Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
918 Nunavut Drive
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Your file - Votre référence
2AM-MRY1325
Our file - Notre référence
GCDocs#130318729

October 23, 2024

Robert Hunter
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
Sent via E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's review of Baffinland Iron Mine Corporation's Water Licence renewal for Type A Water License 2AM-MRY1325 Mary River Project

Dear Mr. Hunter,

Thank you for the September 23, 2024 invitation to review the Renewal Application for the Mary River Project Type A Water Licence 2AM-MRY1325.

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*. Please find CIRNAC comments and recommendations in the attached Technical Memorandum.

If there are any questions or concerns, please contact me Lauren Perrin at lauren.perrin@rcaanc-cirnac.gc.ca or Andrew Keim at Andrew.keim@rcaanc-cirnac.gc.ca

Sincerely,

Lauren Perrin,
Water Management Specialist

Canada

Technical Review Memorandum

Date: October 23, 2024

To: Robert Hunter– Licensing Administrator, Nunavut Water Board

From: Lauren Perrin– Water Management Specialist, CIRNAC

Subject: **Crown-Indigenous Relations and Northern Affairs Canada's review of Baffinland Iron Mine Corporation's Water Licence renewal for Type A Water License 2AM-MRY1325 Mary River Project**

Region: ☐ Kitikmeot ☐ Kivalliq ☒ Qikiqtani

A. BACKGROUND

The Mary River Project is an operating high-grade iron mine located in the Qikiqtani Region of Nunavut, on northern Baffin Island. The mine is owned and operated by Baffinland Iron Mines Corporation (Baffinland) and includes the Mine Site, the Milne Port site, and a 100 km-long Tote Road connecting the two sites. The current approved project allows iron ore production through open pit mining. The Nunavut Water Board correspondence dated June 27th, 2024 with respect to determination of completeness of the Water Licence 2AM-MRY1325 renewal application began the water licence renewal process. On September 23, 2024 the technical review stage began inviting intervenors to comment on the technical documents provided by Baffinland. A summary of Crown-Indigenous Relations and Northern Affairs' (CIRNAC) comments and recommendations regarding the water licence renewal are listed in Table 1 'Summary of Recommendations' as well, detailed summaries and recommendations outlined in Section C from the review.

Table 1: Summary of Recommendations

Recommendation Number	Subject
R-01	**General – Updated Management or Monitoring Plans.**
R-02	**Waste Reporting Conditions**
R-03	**Regulatory Fragmentation – AEMP dustfall Reporting**
R-04	**Dustfall Monitoring Improvements**
R-05	**Water Licence Annual Reporting Clarification and Commitment**
R-06	**Water Discharge Noncompliance / Nonconformance**
R-07	**General – Updated Management or Monitoring Plans**
R-08	**Mineral Wastes**
R-09	**Water Balance**
R-10	**Deficiencies and Thermal Monitoring**
R-11	**Outdated Climate Change Predictions**
R-12	**Missing update on performed closure and rehabilitation activities**
R-13	**Financial Security**
R-14	**Section 24 Proposed Time Schedule**

R-15	**Missing update on WRP leachate water quality**
R-16	**No Update on Water Quality Monitoring**
R-17	**Update Quantity Predictions of PAG Volume**
R-18	**Lack of Clarity on Terminology of Requirement**
R-19	**Discrepancy in Operations Schedule and Water License Duration**
R-20	**Camp Lake Water Quality**
R-21	**Related Licenses that Expire Prior to 2039**
R-22	**Insufficient Groundwater Monitoring Plan**
R-23	**Clarify Water Use -Flood Control**
R-24	**Inaccurate/Inconsistent Labeling of Sources on Figures**
R-25	**Insufficient Description / Type of Water Sources**
R-26	**Stream/Creek Water Source Capacity**
R-27	**Insufficient Description of Water Intake Condition**
R-28	**Ice Road as Industrial Use of Fresh Water**
R-29	**Unclear Description of Flow Rates for Water Usage Estimates**
R-30	**Water Storage – Freshwater Tanks**
R-31	**Water Storage – Stormwater Management Ponds as Storage Reservoirs**
R-32	**Rail Bridge Watercourse Crossings**
R-33	**Water Management Plan**
R-34	**Residual Effects Monitoring**
R-35	**Expected Changes in Water Flow / Storage - Update**
R-36	**KM105 Pond Design**
R-37	**Camp Lake Area Water Management Designs**

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
NWB Type “A” Water Licence No. 2AM-MRY1325 – Mary River Project, Nunavut; Baffinland Iron Mines Corporation	Nunavut Water Board, 12 June 2013
NWB Licence No. 2AM-MRY1325 – Amendment No. 1	Nunavut Water Board, 31 July 2015
Project Certificate 005 (Amendment 05)	Nunavut Impact Review Board, 17 November 2023
2023 NIRB Annual Report: Baffinland Iron Mines 2023 Annual Report to the Nunavut Impact Review Board	Baffinland Iron Mines Corporation, 3 May 2024
The Nunavut Impact Review Board 2022-2023 Annual Monitoring Report for Baffinland Iron Mines Corporation’s Mary River Project (NIRB File No.08MN053)	Baffinland Iron Mines Corporation, January 2024

Document Title	Author, File No., Rev., Date
The Nunavut Impact Review Board 2022-2023 Annual Monitoring Report for Baffinland Iron Mines Corporation's Mary River Project – Updates to Parties Comments on the 2022-2023 Annual Report (NIRB File No.08MN053)	Baffinland Iron Mines Corporation, 20 March 2024
955-221 Mary River Mine 2023 Environmental Audit	Okane, November 17, 2023
2019 Inspection of the Milne Inlet Tote Road and Associated Borrow Sources	Tetra Tech Canada Inc., 30 October 2019
Interim Closure and Reclamation Plan BAF-PH1-830-P16-0012. Revised Draft – Rev 5	Baffinland Iron Mines Corporation, 2018

C. RESULTS OF REVIEW

1. Updated Management or Monitoring Plans

Review Topic/Discipline Area:

General

Reference Documents:

- Cover letter
- Appendix A – Application for Water Licence Renewal

Comment:

In BIMC's application and cover letter, it is stated that "*no changes to the current Licence are being proposed by BIMC. In particular, no changes are being made to the scope, location or water volumes in the current Licence. For clarity, the Sustaining Operations Proposal 2 (SOP2) currently subject to a reconsideration by the Nunavut Impact Review Board does not trigger any amendments to the Licence and is a separate process*". The Application document management table also does not reference updates, nor does section 7.0 of the 'Application and Supporting Information' document.

