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July 15, 2019

Richard Dwyer
Manager of Licensing, Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1J0

**RE: Baffinland Iron Mines Corporation's Type 'A' Water Licence 2AM-MRY-1325
Amendment 2**

Dear Richard Dwyer,

Baffinland Iron Mines Corporation's (Baffinland) application for Amendment 2 of the Type 'A' Water Licence 2AM-MRY-1325 (the Licence) was deemed complete by the Nunavut Water Board (NWB) on May 16, 2019. The Qikiqtani Inuit Association (QIA) provides this response to the request for interested parties to provide comments regarding Amendment 2.

QIA would like the NWB to consider the following while reviewing this submission.

1. QIA is concerned, given this is an active mine, with Baffinland's approach to adaptive management, and the lack of clarity regarding the thresholds that trigger action.
2. QIA is concerned with the requirements for reporting on construction activities and Baffinland's adherence to For Construction submissions.
3. QIA looks forward to providing comments to existing and/or new terms and conditions.
4. QIA believes it would be beneficial for Baffinland to provide one timeline for when they expect current and future studies for Phase 2 to be complete and how they impact the construction schedule of the proposed North Railway.

QIA is willing to discuss its concerns with you and your staff at a time that is mutually agreeable.

Sincerely,

Chris Spencer
Regulatory Manager

cc: Lou Kamermans, Baffinland Iron Mines Corporation
Chris Murray, Baffinland Iron Mines Corporation



Technical Review Comments (2AM-MRY-1325 Amendment 2)

A. Inuit Societal Values

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| Technical Comment #1 | Inuit Owned Land |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-29-ICRP |
| Issue/Concern | 1.1 Baffinland's May 2019 submission of the Interim Reclamation and Closure Plan (ICRP) has not yet been approved by QIA through the Commercial Lease. QIA can provide an update on this approval process as requested by the NWB; however, QIA will manage the ICRP through the Commercial Lease and not the Water Licence Process. |
| Technical Comment #2 | Inuit Owned Land |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-29-ICRP |
| Issue/Concern | 2.1 QIA will work with Baffinland through the Commercial Lease on all matters related to security for Inuit Owned Land. QIA can provide an update on this approval process as requested by the NWB. |
| Technical Comment #3 | Water Compensation and other Licensing Requirements |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-2-Applic |
| Issue/Concern | <p>The current water compensation agreement (WCA) does not cover Phase 2. Phase 2 is a change to the Project as defined by condition 7 of the current WCA. Therefore, a new WCA or an amendment is required.</p> <p>3.1 Baffinland should be required to come to a new agreement with QIA prior to the amendment being issued as per Article 20.3.1 of the Nunavut Agreement.</p> |
| Technical Comment #4 | Inuit Water Use |
| Reference | <p>08MN053_BAF-PH1-830-P16-0022_railway-ops-maint-DRAFT-PHASE-2</p> <p>08MN053_BAF-PH1-830-P16-0008_Environment-Protection-Plan-DRAFT-PHASE-2</p> <p>190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE</p> <p>190502 2AM-MRY1325 Amend2 Applic-Att-27-AEMP-ILAE</p> |
| Issue/Concern | <p>The specifics of Baffinland's use of Inuit Qaujimagatuqangit in developing its monitoring and management plans is not clear.</p> <p>Page 15/43 of the railway operations plan states the following:</p> <p><i>Inuit Qaujimagatuqangit and traditional knowledge have been incorporated into an appropriate design for caribou crossings, by softening the embankment side slopes to an acceptable grade and providing a surface treatment that will make the crossings more accessible to the caribou. Where identified caribou trails will be interrupted by substantial cuts in steeply sloped rock, these will be treated on a site-by-site basis.</i></p> |



