IR-14, IR-25, IR-37a, and IR-37b will be provided.

10. Tailing Volume Comparison and Reconciliation to FEIS

Reference:

Hope Bay Water Licence Amendment Application; Appendix 1-A (Evaluation of Change Associated with Operational Update); Appendix 3-A (Filtered Tailings Design); Appendix 4-F (Water Balance and Load Balance Model); FEIS (Madrid–Boston, 2017); IR Responses (Tailings Quantities and Project Scope); Existing Water Licence (facility capacity, water management framework, and long-term performance requirements).

Comment:

CIRNAC notes that the amended mine plan includes increased throughput (up to 8,000 tpd) and additional mining areas. Appendix 3-A presents total tailings quantities for the revised plan; however, the application does not provide a direct comparison to:

- Previously authorized or assessed maximum tailings volumes;
- Tailings volumes assumed in the FEIS and subsequent approvals.

On the basis of the application, it remains unclear to CIRNAC whether:

- Total tailings volume has increased relative to prior approvals; or
- The revised plan represents a change in deposition rate only.

Although the application lacks the information noted above, AEM verbally indicated that the total quantity of tailings in the TIA would increase from the previously assessed and approved amount of 18 million tonnes to 34 million tonnes. This represents a 90% increase in the total quantity of mining and tailings deposition in the TIA. Despite this significant increase, AEM's application asserts that the amendment remains within the previously assessed envelope.

Total tailings volume is a primary driver of long-term environmental risk, influencing seepage generation, contact water volumes, and closure performance. The existing water licence framework assumes a defined scale of tailings management and associated water handling capacity. Confirmation that total tailings remain within previously assessed and approved limits is necessary to support the conclusion that impacts remain bounded and that the current licence conditions remain appropriate.

Recommendation:

(R-10) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide a clear comparison of previously assessed/authorized maximum mined quantities and tailings quantities in comparison to the proposed amendment;
- b) Provide a technical analysis supporting the conclusion that the 90% increase in mining and tailings quantities relative to the assessed and approved project remains within the previously assessed envelope; and

11. Waste Rock Quantities and Mining Area Reconciliation to FEIS

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-B (Mine Plan and Waste Rock Quantities); Appendix 6-O (Geochemistry); Appendix 6-L (Site Layout); FEIS (Madrid–Boston, 2017); IR Responses (Mining Areas and Disturbance); Existing Water Licence (contact water management and geochemical loading considerations).

Comment:

CIRNAC notes that the amended mine plan incorporates multiple deposits and increased throughput. Appendix 4-B provides waste rock quantities; however, the application does not provide comparison to:

- Total mined tonnes assessed in the FEIS;
- Previously authorized or anticipated maximum extraction scenarios.

IR responses acknowledge some additional disturbance beyond previously defined limits; however, the application does not clearly demonstrate whether:

- Total mined tonnes have increased relative to the FEIS;
- Waste rock volumes remain within previously assessed bounds;
- Spatial disturbance remains fully within previously assessed limits.

Given that waste rock is a primary source of sulphate and metal loading and contributes to contact water generation managed under the licence framework, this information is required.

Waste rock volumes and mined tonnes control geochemical loading, contact water generation, and long-term water management requirements. The existing licence assumes a defined scale of material handling and associated water management infrastructure. Confirmation that these quantities remain within previously assessed bounds is necessary to support the conclusion that cumulative impacts remain unchanged.

Recommendation:

(R-11) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide a reconciliation of total mined tonnes and waste rock volumes relative to FEIS assumptions;
- b) Confirm that all mining areas remain within previously assessed spatial limits or quantify expansions;
- c) Identify whether the amendment represents an increase in total material mined or a change in sequencing/throughput only; and

- d) Demonstrate that associated geochemical and water management impacts remain within previously assessed bounds.

12. Life of Mine (LOM) Reconciliation with Increased Throughput

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-F (Water Balance Model); Appendix 3-A (Tailings Design); FEIS (Madrid–Boston, 2017); IR Responses (Mine Plan and Production); Existing Water Licence (water withdrawal limits, long-term management framework, and adaptive management requirements).