In contrast to this statement in the cover letter, BIMC site operations or conditions have changed / progressed since the last Water Licence (WL) review, which may necessitate updates to the WL application and/or supporting documents in order to be consistent with the licence conditions. It should be noted that these requirements are *independent* of the SOP2 process. For example, BIMC has not made updates to management and/or monitoring plans to reflect current conditions since the last WL was issued. While the operational scope, location and water volumes may not have changed, there are regulatory concerns, annual report feedback and operational circumstances that suggest updates are required under the current WL renewal process. During the 2024 annual security review, BIMC committed to updating the Interim Closure and Reclamation Plan (ICRP) and several other management plans. CIRNAC notes that, an updated ICRP was not provided with the WL renewal application, nor were any other management plans. CIRNAC also notes that the Waste Rock Management Plan was not updated, which is a requirement for WL revisions (Part F, Item 3.), and is similarly necessary for a renewal also.

To note, the current WL (Part B, Item 18) requires the Proponent to "*review the Plans or Manuals referred to in this Licence as required by changes in operation and/or technology and modify the Plans or Manuals accordingly. Revisions to the Plans or Manuals are to be submitted in the form of an Addendum to be included with the Annual Report required by Part B, Item 4, complete with a revisions list detailing where significant content changes are made*". To renew a WL in the absence of updated management or monitoring plans negates procedure and due diligence requirements of Crown decision-makers.

In accordance with authorities under *the Nunavut Waters and Nunavut Surface Rights Tribunal Act* sc. 43 (1) (a), for a WL renewal, the Board may renew a licence with or without changes to the conditions of the licence.

The subsequent comments and recommendations provided within CIRNAC's overall technical review submission identifies key matters of importance related to the next WL issuance for BIMC based on the application information and current status of the site today.

Recommendation:

(R-01)
CIRNAC recommends and/or requests the following:

a) Can the Proponent explain why updates to management and monitoring plans were not undertaken to support the renewal application in relation to the context of the current status of operations and the 2024 annual security review commitments?
b) The management plans provided by BIMC in the current WL renewal application be updated where appropriate (as identified in the subsequent comments) to support sustainable water use, deposit of waste to water and financial security as relevant based on the current state of operations at BIMC.
c) That management plan updates are submitted for acceptance during the WL renewal process, and not deferred conditionally following decision.
d) That WL conditions indicate a frequency for plan re-evaluation (e.g., 3 years), which will bring added clarity in expectations related to the review of plans in future iterations of the WL.

2. Waste Reporting Conditions

Review Topic/Discipline Area:

Air Quality & Waste Deposit to Water

Reference Documents:

- Water Licence - Annual Reporting (Part B, Item 4 and Schedule B b.) and Conditions apply to Waste (Part F)

Comment:

Part 1 Section 4 of *the Nunavut Waters and Nunavut Surface Rights Tribunal Act* defines waste as any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of water. The *Nunavut Waters Regulations* under Prohibitions sc. 12 (3) Deposit of Waste, Duty to Report Deposits, states that "*every person who owns or has the charge, management or control of the waste, or who cause or contributed to the deposit, shall, subject to the regulations, without delay report the deposit to an Inspector*".

Project related dustfall emissions arising from the development are considered as a waste deposit to fresh water and is a monitoring and reporting requirement of the Surface Water Aquatic Effects Management Plan (SWAEMP) and the Aquatic Effects Monitoring Plan (AEMP). Under the SWAEMP and AEMP, all aspects of water quality, approved deposits to water and related effects are monitored over time to understand potential changes in the environment and to initiate action responses if warranted. In previous Water Licence (WL) annual report reviews, CIRNAC has noted information-reporting deficiencies related to dust emissions as a waste deposit to water. Additional clarity about reportable waste (inclusive of dust deposition to aquatic

environments) is needed in the next WL. Quantifying the loading contribution of point-source dust depositions to water quality is important for the evaluation of direct versus cumulative Project effects by regulatory authorities, and related decision-making for sustainable water use.

At this time, the SWAEMP and AEMP acknowledges the need for dustfall monitoring and defers this monitoring and reporting to the Air Quality Noise Abatement Management Plan (AQNAMP) or the annual Terrestrial Environment Monitoring Report, which are outside the WL authority. Detail for this is found on Table 10-1 of the SWAEMP and section 5.2 of the AEMP. The unnecessary fragmentation of information could be addressed through clarity in the WL conditions and management plans.

To avoid potential misinterpretation of this comment's scope, CIRNAC acknowledges the overlapping regulatory interests in air quality monitoring and reporting as a matter of mandate related to the Government of Nunavut (GN) and Environment and Climate Change Canada (ECCC), and further acknowledges this as a matter of interest related to the BIMC Dust Audit Committee. As a result, ***only dustfall*** monitoring and reporting data (as a component of AQNAMP) is considered relevant in scope for the WL as it relates to waste input to water.

Recommendation:

(R-02)
The following recommendations are intended to clarify WL responsibilities related to dustfall monitoring, and complement the existing AQNAMP, as well as other regulators or groups such as the GN, ECCC and the BIMC Dust Audit Committee.

CIRNAC recommends that:

a) The annual reporting requirements for waste (Part B, Item 4 and Schedule B, Item b.) be updated in the WL as appropriate, and include reporting of all relevant waste types in recognition of dust emission waste deposits that interact with water.
b) The annual reporting requirements of the WL define dustfall parameters as a source load deposit input to water to understand dust deposition rates. CIRNAC also recommends that data reporting related to dustfall, suspended particulates and snow core sample data be included in reporting.
c) WL conditions related to waste (Part F) be updated to include provisions that acknowledge dust emissions as a waste source deposit to water. Dustfall sampling (including snow core) data should be tested for the analytes identified in WL Schedule I. Conditions Applying to General and Aquatics Effects Monitoring Table 12: Monitoring Group Parameters. Please also see related recommendations under comment #3.

CIRNAC requests that BIMC:

a) Provide a full dataset (excel format) of all available dustfall and snow core sampling data (from Project inception to present) to support assessment of dust interactions with water.

3. Regulatory Fragmentation – AEMP Dustfall Reporting

Review Topic/Discipline Area:

Air Quality & Waste Deposit to Water for AEMP

Reference Documents:

- Appendix L3 Surface Water and Aquatic Ecosystem Management Plan
- Appendix L8 Aquatic Effects monitoring Plan

Comment:

The Surface Water and Aquatic Ecosystem Management Plan (SWAEMP) defers to the Air Quality and Noise Abatement Management Plan (AQNAMP) for monitoring and mitigation of dust. Under section 9.4.1.3 of the SWAEMP it states that "D*ustfall Monitoring Program evaluates dustfall rates in proximity to the Tote Road, Milne Port and Mine Site and informs aquatic effects monitoring programs on the potential effects of dust generated by the Project on surrounding aquatic ecosystems and water bodies*". The same section goes on to say, "*An assessment and management response framework is described in detail in Section 5 of the Aquatic Effects Monitoring Plan. For additional details on the aquatic effects monitoring programs, refer to BIMC's Aquatic Effects Monitoring Plan (BAF-PH1-830-P16-0039)*".