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| | <p>It is uncertain how the Environmental Protection Plan, Surface Water and Aquatic Ecosystems Management Plan (SWAEMP) and the Aquatic Effects Monitoring Plan (AEMP) have considered Inuit Qaujimajatuqangit or Inuit's use of water.</p> <p>4.1 Provide the specifics of how Inuit Qaujimajatuqangit was and will be used and considered in the development of the North Railway, its location, the crossings, and the relevant management and monitoring plans.</p> <p>4.2 Provide monitoring locations along the proposed North Railway that align with Inuit use.</p> |
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B. Environmental Management

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| Technical Comment #5 | Fish and Physical Effects of Flow Diversion |
| Reference | Fish Passage Risk Assessment Update (KP Ref VA19-00838) |
| Issue/Concern | <p>On page 13/37, Knight Piesold makes the following statement:</p> <p><i>Monitoring and adaptive management will also be conducted.</i></p> <p>5.1 When will the monitoring and adaptive management plan related to flow diversion be shared for review and comment?</p> |

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| Technical Comment #6 | Management and Monitoring Plans – North Railway |
| Reference | 08MN053_BAF-PH1-830-P16-0022_railway-ops-maint-DRAFT-PHASE-2 |
| Issue/Concern | <p>Table 2-1 states that management of water quality impacts for the North Railway for stream crossing blockages, slides, and erosion is included in the Railway Operation and Maintenance Management Plan. However, no further information is provided within the plan regarding mitigation and monitoring for water quality issues related to these areas.</p> <p>6.1 This plan or another should be resubmitted with the monitoring and mitigation measures to be taken for the construction and operations of the North Railway. This should include adaptive management.</p> |

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| Technical Comment #7 | Management and Monitoring Plans – Referencing Confusion |
| Reference | <p>Multiple, for example:</p> <p>08MN053_BAF-PH1-830-P16-0022_railway-ops-maint-DRAFT-PHASE-2</p> <p>190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE</p> |
| Issue/Concern | <p>References from one management plan to another without specific indication on where to look in the referenced management plan creates uncertainty for reviewers and could be difficult for operators to use. Additionally, there are times when no new information is present or obvious, or the reference is circular.</p> <p>The onus for clarity should be on Baffinland, and not the reviewer. Two examples of this are as follows:</p> |



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| | <p>Example 1: Table 2-1 of the Railway Operation and Maintenance Management Plan establishes itself as the plan responsible for the management of water quality impacts for the North Railway for stream crossing blockages, slides and erosion. However, no further information is provided within the plan regarding mitigation and monitoring for water quality issues related to these areas.</p> <p>Example 2: The Surface Water and Aquatic Ecosystem Management Plan, on page 31/66 states: <i>Mitigation measures at Milne Port will include periodic site inspections, as outlined in Baffinland's Environmental Protection Plan...</i></p> <p>When reviewing the Environmental Protection Plan, there is no clear indication of where a Milne Port site inspection would be discussed. Table 10-1 in the SWAEMP would be a better reference to provide the reader.</p> <p>7.1 Baffinland should be required to update all DRAFT management plans so that all references are clear and easy to access. At a minimum, references should include the section headers or section numbers.</p> |
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| Technical Comment #8 | Management and Monitoring Plans |
| Reference | 190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE |
| Issue/Concern | <p>On page 32/66 Baffinland states the following:</p> <p><i>Scheduled monitoring of water quality, water quantity and fish passage at water crossings along the Tote Road, as detailed in Section 10 of this Plan, will be used to inform and prioritize Tote Road maintenance activities and surface water drainage improvements.</i></p> <p>Section 10 lists multiple monitoring activities to be completed by Baffinland but lacks detail of how the monitoring activities will prioritize maintenance activities or the frequency at which these monitoring activities will be assessed to inform maintenance activities.</p> <p>8.1 Resubmit the SWAEMP and include the frequency of the assessment of monitoring activities listed in Section 10 and how this will inform and prioritize maintenance activities.</p> |