Comment:

CIRNAC notes that the application indicates increased throughput but does not present:

- The LOM (years) associated with the amended plan;
- A comparison to the LOM assessed in the FEIS;
- Total tonnes mined relative to FEIS assumptions.

LOM is inversely related to throughput for a fixed resource base; however, if total tonnes increase, LOM may remain similar or increase. This distinction is not clear for the amendment. Without this information, it is impossible to determine whether cumulative effects (e.g., total water use and discharge loads under the licence framework) remain within previously assessed bounds.

LOM is a key determinant of cumulative environmental effects, including total water withdrawals, discharge volumes, and long-term closure conditions. The existing licence sets limits on annual withdrawals and relies on assumptions regarding duration and cumulative loading. Confirmation that LOM remains consistent with FEIS assumptions is required.

Recommendation:

(R-12) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide the LOM (years) associated with the amended mine plan;
- b) Provide a comparison to the LOM assessed in the FEIS;
- c) Reconcile total tonnes mined under the amended plan with FEIS assumptions; and
- d) Describe implications for cumulative water use and discharge volumes over the full LOM.

13. Multiple-Accounts Analysis (MAA) – Tailings Management Strategy Selection

Reference:

Hope Bay Water Licence Amendment Application; Appendix 3-A (Filtered Tailings Design); IR Responses (Tailings Alternatives / Design Selection); FEIS (Madrid–Boston, 2017); Existing Water Licence (water management framework, reliance on TIA-based system, and long-term performance expectations).

Comment:

CIRNAC notes that the proponent identifies advantages of filtered tailings (e.g., reduced water inventory, improved geotechnical stability); however, the application does not provide sufficient detail to verify how these benefits were evaluated relative to alternative tailings management approaches. Specifically, the application does not provide:

- Evaluation criteria used in the MAA (including environmental, technical, and economic factors);
- Weighting assigned to each criterion;
- Scoring of each alternative;
- Sensitivity analysis demonstrating robustness of the selected option.

While IR responses confirm that alternatives were considered, only a qualitative summary is provided. Without the underlying evaluation framework, it is impossible to confirm that the selected tailings management approach represents the preferred alternative with respect to water management, seepage control, and closure performance, particularly given that the existing licence framework is based on centralized water storage within the TIA.

The transition to filtered tailings represents a material change in tailings management relative to the slurry-based system assumed in the existing licence. This change has implications for water management, seepage generation, and closure performance. Verification that this option is preferred from a water-related environmental perspective requires transparency regarding the evaluation framework used to select it.

Recommendation:

(R-13) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide the results of the Multiple-Accounts Analysis supporting selection of the filtered tailings option, including criteria, weightings, scoring, and sensitivity analysis; or
- b) If there is financially sensitive information in the MAA, provide a redacted version or a detailed technical summary that is sufficient to demonstrate that the selected

tailings management option is preferred with respect to water-related environmental outcomes.

14. Dry Stack Tailings Closure Strategy

Reference:

Hope Bay Water Licence Amendment Application; Appendix 3-A (Filtered Tailings Design); Appendix 4-E (Interim Source Term Report); Appendix 6-I (Closure / ICRP); IR Responses (Closure Strategy); FEIS (Madrid–Boston, 2017); Existing Water Licence (closure planning requirements, long-term water quality objectives, and adaptive management framework).

Comment:

CIRNAC notes that the dry stack design is presented at a conceptual level and relies on assumptions regarding permafrost stability, drainage behaviour, and geochemical performance. The Interim Closure and Reclamation Plan (ICRP) and other supporting documents of the application do not provide:

- A defined cover system or infiltration control approach for the revised tailings management strategy;
- A strategy to limit oxygen ingress and sulphide oxidation;
- Evaluation of closure performance under climate change scenarios.

The Interim Source Term Report (Appendix 4E) indicates that filtered tailings may exhibit higher reactivity relative to submerged tailings, increasing the importance of infiltration and oxygen control. IR responses confirm that closure design details will be addressed at a later stage (ICRP), rather than demonstrated as part of this application.