The BIMC Aquatic Effects Monitoring Plan (AEMP) addresses dust deposition to water as a key pathway of potential effect. Because deposition is a known waste deposit to water, with potential effects to water quality and aquatic ecosystems mitigation measures are described in AEMPs.. Section 3.4.2 of the AEMP states: "*Under this program, dustfall measurements (the amount of dustfall per unit time) are completed monthly and, if sufficient volume of dustfall material is collected, dustfall material is analyzed to determine the metals composition of the dust. The dustfall monitoring data are used to estimate annual deposition (rates, quantities) and chemical composition of dust potentially entering aquatic systems within and near the Project operations*". The AEMP section 5.2 Reporting indicates that "*Monitoring results from the Dustfall Monitoring Program will be reported in the Terrestrial Environment Annual Monitoring Report, appended to the NIRB Annual Report, as required by Project Certificate No. 005*."

As described in comment #2, Water Licenses (WL) are obligated to monitor waste deposits to water, where dust deposition is a key pathway of potential effect for water quality and components of the aquatic environment, as is discussed in the BIMC AEMP and SWAEMP. Under the current arrangement of the SWAEMP and the AEMP, both plans defer monitoring, mitigation and reporting to the AQNAMP or Terrestrial Environment Annual Monitoring Report, which is outside the authority of the WL.

To effectively regulate water water related monitoring, reporting, mitigation and/or management plans that are linked to (or obliged by) the approved WL and related legislation, need to be reviewed and approved by the NWB. In this case, aspects of dustfall monitoring, mitigation and reporting are not entirely presented under the SWAEMP and AEMP leading to regulatory fragmentation for matters related to sustainable water management. Dustfall monitoring, reporting and mitigation must be accounted for in the WL application and management plans to ensure fulsome, effective and responsible regulation of water quality.

In addition to the above-mentioned issues, the existing dustfall monitoring found under the AQNAMP does not currently meet the regulatory expectations for WL dustfall monitoring in relation to water quality interactions. BIMC does not deploy continuous dustfall monitoring and neither the AEMP or SWAEMP include snow core sampling. A jurisdictional scan of other arctic-based mine operators found more expansive dustfall monitoring that included continuous monitoring and snowcore data suggesting it is viable to implement. A cohesive improvement to the AEMP and SWAEMP is required to procedurally and administratively link dustfall to existing authorities within the WL.

Recommendation:

(R-03)
To prioritize coordinated efficiency for the benefit of the Proponent and regulators and further support regulatory monitoring / reporting under the WL in relation to dust deposition as a pathway of potential effect on water quality, , CIRNAC provides the following recommendations:

SWAEMP and AEMP Updates:

a) Under the WL via the SWAEMP and the AEMP, update both plans to directly state the monitoring, mitigation and reporting requirements for dustfall. This may simply be copied in alignment with the existing AQNAMP dustfall program.
Under the WL via the SWAEMP and the AEMP, update both plans' annual reporting requirements to ensure more comprehensive reporting of dustfall deposition rates and comparison to baseline for assessment of pathways of potential effect. This will ensure that the data will be available to regulators under future NWB review processes. **OR, alternatively:**

b) Consider whether a Dustfall Management Plan under the WL is the most efficient means of clarifying dustfall monitoring and mitigation reporting under the authorities of the WL.

SWAEMP and AEMP Sample Testing:

a) Ensure that dustfall samples are tested for the analytes identified in WL Schedule I. Conditions Applying to General and Aquatics Effects Monitoring Table 12: Monitoring Group Parameters.

Dustfall Monitoring Improvement (additional requirements):

a) Improve dustfall monitoring under the SWAEMP and AEMP by implementing the following:

- continuous monitoring for dust around the Project Area, including at Deposit No. 1.
- Installation of additional passive monitors at a greater distance from the mine to capture the broader regional impacts of dust, including up and down wind of prevailing winds.
- Inclusion of snowcore sampling to support dustfall monitoring and chemical characterization data.
- Ensuring that snow is tested for the analytes identified in WL Schedule I. Conditions Applying to General and Aquatics Effects Monitoring Table 12: Monitoring Group Parameters.
- Ensuring detailed provisions for reporting dustfall under the WL, and integration with the reporting requirements of the AEMP and SWAEMP.

4. Dustfall Monitoring Improvements

Review Topic/Discipline Area:

Air Quality & Waste Deposit to Water for AEMP

Reference Documents:

- N/A

Comment:

As stated in comment #3 (Air Quality & Waste Deposit to Water for AEMP), dustfall as a pathway of potential effect requires improved management planning, monitoring and reporting under the authority of the WL. CIRNAC does not believe that the current dustfall monitoring meets the regulatory expectations for WL monitoring. Due to changes in BIMC operations (e.g., mine plan updates, increased haulage rates, future planned expansion), there is a need to conduct a detailed review of dustfall monitoring . Review of dustfall monitoring and capture data should be undertaken to verify the mine's dustfall performance over time, relative to baseline predictions. In addition, a review should also consider whether the existing data is sufficient to make evidentiary conclusions about cumulative effects and potential effects of dustfall on water quality as a source load input.

Recommendation:

(R-04)
CIRNAC recommends a comprehensive review of dustfall monitoring relative to the scope and authority of the WL, relative to water quality, and to consider the following:

a) Review of dustfall data (requested in comment #2) and the model used to support the monitoring program (including sample design, assumptions etc.) to determine if dustfall data collection is sufficient, relative to the current state of development.
b) Provide recommendations (if required) for improvement to the dustfall monitoring process to further enhance the improvements suggested in comment #3, recommendation #5.

5. Water Licence Annual Reporting Clarification and Commitment

Review Topic/Discipline Area:

General - Annual Reporting

Reference Documents:

- Appendix A, Application for WL renewal, Section #26 Annual Reporting, PDF Page 20/22

Comment:

The Water Licence (WL) application (section 26) for annual reporting indicates that BIMC will maintain its current annual report template. In previous WL annual report reviews, CIRNAC has noted deficiencies in information reporting such as: dust emission waste deposit to water; results and interpretation related to impact predictions; and groundwater monitoring data.

Recommendation:

(R-05)
CIRNAC requests that:

a) The Proponent revise Application Section #26 template outline by creating a concordance table that identifies under what report section it will present the required datasets for future annual reports, per the requirements of Part B, Item 4 and Schedule B of the Water Licence.

6. Water Discharge Noncompliance / Nonconformance

Review Topic/Discipline Area:

Mine Effluent

Reference Documents:

- EA project certificate T&C #17

Comment:

Term and Condition #17 states that "The Proponent shall develop and implement effective measures to ensure that effluent from the project-related facilities and/or activities, including sewage treatment plants, ore stockpiles, and mine pit, satisfies all discharge criteria requirement established by the relevant regulatory agencies prior to being discharged into the receiving environment".