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| Technical Comment #9 | Management and Monitoring Plans |
| Reference | Multiple, including: 190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE |
| Issue/Concern | <p>Baffinland is requesting approval of management plans with acknowledged missing information in the form of recommendations or with the intention that it will be updated in the future. Stating that information will be provided in the future is not an acceptable placeholder for information; reviewers require this information to assess the adequacy of the plan.</p> <p>For example, in section 10.2.3 Baffinland states:</p> |



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| | <p><i>Surface water and aquatic ecosystem monitoring programs specific to the North Railway focus on monitoring requirements stipulated by Baffinland's Type A Water Licence, DFO authorizations for water crossings, and fulfilling commitments made to stakeholders and regulators.</i></p> <p>This statement indicates the plan is missing information that could be further detailed as to what Baffinland intends to do. A second example is that SWAEMP section 10.2.3.1 Construction Monitoring indicates the <i>water withdrawal site BG32 is recommended in the first year following Project approval.</i></p> <p>9.1 Resubmit DRAFT plans and use language for what Baffinland will do should the Project be approved rather than delaying detail or recommending actions be taken.</p> |
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| Technical Comment #10 | Management and Monitoring Plans |
| Reference | 190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE 08MN053_BAF-PH1-830-P16-0023_Roads_Management_Plan-DRAFT-PHASE-2 |
| Issue/Concern | <p>On page 32/66 of the SWAEMP, Baffinland states the following:</p> <p><i>The Road Management Plan describes mitigation for managing dust along the Tote Road, including the application of water as well as calcium chloride and water. Calcium chloride will be applied in accordance with applicable guidelines to minimize runoff into local watercourses.</i></p> <p>10.1 Present the how, where and to what frequency is calcium chloride monitored to remain in accordance with applicable guidelines to minimize runoff into local watercourses.</p> <p>10.2 Provide the applicable guideline used to minimize runoff into local watercourses.</p> |

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| Technical Comment #11 | Management and Monitoring Plans – North Railway |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm |
| Issue/Concern | <p>On page 44/202, Baffinland states:</p> <p><i>A detailed monitoring program will need to be designed and established as part of the instrumentation and monitoring with additional measures taken as part of the adaptive management approach. This strategy is also used to manage proper remedial actions for other cases where there may be potentially unforeseen warmer conditions encountered in the area.</i></p> <p>11.1 The Water Licence should require Baffinland to monitor the construction, operations and closure of the North Railway.</p> <p>1.2 The Water Licence should require Baffinland to provide the monitoring program prior to any construction approvals for the North Railway is provided.</p> |



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| Technical Comment #14 | Management and Monitoring Plans |
| Reference | 08MN053_BAF-PH1-830-P16-0023_Roads_Management_Plan-DRAFT-PHASE-2 |
| Issue/Concern | <p>On page 26/83, Baffinland states the following:</p> <p><i>Observations and recommendations made by the Professional Geotechnical Engineer and the Professional Fisheries Biologist in concert with the post-construction water quality monitoring results will be used by Baffinland to determine and prioritize any corrective actions and future upgrades to the Project road network.</i></p> <p>14.1 Provide the severity of the concern that requires immediate action be taken by Baffinland.</p> <p>14.2 Provide the frequency at which Baffinland would determine and prioritize any corrective actions to the Project road network.</p> |



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| | 14.3 Provide what would trigger Baffinland to construct the approved Tote Road to the 2014 Hatch design. |
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| Technical Comment #15 | Management and Monitoring Plans - North Railway |
| Reference | 08MN053_BAF-PH1-830-P16-0022_railway-ops-maint-DRAFT-PHASE-2 |
| Issue/Concern | <p>On page 24/43 Baffinland states the following:</p> <p><i>Instrumentation will be located at select locations along the North Railway line to target areas identified as being at higher risk of future settlement and instability risk. A preliminary inventory of rail condition monitoring equipment and locations has been developed. This will predominantly address monitoring during the construction stage and the information gathered during construction will be used to finalize the operational condition monitoring plan.</i></p> <p>15.1 Provide the target areas identified as higher risk and validation for this assessment. 15.2 Provide what additional information will be gathered prior to construction of the North Railway and how that information will be used to inform the construction of the North Railway. 15.3 Provide how the information gathered during the construction of the North Railway will be used to finalize the operational condition monitoring plan. 15.4 Provide the inventory of rail condition monitoring equipment and locations.</p> |