To address this risk, CIRNAC notes that Appendix 4E explicitly states that the tailings dry stack and tailings beaches will be covered with a complex cover comprised of a geomembrane and 1 metre of coarse rock. This closure strategy differs significantly from the 0.3-metre-thick rock cover that was previously proposed by AEM. The transition to a more complex cover has potentially significant water quality and financial security implications. However, based on application documents other than Appendix 4E, it is unclear the extent to which the revised complex cover system has been incorporated into the long-term closure strategy of the site.

Given that the existing licence framework relies on defined water management systems and long-term performance expectations, deferral of closure design introduces uncertainty regarding compliance.

Dry stack closure directly controls post-closure seepage quality and long-term water management performance. The existing water licence requires demonstration that long-term environmental protection objectives can be met. Without a defined closure approach, it is not possible to confirm that closure conditions will be met without reliance on long-term active water treatment.

Recommendation:

(R-14) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide a conceptual dry stack closure design, including cover system, infiltration control, and water management approach;
- b) Confirm that the source term predictions (Appendix 4E) and water quality and load balance mode predictions (Appendix 4F) are based on the placement of a complex, low-permeability geomembrane cover over the dry-stack and slurry tailings;
- c) Provide the incremental closure costs associated with construction of a complex, low-permeability geomembrane cover relative to the previously proposed cover strategy;
- d) Model post-closure seepage quality and quantity under baseline and climate change scenarios; and
- e) Demonstrate that closure water quality objectives can be achieved without reliance on long-term active treatment.

15. Fugitive Dust and Air Quality – Dry Stack Tailings (Operational Phase)

Reference:

Hope Bay Water Licence Amendment Application; Appendix 3-A (Filtered Tailings Design); Appendix 4-E (Interim Source Term Report); Appendix 6-P (Air Quality / Environmental Management); IR Responses; Existing Water Licence (water quality protection objectives and environmental protection framework).

Comment:

CIRNAC notes that filtered tailings are placed in a partially saturated, subaerial configuration, which differs from slurry-based deposition and may increase the potential for dust generation. The Interim Source Term Report identifies arsenic as a key constituent of concern under neutral pH conditions, indicating that particulate-bound transport may be relevant.

Notably, wind blown tailings dispersion from the dry stack tailings facility at AEM's Meliadine Mine has been identified as a source of impacts to adjacent surface water

receivers. On this basis, fugitive dust dispersion is a credible pathway for contaminant transport from the Doris dry stack to surface water receivers. The application amendment does not assess this pathway or identify mitigation measures that will be employed to mitigate potential impacts. Specifically, the application does not provide:

- An assessment of fugitive dust generation from the dry stack;
- Characterization of particulate composition (including metals such as arsenic);
- Description of operational dust control measures specific to the dry stack;
- Evaluation of potential deposition to nearby water bodies or snowpack.

Although air quality is not directly regulated under the water licence, fugitive dust deposition may act as a cross-media pathway whereby contaminants are transported and deposited to land, snowpack, and surface water. This pathway may influence water quality, which is directly within the scope of the licence.

Recommendation:

(R-15) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide a quantitative assessment of fugitive dust generation from the dry stack tailings during operations;
- b) Characterize the expected composition of dust, including key parameters such as arsenic;
- c) Describe dust mitigation and monitoring measures; and
- d) Confirm that dust deposition will not result in measurable adverse effects on environmental quality, including surface water.

16. Updated Tailings Facility Design and Operation

Reference:

Hope Bay Water Licence Amendment Application; Appendix 3-A (TIA Filtered Tailings Conceptual Design Assessment); Appendix 4-E (Interim Geochemical Source Term Predictions, Hope Bay Project).