Review of the water monitoring and sampling locations suggest that BIMC is not assessing surface water runoff (effluent) downgradient from the southeastern mine workings area. In fact, it is not clear where onsite routine water and permitted sample locations are located at the site in the application documentation or existing management plans.

Review of the Mine Site Water Management Plan, Figure 4.1shows multiple culverts along the mine haul road downgradient of the active mine area. These culverts direct mine effluent/runoff to Catchment Area #2 containing the Explosive Magazine Area with undersized check dams and/or undefined watershed catchments.

Review of aerial imagery suggests surface water runoff erosion gullies are present between the mine workings and the Mary River. It is not clear or documented if this overland flow or potentially emerging shallow groundwater from the active zone is contaminated with metals or satisfies all discharge criteria.

Recommendation:

(R-06)
CIRNAC recommends that:

a) BIMC provide a drawing showing the location of all routine and permitted water monitoring and sampling locations.
b) BIMC add new water sampling location(s) downgradient (southeast) of the mine workings (pit) to ensure effluent water satisfies all discharge criteria before reaching the receiving waters of the Mary River.

7. General – Updated Management or Monitoring Plans

Review Topic/Discipline Area:

Mine Infrastructure

Reference Documents:

- Requirement for Management Plan
- Project Certificate T&C 28 and 29

Comment:

Review of section 7.0 of the 'Application and Supporting Information' document noted a deficiency in surface water management and closure planning for the KM105 Pond and dam. CIRNAC notes that there is no management or closure plan specific to the KM105 Pond and Dam, other than a brief description of closure activities under the Freshwater Supply, Sewage, and Wastewater Management Plan.

A dam that is built for the retention and/or diversion of waters is subject to the Canadian Dam Association's Dam Safety Guidelines. These guidelines establish the standards for environmentally responsible design, construction, operation, surveillance, and closure of dams.

BIMC's August 15, 2024 letter to the Board outlining its responses to Information Requests included a response to the Qikiqtani Inuit Association's comment QIA-12 concerning the management of the potentially contaminated sediment. CIRNAC notes that updates related sediment management at KM105 Pond are not described in the Waste Rock Facility Management Plan that was submitted with the renewal application.

In addition, the lack of as-built drawings and procedures surrounding dam operations, maintenance, surveillance and closure is a concern as it poses a potential threat to the water and sediment quality of the Mary River and other downstream receiving water environments, especially considering the number and frequency of leakage issues previously documented by BIMC.

Recommendation:

(R-07)
CIRNAC recommends that BIMC:

a) Provide details of the finding of containment failure and remedial measures, including as-built details, as per Term and Condition No. 29 (Landforms, Geology and Geomorphology – Design Plans). This should include evidence that the Engineer of Record of the MS-11/KM105 pond revisit the design to ensure it meets the design intent of containing of the surface runoff, and specifying the party assigned with responsibility of the facility post seepage remedial works.
b) Develop an Operation, Maintenance and Surveillance (OMS) manual to provide all the information and instruction needed to allow an individual to perform all the actions necessary to provide safe operation, routine maintenance and regular inspection of the dam

Further to the above, CIRNAC also recommends that the following specific conditions be added to support management obligations related to dams in Part I, Item 12-14 of the WL:

- The Geotechnical Engineer's Report shall be prepared in accordance with the Dam Safety Guidelines and shall include: a) a conformity table, indicating how each of the applicable requirements in the Dam Safety Guidelines have been met; b) a statement from the Professional Engineer on the safety of the Dam; c) a summary list of findings with prioritized recommendations, prepared by the Professional Engineer; d) a covering letter from the Licensee outlining an implementation plan to respond to any recommendations made by the Professional Engineer, including rationale for any decisions that

deviate from the Professional Engineer's recommendations; and e) the status of and rationale for any outstanding recommendations from the previous Dam Safety Review.

8. Mineral Wastes

Review Topic/Discipline Area:

Waste Management

Reference Documents:

- Appendix L5 - Waste Management Plan BIM-5200-PLA-0013

Comment:

Mineral wastes are soils, sediment or construction materials which have become contaminated as a result of mining operations. These can include native soil contaminated by dusting from ore haulage, crushing, blasting, or spilled ore, or sediments collected in retention ponds with metal concentrations greater than CCME soil standards protective of human health and the environment.

These wastes may also be generated by cleanup activities undertaken during site closure and remediation, like contaminated native soils below operational areas such as the crusher and ore storage areas at the mine site and Milne Port.

The waste management plan does not mention how these materials would be collected, contained, recorded during work, and disposed of correctly. Table 2 and 3 in the Waste Management Plan describe how soil contaminated with petroleum hydrocarbons are managed but there is no mention of native soils or other contaminants used by mining operations.

The Interim Closure and Reclamation Plan states that "Residual soils meet federal/territorial soil quality guidelines or site-specific risk based criteria as required (CCME agricultural is assumed at this time). If soil exceeds the adopted criteria, it will be removed or risk managed to the satisfaction of the qualified professional to achieve protection of ecological and human health". There is no mention of how this will be operationalized .

Section 3.3.8, Landfills and Other Waste Disposal Areas within the Guidelines for Closure and Reclamation of Advance Mineral Exploration and Mine Sites in the Northwest Territories, states that landfills and other waste disposal areas which can include abandoned waste rock piles should be disposed in a manner that minimizes adverse human health and environmental effects. It is CIRNACs interpretation that if the mine were abandoned, agriculture, parkland or residential guidelines would apply to all mineral waste areas (including the waste rock facility) and the Federal government would be held to a higher standard of clean-up for the crusher, ore storage areas, dusting zones and possibly the waste rock facility.

Recommendation:

(R-08)
CIRNAC recommends that:

a) BIMC update the waste management plan to include mineral waste and directives for: collection, containment, data / records, and disposal.

9. Water Balance

Review Topic/Discipline Area:

Water Balance

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-I-ILAE.pdf;
- 240815 2AM-MRY1325 Att 3. BIM-5200-PLA-0022-Fresh Water Supply, Sewage, and Wastewater Management Plan-ILAE.pdf;
- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L12-1of5-ILAE.pdf

Comment:

CIRNAC understands that it is BIMC's position, as stated in Appendix I, Table F.1 of the Water Licence application, that "a water and load balance is not required for a Water Licence renewal, per the NWB Guides. BIMC provides an updated list of management and monitoring plans for the Project annually as part of the QIA-NWB Annual Report for Operations. BIMC can provide existing management plans as part of the application for the convenience of reviewing parties, but the NWB does not consider updated management plans to be necessary for a renewal application."