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| Technical Comment #16 | Adaptive Management |
| Reference | 190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE |
| Issue/Concern | <p>The use of triggers to implement mitigative measures are a foundation of adaptive management. Triggers based on monitoring data are used to avoid the exceedance of water quality criteria and potential impacts to the receiving environment. The submitted monitoring and management plans are not clear on the difference between a monitored activity and one that would trigger a mitigative action. For instance, the SWAEMP has numerous mitigative measures in Section 6.4.3 Generic Erosion and Sediment Control Measures but there lacks an indication of what monitoring data thresholds would be considered to trigger the use of such mitigation measures. Attachment 1 includes the general monitoring conducted by Baffinland extracted from Section 10 of the SWAEMP.</p> <p>16.1 Present the triggers based on monitoring data listed in Attachment 1, that will be implemented to mitigate against an exceedance of a water quality criteria, relevant thresholds, and potential impacts to the receiving environment. As committed to by Baffinland in the NIRB process, QIA is willing to work with Baffinland through updating its adaptive management included in monitoring and management plans. 16.2 Update all applicable water quality monitoring plans to include triggers, based on monitoring data, and to implement the mitigation measures to avoid exceedance of water quality criteria, relevant thresholds, and potential impacts to the receiving environment. 16.3 Describe how the proposed measures will mitigate the occurrence of an exceedance to water quality criteria.</p> |



C. Construction and reporting

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| Technical Comment #17 | Fish and Physical Effects of Flow Diversion |
| Reference | Fish Passage Risk Assessment Update (KP Ref VA19-00838) |
| Issue/Concern | <p>On page 12/37, Knight Piesold makes the following recommendation:</p> <p><i>Site specific assessments should be undertaken at this diversion during detailed engineering design of the railway. The assessments should consider fish use and length of impacted channel, and potential mitigation options can be identified and incorporated into the final design.</i></p> <p>17.1 Is Baffinland committed to completing these recommendations? If yes, when will the assessment and detailed design be shared for review and comment?</p> |

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| Technical Comment #18 | Fish and Culvert Passage |
| Reference | Fish Passage Risk Assessment Update (KP Ref VA19-00838) 190502 2AM-MRY1325 Amend2 Applic-Att-27-AEMP-ILAE |
| Issue/Concern | <p>On page 11/37, Knight Piesold makes three recommendations regarding fish passage and impact mitigation:</p> <p><i>Install at least one culvert at each fish bearing crossing as an embedded culvert, such that slope, bed material and discharge per unit width are sufficiently comparable to upstream and downstream conditions. A Qualified Professional (QP) with sufficient experience and training should supervise design and installation.</i></p> <p><i>At the highest risk crossings, site-specific assessment (e.g. assess baseline depths, velocities and discharge, channel morphology and fish use) will be conducted. If required, site-specific design and construction (e.g. embedded box or arch culverts, or fish passage culverts) will be used to mitigate risk.</i></p> <p><i>A monitoring program will be developed to monitor conditions at the highest risk crossings.</i></p> <p>18.1 Is Baffinland committed to completing these recommendations? If yes, when will the monitoring program be shared for review and comment?</p> <p>18.2 Given this statement can Baffinland explain why the North Railway did not cause greater changes to the AEMP? Please also consider the North Railway involved almost 400 stream crossing and 30 new quarries.</p> |