Comment:

CIRNAC notes that the application and supporting documents provide comments on the nature and extent of existing and proposed tailings management approaches and related facility designs. Section 3 Operational Update Overview, subsection 3.3 Detailed Description 3.3.4 Tailings Management states that “As part of the Water Licence Amendment, tailings will be deposited **in the TIA** using a phased approach. Initially, slurry tailings will be deposited **within the TIA**. Over time, the operation may transition to filtered

*tailings placement, creating a dry-stack configuration. The dry-stacked tailings will be located **within the existing TIA footprint**, placed on a foundation consisting of previously deposited slurry tailings and surrounding overburden.”*

These statements lead the reader to expect that the future tailings footprint will be the same as that of the current approved facility. Section 3.3.4 refers to Appendix 3-A TIA Filtered Tailings Conceptual Design Assessment that “*confirms the technical feasibility of transitioning from slurry to filtered tailings within the existing TIA footprint.*”

From review of Appendix 3-A Figure 2-1 it appears that the proposed configuration of the dry stacked tailings extends well beyond the limits of the existing TIA footprint.

It is important that the information provided in the application provides a clear understanding of what is being proposed. Given that tailings storage is by far the most significant waste management concern through the mine life cycle, it is important that the Proponent provide information in such a manner that all participants in the technical review can have a clear and accurate understanding of what is being proposed by the proponent.

Recommendation:

(R-16) CIRNAC recommends that the Board ensure that the Proponent provide clarity on what is meant by its references to “*within the existing TIA footprint*” and provide additional discussion and details to support the statement that all tailings generated under the amended operations will in fact fall within the existing TIA footprint.

17. Justification of Maximum Water Withdrawal Rates (Dry Stack Transition)

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-F (Water Balance and Load Balance Model); Appendix 3-A (Filtered Tailings Design); Appendix 4-C (Analysis of Increased Water Withdrawals at Hope Bay); IR Responses (Water Management and Withdrawals); Existing Water Licence (Part D – Water Use, including maximum withdrawal limits and requirement to maximize reclaim water use from the TIA).

Comment:

CIRNAC notes that the Water Balance Model indicates increased internal recycling of water under the dry stack configuration; however, the application does not reflect that and does not provide:

- A comparison of water demand under slurry versus filtered tailings at equivalent throughput;
- Quantification of the expected reduction in make-up water requirements due to filtration;

- A clear linkage between modelled water demand and the requested maximum withdrawal rates.

While increased throughput may offset some gains in water recovery, the absence of a normalized comparison obscures whether the requested withdrawal limits reflect actual operational requirements or include additional contingency capacity.

Given that the existing licence requires maximization of reclaim water use and defines an upper bound on withdrawals, this information is required to confirm that the requested limits are appropriate and consistent with licence intent.

Water withdrawal limits define the maximum allowable environmental impact on freshwater systems. The existing licence explicitly requires maximizing the use of reclaim water from the TIA and establishes a defined maximum withdrawal limit. If dry stack operations increase water recovery, the required withdrawal rates may be lower than those requested. Without clear justification, the proposed limits may exceed those necessary to support the amended mine plan.

Recommendation:

(R-17) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide a comparison of water withdrawal requirements for slurry versus dry stack tailings at equivalent throughput;
- b) Quantify expected reductions in make-up water demand resulting from filtration;
- c) Demonstrate how these reductions have been incorporated into the requested maximum withdrawal limits;
- d) Identify the conditions under which maximum withdrawal rates would be required (e.g., low-flow conditions, reduced recycle efficiency); and
- e) Confirm that requested limits do not exceed those necessary to support the amended mine plan.

18. Water Balance Stress Test (Non-Average Conditions)

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-F (Water Balance and Load Balance Model); IR Responses (Water Management); Existing Water Licence (requirements for water balance model updating, validation, and adaptive management).

Comment:

CIRNAC notes that the application presents a life-of-mine water balance; however, it does not include stress testing under conditions such as:

- Low-flow (drought) scenarios;
- High inflow events (e.g., spring freshet, extreme precipitation).

As a result, it is not possible to confirm that storage, pumping, and treatment systems are sufficient under these conditions. Given that the water management system relies on capture and treatment of all contact water, performance under extreme conditions is critical.

The existing licence framework requires that the water balance model be updated and validated against observed data, reinforcing the need for demonstration of system robustness beyond average conditions.

System reliability is governed by extreme conditions rather than average conditions. The existing licence requires ongoing validation and calibration of the water balance model to ensure that it reflects actual system behaviour. Without stress testing, it is not possible to confirm that the system can operate without uncontrolled discharge or exceedance of storage capacity under extreme conditions.