CIRNAC disagrees with the statement as it considers a complete understanding of the water balance and potential effluent pathways to the receiving water as a critical step in mine water management. Furthermore, not characterizing this effluent is out of compliance with Project Certificate T&C No. 17. Additonal details on why the Terms and Conditions are not being met, as discussed in

Blockflow Diagrams in Appendix L4 (Fresh Water Supply, Sewage, and Wastewater Management Plan, are insufficient as they do not include all water sources (e.g. precipitation runoff), all pathways (e.g. the actual mine, stormwater ponds), and all discharges. The Water Balance for the Waste Rock Facility (Phase 1 Waste Rock Management Plan) is not comprehensive for the entire Mine Site.

Recommendation:

(R-09)
CIRNAC recommends that:

a) BIMC develop a comprehensive Water Balance model of the entire Mine Site

10. Deficiencies and Thermal Monitoring

Review Topic/Discipline Area:

Thermal Analysis

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L10-ILAE.pdf
- NIRB\240331 - 2023 QIA-NWB Annual Report for Ops - Full Report - As Sent.pdf

Comment:

Thermal analysis and modelling are mentioned in several sections of the document (e.g., 5.2.2.1, 9.4.1, D.3, D.4)

1) Task 1 of Table D4 in section D.4 states that thermistor data collection is anticipated throughout the life of the project. No data has been reported past 2022 up to and including the 2024 annual report. For some of the thermistors no damaged beads were reported.
2) A thermal model has been constructed using up to 3 years of data after the thermistors were installed. Task 2 in Table D-4 in section D.4 states that the model should be updated following at least 5 years of data collection. No new data or installation of new thermistors have been reported past the initial 3 years of data.

The model shows increasing temperatures in the frozen part of the waste rock pile as well as a section with temporarily increased temperatures both at BH1. No analysis is presented as to how common these are throughout the pile or the long-term impact to permafrost..

Recommendation:

(R-10)
CIRNAC recommends that BIMC:

a) Continue collecting thermistor data from the WRP
b) Update its thermal model
c) Install additional monitoring locations to evaluate the thermal stability of the waste rock pile and permafrost.

11. Outdated Climate Change Predictions

Review Topic/Discipline Area:

ML/ARD Mitigation

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L10-ILAE.pdf
- NIRB\240331 - 2023 QIA-NWB Annual Report for Ops - Full Report - As Sent.pdf

Comment:

The only ML/ARD mitigation strategy is freezing the PAG waste rock in permafrost in the WRP. The 2007 Intergovernmental Panel on Climate Change is cited to support BIMC's assertion that the non-PAG shell is sufficient to keep the PAG frozen. Climate change is occurring at a faster rate in the Arctic than in other regions of the earth, and climate change models have been substantially updated in recent years.
The original water license states under Part F paragraph 3 that a revised waste rock management plan shall be provided for future revisions under the license. The revision shall include updates on:
g. Waste Rock Storage Facilities with consideration for climate change.

Recommendation:

(R-11)
CIRNAC recommends that:

a) BIMC revisit its climate change predictions and evaluate the long-term thermal stability of the permafrost in the WRP. This evaluation also needs to be updated once additional monitoring and modelling data from the WRP are available (TRC 10).

12. Missing Update on Performed Closure and Rehabilitation Activities

Review Topic/Discipline Area:

Closure and Reclamation Activities

Reference Documents:

- Appendix L10 – Interim Closure and Reclamation Plan

Comment:

The Interim Closure and Reclamation Plan (ICRP) submitted with the Water Licence (WL) renewal application is dated 2018. Since this time, progressive rehabilitation and changes to the site have occurred, necessitating an update of the ICRP update in support of the renewal application. In the absence of an updated ICRP, the current status of interim closure activities cannot be fully reviewed. Information presented in Table 6.1 shows a progressive rehabilitation schedule, but the information is deficient compared to current progressive reclamation activities. Table 6.1 is also deficient because it is not conceptually inclusive for all years of the mine's Operations Phase, and it includes content for construction, which is now complete. Further to the deficiencies noted in Table 6.1, progressive reclamation activities are presented by year since start of the project and several activities should now be completed. Section 6.3 Completed Progressive Reclamation is not adequately updated to account for all progressive reclamation activities. A list and description of any existing abandoned or restored site facilities is not provided.

Other deficiencies were noted based on the Q1 and Q2 Waste Rock Management Compliance reports; where progressive reclamation was completed in alignment with the Waste Rock Facility QAQC Monitoring Plan, included as part of the Phase I Waste Rock Management Plan (WRMP) issued April 2, 2024. The ICRP currently does not mention integration with the WRMP and furthermore, does not clarify the status of progressive reclamation. The ICRP Appendix C site photos are out of date.

Lastly, based on reporting related to KM105 Pond and Dam, the ICRP should have included additional discussion to account for this key piece of infrastructure.

Collectively, these deficiencies point toward the need for a thorough review of the ICRP by BIMC, so that these, and other aspects, may be updated in support of the WL renewal.

Recommendation:

(R-12)
CIRNAC recommends that BIMC:

a) Submit an updated ICRP with relevant content and information based on the current state of operations, including, but not limited to: the progress of waste rock percentage cover; aerial photos; research status; financial security including a table of costs; mine plan schedule; sequencing of progressive and final closure activities relative to the mine plan (as available today); KM105 Pond and Dam closure activities / implications.
b) Develop a progressive reclamation schedule for operations based on the current Project description and mine plan schedule.
c) Describe the current status of progressive reclamation activities per Section 6.3 of the ICRP.

13. Financial Security

Review Topic/Discipline Area:

Closure and Reclamation Cost Estimate

Reference Documents:

- Mary River Project 'Application and Supporting Information to Renew Type A Water Licence 2AM-MRY1325'
- Appendix L10 – Interim Closure and Reclamation Plan

Comment:

The Interim Closure and Reclamation Plan (ICRP) submitted with the Water Licence (WL) renewal application is dated 2018. Since this time, progressive rehabilitation and changes to the site have occurred, along with several annual security reviews (ASRs). When combined, these factors necessitate updates to the ICRP in support of the renewal application.

It is noted that the 2022 ASR outcome is included in Appendix H; however, a more recent 2024 ASR has been completed, and it was not applied to the renewal application or the ICRP. The outcomes and findings from the last, (2024), ASR should be used to update Section 10 of the ICRP to reflect the current status of the Operation.

CIRNAC also notes that annual security reviews are typically not completed on time relative to the existing WL conditions. In addition, CIRNAC notes that annual changes in security are typically not great enough to warrant annual reviews. To support more efficient financial security review requirements, CIRNAC recommends that the frequency for financial security reviews that are submitted to the board be extended to an interval of 3

years, which aligns to what is observed in other jurisdictions for security assurance. An annual security update should be provided by BIMC during years when a financial security review is not required.