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| Technical Comment #19 | Construction – Erosion and sedimentation |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm |
| Issue/Concern | <p>On page 41/202, Baffinland states:</p> <p><i>Any issues related to erosion and sedimentation occurring along the ditches and the railway route will be reported, and medial measures will be taken to minimize further impact.</i></p> <p>19.1 These reports should be included in Baffinland’s reporting to NWB. 19.2 Provide the measures and what are the specific triggers to action them.</p> |



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| Technical Comment #20 | Construction – Initial Conditions |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm 2AM-MRY1325 Baffinland Iron Mines Revised Run of Mine Stockpile and Sedimentation Pond Issued For Construction Drawings |
| Issue/Concern | <p>On page 42/202, Baffinland states:</p> <p><i>However, it is essential that samplings of overburden soils will be completed to determine the permafrost conditions encountered at the site, including potential ground ice or thick ice bodies.</i></p> <p>The importance of this work was just exemplified by Baffinland’s construction approval resubmission for its Run of Mine Stockpile and Sedimentation Pond.</p> <p>20.1 This work should be completed and provided by Baffinland prior to any construction approvals for the North Railway deviation is provided.</p> |

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| Technical Comment #21 | Construction – Slope Stability |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm |
| Issue/Concern | <p>On page 43/202, Baffinland states:</p> <p><i>Embankment cut test sections may be subjected to observation and monitoring to confirm the method of excavation, cut slope stability performance, as well as performance of the embankment fill built in cut sections, such as settlements, and slope stability.</i></p> <p>21.1 The Water Licence should require Baffinland to complete and report on embankment cut test sections. The reporting should describe how the results were included in final designs. This work should be completed and provided by Baffinland prior to any construction approvals for the North Railway is provided.</p> |

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| Technical Comment #22 | Construction – Settlement |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm |
| Issue/Concern | <p>On page 42/202, Baffinland states:</p> <p><i>As part of maintenance, additional insulation or soil cover will be provided in areas showing increased settlement beyond expectations. Aerial assessments will be undertaken to find standing water or other features on the ground and adjacent areas.</i></p> <p>22.1 Additional details regarding the frequency, and extent of the aerial assessments is requested.</p> <p>22.2 A specific trigger for when additional insulation is required should be considered in the Water Licence.</p> <p>22.3 The Water Licence should require Baffinland complete the aerial assessments committed to and report upon them.</p> |



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| Technical Comment #25 | Construction – Engineered mitigation and design |
| Reference | 190502-2AM-MRY1325-Amend2-Applic-Att-8.5-Rail-Geotech-Recomm 190506 2AM-MRY1325 Amend2 Applic Att-22-SWAEMP-ILAE 08MN053_BAF-PH1-830-P16-0022_railway-ops-maint-DRAFT-PHASE-2 |
| Issue/Concern | <p>The Baffinland's history indicates it is prone to change. For example, the Tote Road is not built to the approved ERP design and the mine plan has changed multiple times since its initial approval in 2014. More recently, as stated by Baffinland on page 49/66 of the SWAEMP:</p> <p><i>It should be noted that changes in the design of the North Railway since publication of the FEIS Addendum for the Phase 2 Proposal has resulted in a raise of the embankment and elimination of most of the previously identified rock cuts. Most of the previously identified diversions have been eliminated. Revised hydrological modelling is currently underway to re-assess this issue.</i></p> <p>Changes in the Project creates uncertainty and difficulty for reviewers to understand the scope of the project and the related mitigation and monitoring. This may explain the Baffinland's statement on page 24/43 of the Railways Operations and Maintenance:</p> <p><i>A plan is in development for long term monitoring and maintenance of the rail alignment. This monitoring plan includes the installation of thermistors and inclinometers, along with other measurement measures.</i></p> <p>25.1 Provide a timeline for the completion of modelling; additional testing; final design; and final approval of the North Railway.</p> <p>25.2 Baffinland should be required to provide bi-weekly reports during the construction of the North Railway that outline any deviations from the approved construction drawings.</p> <p>25.3 Provide a timeline for delivering the North Railway long term monitoring and maintenance plan for review, comment, and approval.</p> |