Recommendation:

(R-18) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide water balance stress test scenarios representing low-flow and extreme inflow conditions;
- b) Demonstrate that the water management system can operate without uncontrolled discharge under these scenarios; and
- c) Confirm that storage, pumping, and treatment capacity are sufficient to maintain compliance under extreme conditions.

19. No Freshwater Discharge Commitment**Reference:**

Hope Bay Water Licence Amendment Application; Appendix 4-F (Water Balance and Load Balance Model); IR Responses (Discharge Strategy); Existing Water Licence (authorized discharge pathways, including provisions for discharge to freshwater under certain conditions).

Comment:

CIRNAC notes that the proposed water management approach appears to rely on complete capture and routing of contact water to treatment and marine discharge. However, the application does not explicitly confirm that treated or untreated water will not be discharged to freshwater receivers under:

- Normal operating conditions;
- Upset conditions;
- Extreme events.

In the absence of this confirmation, it is impossible to verify that freshwater systems will be fully protected. This is particularly relevant given that the existing licence allows for certain freshwater discharge pathways, indicating that the proposed approach may represent a change in water management philosophy.

Avoidance of freshwater discharge appears to be a key component of the proposed water management strategy. However, the existing licence framework includes provisions for discharge to freshwater under certain conditions. Explicit confirmation is required to verify whether the amended project represents a tightening of this framework and to ensure that freshwater systems are protected under all operating conditions.

Recommendation:

(R-19) CIRNAC recommends that the Board ensure that the Proponent:

- a) Confirm whether any discharge to freshwater will occur under any operating condition;
- b) If no discharge is proposed, provide an explicit commitment to this effect; and
- c) Describe contingency measures that ensure freshwater systems are protected under upset and extreme conditions.

20. Source Term Conservatism and Sensitivity

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-E (Interim Source Term Report); Appendix 4-F (Water Balance and Load Balance Model); IR Responses (Geochemistry and Water Quality); FEIS (Madrid–Boston, 2017); Existing Water Licence (water quality objectives and reliance on predictive modelling for compliance).

Comment:

CIRNAC notes that the Interim Source Term Report provides estimates of constituent release; however, the application does not identify whether these assumptions represent conservative conditions, nor does it evaluate sensitivity to key parameters such as arsenic, sulphate and nitrogen species.

Given the uncertainty inherent in geochemical predictions, particularly for filtered tailings systems where oxidation conditions differ from submerged systems, it is necessary to demonstrate that modelling outcomes are robust to reasonable variation in input assumptions.

Without this it is not possible to confirm that predicted effluent quality and associated loading remain within acceptable bounds under all plausible conditions.

Geochemical source terms directly control predicted effluent quality and contaminant loading. The existing licence relies on predictive modelling to demonstrate compliance with water quality objectives. Without demonstrating conservatism or evaluating sensitivity, confidence in model predictions is reduced.

Recommendation:

(R-20) CIRNAC recommends that the Board ensure that the Proponent:

- a) Identify conservative assumptions used in the source term development;
- b) Provide sensitivity analysis for key parameters (e.g., arsenic, sulphate, nitrogen); and
- c) Demonstrate that predicted effluent quality remains within acceptable limits under a range of plausible conditions.

21. Under-Ice/Seasonal Operations Constraint

Reference:

Hope Bay Water Licence Amendment Application; Appendix 4-F (Water Balance Model); IR Responses (Water Management and Operations); Existing Water Licence (water withdrawal limits, discharge management, and seasonal operational considerations).

Comment:

CIRNAC notes that the water balance and operational plan do not clearly define how the system will be managed under winter conditions when surface waters are ice-covered. Specifically, the application does not describe:

- Constraints on water withdrawals under ice-covered conditions;
- Changes in inflow availability and system response;
- Operational adjustments required to maintain compliance during winter.

Without defined constraints, it is not possible to verify that the system will perform as intended under seasonal conditions. This is particularly relevant where system performance depends on continuous capture and management of contact water.