Recommendation:

(R-13)
CIRNAC recommends that BIMC:

a) Update information in the WL renewal Application as related to Financial Security.
b) Update the Application's supporting documents, including the ICRP under section 10, with the current 2024 financial security figures.

CIRNAC requests feedback from the Proponent and Board regarding support to:

a) Revise WL conditions to remove the need for annual security reviews, and increase the frequency of financial security review.
b) Provide input and justification for a financial security review period frequency (e.g., 3 years).
c) Revise WL conditions to include an annual security update in years when a security review is not required.

14. Section 24 Proposed Time Schedule

Review Topic/Discipline Area:

Proposed Time Schedule

Reference Documents:

- Appendix A – Application for Water Licence Renewal

Comment:

Section 24 'Proposed Time Schedule' of the Water Licence (WL) renewal application (Appendix A) indicates the following:

- Construction: 2013-2014
- Operation: 2028 – 2048
- Closure: 2049 – 2051
- Post-Closure: 2052 – 2056

These dates do not align with the current Project approvals, the Interim Closure and Reclamation Plan (ICRP) and/or 2024 annual security review. Closure is understood to commence in 2040 based on the current approved scope of the project description. If the dates for operation, closure and post-closure as presented in the application are accurate, a multitude of widely expansive updates to the application package will be requested.

Recommendation:

(R-14)
CIRNAC recommends that BIMC:

a) Confirm if the application details are correct
b) Confirm it's intent of timelines for operation, closure and post-closure under the current WL renewal process.

15. Missing Update on WRP Leachate Water Quality

Review Topic/Discipline Area:

WRP Leachate

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L10-ILAE.pdf
- NIRB\240331 - 2023 QIA-NWB Annual Report for Ops - Full Report - As Sent.pdf

Comment:

Evaluation on the WRP leachate (section D.3) is based on 2014 data on ML/ARD evaluation, prior to mining of the ore body. A new method for the PAG vs non-PAG evaluation has been proposed in the annual report, but the water license application has not been updated with the new data or the information on the new screening procedure. No recent data on humidity cells was provided
The acid neutralizing potential is based on minerals other than carbonate. No evaluation is presented to verify that the chemical reaction is sufficiently fast to neutralize acid being formed.
The original water license states under Part F paragraph 3 that a revised waste rock management plan shall be provided for future revisions under the license. The revision shall include updates on:

a. The on-going Waste Rock Characterization Program (including the further refinement of acid rock drainage and metal leaching aspects of the foot wall and hanging wall);
b. Any additional details on the segregation of potentially acid generating waste rock;
c. The geochemical modeling;
d. Pit water quality predictions;
e. Results of ongoing humidity cell kinetic testwork;
f. The incorporation of on-site test pile program results with respect to ARD/ML and impacts to modeling results; and
g. Waste Rock Storage Facilities with consideration for climate change.

Recommendation:

(R-15)
CIRNAC recommends that BIMC provide the information on:

a) Its updates to its on-going Waste Rock Characterization Program (including the further refinement of acid rock drainage and metal leaching aspects of the foot wall and hanging wall;
b) Any additional details on the segregation of potentially acid generating waste rock;

c) Results of ongoing humidity cell kinetic test work;
d) The incorporation of on-site test pile program results with respect to ARD/ML and impacts to modeling results

16. No Update on Water Quality Monitoring

Review Topic/Discipline Area:

Water Quality Monitoring

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L10-ILAE.pdf
- NIRB\240331 - 2023 QIA-NWB Annual Report for Ops - Full Report - As Sent.pdf

Comment:

Within Appendix H (FEIS Freshwater Quality Predictions), Table H9 – 14 list water quality predictions for different creeks in the area. The predictions are from pre-2018. More data from water quality monitoring is now available. A comparison between predicted and measured water quality data will support an evaluation of water quality predictions and confirmation of required mitigation measures.
Part F paragraph 3 of the 2013 water license (and 2015 Amendment No. 1) states that a revised waste rock management plan shall be provided for future revisions under the license. The revision shall include updates on:
a. Geochemical modeling;
b. Pit water quality predictions

Recommendation:

(R-16)
CIRNAC recommends that BIMC:
a) Provide a comparison between predicted and measured water quality data and evaluate if additional mitigation measures are required.
b) Provide update on geochemical modeling and pit water quality predictions

17. Update Quantity Predictions of PAG Volume

Review Topic/Discipline Area:

PAG Volume

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L10-ILAE.pdf
- NIRB\240331 - 2023 QIA-NWB Annual Report for Ops - Full Report - As Sent.pdf

Comment:

Estimates for the waste rock volume and the effect on the WRP leachate are based on data from 2014. Predicted volumes were exceeded in several of the previous years. The effects on the chemical stability of the waste rock in the WRP and the leachate water quality has not been discussed.

Recommendation:

(R-17)
CIRNAC recommends that BIMC:

a) Update the PAG volume predictions with recent data and evaluate impacts on chemical stability and leachate water quality.

18. Lack of Clarity on Terminology of Requirement

Review Topic/Discipline Area:

Geologic Structure Change

Reference Documents:

- 06 Appendix 6D Ecological Land Classification.pdf
- No. 17 in Section 3.0 of the Supplemental Information Guideline (SIG)

Comment:

It is not clear what is meant with the term “Geologic Structure Change”.
Appendix 6D covers the ecological land classification and is mostly focused on habitat for plants and wildlife. Some links to geology are investigated, but are not linked to geologic structure.

Recommendation:

(R-18)
CIRNAC recommends that BIMC:

a) Provide clarification on its use of the term “Geologic Structure Change” to permit further evaluation.

19. Discrepancy in Operations Schedule and Water License Duration

Review Topic/Discipline Area:

Schedule

Reference Documents:

- Appendix A, Application for WL renewal, Section #24 'Proposed Time Schedule'

Comment:

Under "Section 24 -Proposed Time Schedule" of the Water Licence renewal application (Appendix A), the operations phase for the Mary River Project is given as 2028 - 2048. The time schedule for Closure and Post-Closure Phase also do not align with the Interim Reclamation and Closure Plan.

Recommendation:

(R-19)
CIRNAC recommends that BIMC:

a) Clarify the application details related to Section 24 – Proposed Time Schedule.

20. Camp Lake Water Quality

Review Topic/Discipline Area:

Water quality monitoring

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-1Application&Supporting-Info-ILAE.pdf

Comment:

Section 5 of the "Mary River Project – Application and Supporting Information to Renew Type A Water Licence 2AM-MRY1325" presents water quality information. Section 5.1 notes that "mine related influences on water quality was detected in tributaries to Camp Lake" and "Arsenic, copper, iron, manganese, and phosphorous concentrations were above AEMP sediment quality benchmarks at individual stations in Camp Lake". Section 5 concludes by noting that no mine related influences were indicated in Camp Lake and that average sediment concentrations were below respective benchmarks.
No information is presented if there is a temporal trend of increasing concentrations, and if so, what the predictions are for future exceedances.

Recommendation:

(R-20)
CIRNAC recommends that BIMC:

a) provide temporal information on water and sediment quality data.

21. Related Licenses that Expire Prior to 2039

Review Topic/Discipline Area:

Additional Licenses

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-A-ILAE.pdf
- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-D-ILAE.pdf

Comment:

Several licenses related to the water license expire prior to the proposed end date for the water license renewal in 2039:

- Mineral Leases #2483, 2484 and 2485 Expires: August 27, 2034
- Foreshore Lease 47H/16-1-2 and Lease Amendment 47H/16-1-5 Expires: June 30, 2035
- Tote Road and Borrow Area Land Use Permit N2019Q0011 Expires: June 29, 2024
- Bruce Head Land Use Permit N2019J0010 Expires: June 29, 2024
- Steensby Land Use Permit N2019C0009 Expires: June 29, 2024
- Statement of Compliance of a Marine Facility # 1000000660 Expires: May 27, 2025
- Type 'B' Water Licence 2BE-MRY2131 Expires: April 16, 2031

The mineral leases, foreshore lease, tote road and borrow area land use permit, and the Bruce Head land use permit are required for the operation of the mine, so form the basis of the water license. The necessity of the Steensby land use permit depends on the construction of the railway connection.
The permits expiring in 2024 are being processed for an automatic 2-year extension until 2026

Recommendation:

(R-21)
CIRNAC recommends that BIMC:

a) Provide information on its plans to renew these licenses. In addition CIRNAC requests an update on the status of that work

22. Insufficient Groundwater Monitoring Plan

Review Topic/Discipline Area:

Groundwater Monitoring and Management

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L5-ILAE.pdf

Comment:

The application requires that the Waste Management Plan (or Groundwater Management Plan) provide a description of measures to prevent groundwater from coming into contact with waste as well as measures for

managing groundwater that does come into contact with waste. Appendix L5, Section 4.7. exclusively discusses management of groundwater within the landfill facility.

The definition of waste used in the management plans does not align with the definition of waste within the water license.

The Waste Management Plan also provides no description of measures for preventing groundwater from coming into contact with waste or managing groundwater that has come into contact with waste. An event that has been shown to have occurred at the landfill facility. It also provides no description as to how groundwater is being managed within the hazardous waste berm facility which has also come into contact with waste.

Recommendation:

(R-22)
CIRNAC recommends that BIMC:

a) Provide a Groundwater Management Plan. This plan should use the definition of waste provided in the license and *Nunavut Waters and Nunavut Surface Rights Tribunal Act*.

   The plan should provide a description of what current measures are in place to prevent waste from coming into contact with groundwater. These measures should be provided for any area within the project with substances that are considered waste as per the Act (e.g., maintenance shops, ore storage areas, mine area, waste rock facility, etc.). It should also include measures for managing groundwater that does come into contact with waste. Finally, It should include a description of how groundwater is being monitored around areas with waste to determine if groundwater is coming into contact with waste sources.

23. Clarify Water Use -Flood Control

Review Topic/Discipline Area:

Flood Control

Reference Documents:

- Appendix A, Application for WL renewal, Section #12 'water use'
- Supplemental Information Guideline (SIG) Form – Section 6.0 Water Use

Comment:

Under Section 12 of the Water Licence (WL) application (Appendix A) Flood Control is not checked. Conversely, Flood control is identified as a key water use activity in the SIG form under Section 6.0 'Water Use', No. 1, Column D, Row 15 'flood control'. The SIG indicates that flood control information is found in the Water Management Plan (WMP). In WMP, several references are made to flood control.

Recommendation:

(R23)

CIRNAC requests that BIMC:

a) Correct its application submission related to flood control, and all other applicable plans, as necessary.
b) Ensure that flood control structures (e.g., KM105 Pond) are considered as a key update for management plans, updates relevant to the Interim Closure and Reclamation Plan (ICRP), financial security and project description.

24. Inaccurate/Inconsistent Labeling of Sources on Figures

Review Topic/Discipline Area:

Water Source Locations

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-1Application&Supporting-info.pdf

Comment:

Figure 5.1 and Figure 5.2 don't have the locations of Dust Suppression Water Use streams labelled, and Source Names in Table 5.1 and Table 5.2 don't match the figure names.

Recommendation:

(R-24)
CIRNAC recommends that BIMC:

a) Add labels to all water source locations in Figure 5.1 and Figure 5.2, and be consistent with naming convention in Table 5.1 and 5.2.

25. Insufficient Description / Type of Water Sources

Review Topic/Discipline Area:

Water Source Description and Type

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-1Application&Supporting-info.pdf

Comment:

In Section 5, the water sources are listed and shown on a large-scale figure (Figure 5.1 and Figure 5.2). No description of the source of water is provided. The type of water source (e.g. lake, creek) is only inferred based on the name for some instances in Table 5.2.

Recommendation:

(R-25)
CIRNAC recommends that BIMC:

a) Provide the type of each water source in Table 5.2. Additionally, BIMC should provide a more detailed description of the sources (i.e., Photos, plan views, drainage areas, etc.).

26. Stream/Creek Water Source Capacity

Review Topic/Discipline Area:

Water Source Capacity

Reference Documents:

- 140716 2AM-MRY1325 Attach 2 Addi water withdrawal locations and water qualities along tote road-IAAE.pdf

Comment:

The percentage reductions under mean and low flow conditions are provided for Lakes, but there were no percentage reductions provided for the creeks.

Recommendation:

(R-26)
CIRNAC recommends that BIMC:

a) Provide the % reductions for Mean Monthly Discharge and Low Flow Conditions for all water sources.

27. Insufficient Description of Water Intake Condition

Review Topic/Discipline Area:

Water Intake Condition

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-K1.pdf

Comment:

Section 6.2a and 6.2c of the water license application form require that a description of any existing water intake facility and distribution system be provided, as well a rating for the condition of the facility.
The provided information on the condition of water intakes includes only photographs of the water intake meters, a pump and spill tray partially submerged in water. The information provided does not meet the requirements of describing the general condition of any existing water intake facility (as per SIG Section 6.0, No. 2a).

Recommendation:

(R-27)
CIRNAC recommends that BIMC:

a) Provide a description of the current water intake facilities and distribution system, including a statement of condition, photos, and rate the condition as satisfactory or unsatisfactory, and explain the rating as per SIG Section 6.0, No. 2a.

28. Ice Road as Industrial Use of Fresh Water

Review Topic/Discipline Area:

Ice Road Inclusion

Reference Documents:

- 240626-2AM-MRY1325-WL-Renewal-Applic-Appendix-L4.pdf

Comment:

Section 4.2 lists 'ice road construction' as an industrial use of the fresh water source. Under the existing Water Licence (WL) explicit description of ice road provisions is not included (e.g. Part A, Item 1 Scope).