Seasonal conditions influence hydrology, water availability, withdrawal capacity, and discharge behaviour. The existing licence regulates water withdrawals and discharges on an annual basis, but compliance depends on operational feasibility under seasonal constraints. These conditions may also influence aquatic systems.

Recommendation:

(R-21) CIRNAC recommends that the Board ensure that the Proponent:

- a) Define operational constraints under winter and under-ice conditions;
- b) Describe how water withdrawals, storage, and discharge will be managed during these periods; and
- c) Demonstrate that the water management system will operate without adverse impacts under seasonal conditions.

22. Uncertainty Register And Commitments

Reference:

Hope Bay Water Licence Amendment Application; All Relevant Appendices; IR Responses (various topics including closure, water balance, and geochemistry); Existing Water Licence (adaptive management framework, plan submission requirements, and ongoing compliance obligations).

Comment:

CIRNAC notes that the application identifies multiple areas of uncertainty, including:

- Dry stack closure design;
- Water balance assumptions;
- Geochemical source term estimates;
- Operational performance under extreme and seasonal conditions;
- Impacts of increased water take on receiving waters and fish habitat.

However, these uncertainties are not consolidated into a structured framework. The application does not clearly define:

- The specific risks associated with each uncertainty;
- The actions required to address them;
- The timelines for resolution;
- How these actions will be incorporated into future plans or licence conditions.

Without this structure, it is difficult to evaluate whether the proposed adaptive management approach is sufficient to ensure compliance with water licence requirements.

The existing water licence relies on adaptive management and ongoing plan updates to ensure environmental protection. Effective implementation of this framework requires clear identification of uncertainties, associated risks, and defined commitments for resolution. Without a structured approach, it is difficult to track how uncertainties will be addressed and whether commitments are enforceable.

Recommendation:

(R-22) CIRNAC recommends that the Board ensure that the Proponent:

- a) Provide an uncertainty register identifying key uncertainties across all components of the project;
- b) Identify associated risks and potential environmental implications;
- c) Define mitigation measures, monitoring requirements, and actions to address each uncertainty;
- d) Provide timelines for resolution; and
- e) Link these commitments to future plan submissions and licence conditions where appropriate.

23. Interim Closure And Reclamation Plan (ICRP) And Security

Reference:

Hope Bay Water Licence Main Amendment Application; Appendix 4-F (WBWQM-Operational Update); Appendix 6-I (Doris-Madrid ICRP-V8)

Comment:

The Operational Update provides information on changes to existing facilities, proposed new facilities, and changes to operations in association with restarting mine operations at a significantly higher milling (and mining) rate. High level discussions of potential closure actions for existing, changed, and new facilities are provided. Information is also provided on the existing security amount, but no detailed information is provided on closure designs, quantities, or costs related to existing and additional security requirements.

Section 7 of Appendix 6-I AEM states that it recognizes a security update will be required for this Water Licence Amendment; however, an update has not been provided at this time, and that, based on experience, it appreciates the level of review and discussions on security that are required and will work with the KitlA and CIRNAC through the Water Licence Amendment process to review securities to be held under the 2AM-DOH Licence.

AEM notes “that an agreement with both parties will be in place prior to the Water Licence Final Hearing and that following Water Licence Amendment approval, the ICRP will be updated to reflect the closure liability cost.”

Notwithstanding AEM's commitments, CIRNAC notes that detailed information has not been provided in the ICRP to allow for a detailed review of the technical credibility of the closure strategy. By extension, CIRNAC is unable to confirm whether the associated closure reclamation liability cost estimate is adequate. Instead, based on the information provided to date, the current ICRP remains a conceptual document that is insufficient to perform a detailed technical review or security cost analysis.

Recommendation:

(R-23) CIRNAC recommends that the Board ensure that the Proponent provide a detailed technical ICRP update that includes the following technical information:

- a) details on all relevant closure elements, activities, quantities and schedules;
- b) details that support the selected closure approach for each closure element; and
- c) details on performance objectives and criteria to support acceptance of the closure works.
- d) a conceptual closure security estimate that identifies and includes costs for closure of all aspects of the proposed Operational Update including the proposed dry stack tailings facilities.