Recommendation:

(R-28)
CIRNAC recommends that:

a) The Board include ice roads within the scope of BIMC's WL.
b) If ice roads are included in the WL scope, CIRNAC recommends that BIMC provide the water quantity used for ice road construction and provide a description its methods for constructing its ice roads.

29. Unclear Description of Flow Rates for Water Usage Estimates

Review Topic/Discipline Area:

Water Conservation Measures

Reference Documents:

- Water Conservation Measures

Comment:

Section 4.1.1.5 states "These strategies include the installation of low flow water taps. If water meters are not available, water use will be estimated using flow rates." It is not clear what flow rates are being used to estimate water usage.

Recommendation:

(R-29)
CIRNAC recommends that BIMC:

a) Provide clarification on what/where flow rates are being used to estimate water usage.

30. Water Storage – Freshwater Tanks

Review Topic/Discipline Area:

Water Storage

Reference Documents:

- Supplemental Information Guideline (SIG) Form – Section 6.0 Water Use

Comment:

In Section 6.0 Water Use of the Supplemental Information Guideline (SIG) Form (row 33, column D), it states that there is no reservoir storage, so the items in Row 33 through 37 are N/A. However, in the Fresh Water Supply, Sewage, and Wastewater Management Plan, it is mentioned that freshwater tanks are used to store raw water at Milne Port and Mine Site.

Recommendation:

(R-30)
CIRNAC recommends that BIMC:

a) Provide the necessary information for Water Storage Tanks as described in Rows 33 and 37 of the SIG, including:
   i. Description (type, location, design, volume)
   ii. Description of general condition.

31. Water Storage – Stormwater Management Ponds as Storage Reservoirs

Review Topic/Discipline Area:

Water Storage

Reference Documents:

- Supplemental Information Guideline (SIG) Form– Section 6.0 Water Use
- 210630 2AM-MRY1325-KM105 Pond Design and IFCS-IAAE.pdf

Comment:

In Section 6.0 Water Use of the SIG (row 33, column D), it states that there is no reservoir for water storage, so the items in Row 33 through 37 are N/A; however, all stormwater management ponds will store water and

can be considered reservoirs. The KM105 Pond Design document provides the required data for Reservoir Stormwater Management Ponds (see Rows 33 through 37 of SIG):

1. Description (type, location, design, volume)
2. Description of liner (if any)
3. Indicate if in natural channel and provide necessary details
4. Provide cross section
5. Description of general condition

Recommendation:

(R-31)
CIRNAC recommends that BIMC:

a) Clarify Section 6.0 Water Use in the SIG (row 33, column D) and within the WL renewal application package to include Water Storage for reservoirs, referencing KM105 Pond Design document for information.

32. Rail Bridge Watercourse Crossings

Review Topic/Discipline Area:

Watercourse Crossings

Reference Documents:

- 06 Bridge General Arrangements.pdf

Comment:

06 Bridge General Arrangements.pdf

Recommendation:

(R-32)
CIRNAC recommends that BIMC:

a) Consider piers in-line with flow to prevent excess scour and blockage of flow area.

33. Water Management Plan

Review Topic/Discipline Area:

Watercourse Trainings

Reference Documents:

- 240815 2AM-MRY1325 Att5.2021-06-30-Water Management Plan Rev 2-ILAE.pdf

Comment:

The Water Management Plan discusses design criteria for stormwater management ponds: 1:50yr storm for capacity and IDF for spillway. Dam capacity should be based on CDA guidelines.

Recommendation:

(R-33)
CIRNAC recommends that BIMC:

a) Indicate if the stormwater management ponds have been assessed for meeting the dam criteria, and if so, have the dams been classified?

34. Residual Effects Monitoring

Review Topic/Discipline Area:

Effects of Water Usage

Reference Documents:

- FEIS, BIMC 2012 – Volume 7.pdf

Comment:

In Section 2.3.1.1 it states that: “Residual effects to streamflow volume will be monitored early in Project development to ensure that the 10 % threshold is indeed applicable to the Project”.

Recommendation:

(R-34)
CIRNAC recommends that BIMC:

a) Provide the type of each water source in Table 5.2. Additionally, provide a more detailed description of the sources (i.e., Photos, plan views, drainage areas, etc.).

35. Expected Changes in Water Flow / Storage - Update

Review Topic/Discipline Area:

Effects of Water Usage Assessment

Reference Documents:

- FEIS, BIMC 2012 – Volume 7.pdf

Comment:

Effects assessment was done for KM32 Lake/Phillips Creek withdrawal rates from the original 2013 Water License (29 m^3/day). Has this effects assessment been updated for the 2015 Water License Amendment No. 1 (367.5 m^3/day)? Has the effects assessment been done on additional water sources added in the amendment (e.g. dust suppression water sources).

Recommendation:

(R-35)
CIRNAC recommends that BIMC:

a) Provide the effects assessment for amended water sources. If not available, complete effects assessment for amended water sources.

36. KM105 Pond Design

Review Topic/Discipline Area:

Proposed Water Works

Reference Documents:

- 210630 2AM-MRY1325-KM105 Pond Design and IFCS-IAAE.pdf

Comment:

As per Section 6.0 Water Use of the SIG (rows 52 through 77), the design document does not indicate how / when the pond will be removed and what the abandonment/restoration plans are for the structure. In addition, all required construction information (as per Section 6.0 Water Use of the SIG (rows 52 through 77) is not included in the design plans provided including:

- Schedule / sequence / timing restrictions;
- Construction methods / equipment;
- Re-vegetation plans (if required).

Recommendation:

(R-36)
CIRNAC recommends that BIMC provide additional information on KM105 Pond Design, including:

a) How/when it will be removed;
b) Abandonment and restoration plans;
c) Additional construction information.

37. Camp Lake Area Water Management Designs

Review Topic/Discipline Area:

Proposed Water Works

Reference Documents:

- 220715 2AM-MRY1525 Attachment 1 - Camp Lake Design Brief and IFC Drawings-IAAE.pdf

Comment:

As per Section 6.0 Water Use of the SIG (rows 52 through 77), the design document does not indicate if the structures are temporary or permanent and does into indicate how / when they will be removed. As well, there are no abandonment / restoration plans for the structures. The design document does not indicate the design flow (in m^3/s) used for each structure. All required construction information is not included in the design plans provided including:

- Schedule / sequence / timing restrictions;
- Construction methods / equipment.;
- Re-vegetation plans (if required).

Recommendation:

(R-37)
CIRNAC recommends that BIMC provide additional information on the Camp Lake Area Water Management Designs, including:

a) If they are temporary or permanent structures,
b) How/when the structures will be removed;
c) Abandonment and restoration plans;
d) Design flow of each structure, and
e) Additional construction information.