February 8, 2019
Sent via email: info@nirb.ca

Solomon Amuno, Technical Advisor II
Nunavut Impact Review Board
29 Mitik Street, PO Box 1360
Cambridge Bay, NU,
X0B 0C0

Re: Baffinland Response to the Nunavut Impact Review Board's *2017-2018 Annual Monitoring Report for the Mary River Project* and Board's Recommendations

Dear Solomon,

Baffinland Iron Mines Corporation (Baffinland) acknowledges receipt of the 2017-2018 Annual Monitoring Report for Baffinland's Mary River Project (the Project) and is pleased to provide a response to the recommendations from the Nunavut Impact Review Board (NIRB) that required a response within 90-days. All other outstanding responses to recommendations that require an update to be included in the 2018 Annual Report will be provided by Baffinland as part of that submission.

Recommendation # 1 – Climate Change Strategy

As described in Recommendation # 1, the Board requires that Baffinland report on its development and implementation of a Climate Change Strategy for the Early Revenue Phase (ERP) of the Project. The Board also requested that Baffinland provide a discussion of any efforts made by Baffinland to date to comply with Project Certificate Term and Condition No. 3.

Baffinland's Climate Change Strategy is being provided to the NIRB as Attachment No. 1.

Baffinland has undertaken several initiatives during the ERP of the Project to comply with the objectives of Term and Condition No. 3, although these have not been carried out under the umbrella of a formal 'Climate Change Strategy'. A description of these activities is provided below.

Annual Climate Change Monitoring and Reporting:

Baffinland currently tracks, monitors, and reports greenhouse gas (GHG) emissions to the NIRB annually as required by Term and Condition No. 9 and to Environment and Climate Change Canada (ECCC) through the National Pollutant Release Inventory (NPRI) and GHG reporting programs. Baffinland uses guidance documents provided by ECCC and the Intergovernmental Panel on Climate Change (IPCC), along with published emission factors to estimate the Project's annual GHG, SO_2 and NO_X emissions. Annual emissions are then calculated based on on-site fuel consumption and waste management at the Project. It is noted that Baffinland's GHG emissions in 2017 were below the

maximum annual GHG emissions predicted in the FEIS, with 160,000 tonnes of CO_2 being emitted throughout the year.

Baffinland has also been undertaking the following monitoring related to climate and climate change:

- **Meteorological -** Operation of meteorological stations at the Mine Site and Milne Port; the climate data is shared with local communities and others at http://www.baffinland.com/.
- **Stream Flow -** Baffinland operates a long-term hydrometric program collecting seasonal streamflow data.
- **Sea Level –** Continuous time-series of water level, temperature and conductivity data is collected via a tidal gauge system installed at Milne Port.

GHG Reduction Initiatives:

In 2017, Baffinland established an Idling Policy to reduce unnecessary vehicle and equipment idling. This was developed with the specific purpose of reducing air pollution generated as a result of Project activities. Employees are required to follow the Idling Policy where manufacturer guidelines for warm-up periods are not readily available. Where specific manufacturing guidelines are not provided, idling times are restricted to a maximum of 10 minutes for light vehicles and 20 minutes for heavy vehicles and equipment in -20 degrees Celsius or below, and a maximum of 5 minutes for light vehicles and 10 minutes for heavy vehicles and equipment when the ambient temperature is between 0 to -20 degrees Celsius.

From 2013-2017 Baffinland used solar power generators to supplement energy requirements at our remote environmental monitoring sites (e.g. Bruce Head camp). We are also conducting ongoing investigations into operating alternative energy sources to supply supplementary renewable energy for the Project at a much larger scale.

In 2018, Baffinland replaced all diesel powered lighting systems at the crusher with high efficiency LED lights. This represents a fuel savings of approximately 30,000L per year. Other mechanical improvements at the crusher also reduced the need for use of ten diesel-fired frost fighter units down to three. This efficiency resulted in the eliminated use of approximately 33,300L of diesel at the crusher.

In 2019, Baffinland will be installing new GE low speed generators to displace currently operational high speed generators. It is expected that replacement of these generators will result in a reduction of CO2 emissions by approximately 2,640,00kg in just 13 months[1].

Between 2015 to 2017, Baffinland increased the amount of iron ore hauled on the Tote Road by 246%, although GHG produced by the Project only increased by 27% (Figure 1).

[1] Based on a calculation of 132 grams of CO_2 per litre of fuel used

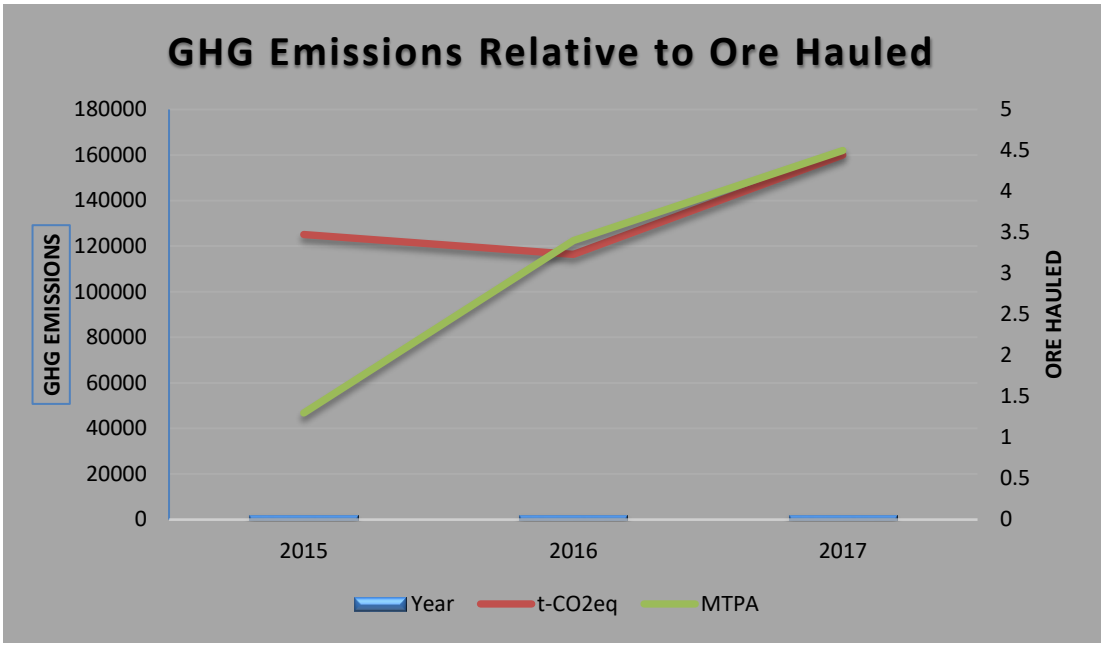

Figure 1: GHG Emissions Relative to MTPA of Ore Hauled

As the Project continues to grow, Baffinland will continue to identify ways to increase the energy efficiency of operations to minimize the intensity of GHG emissions relative to annual rates of iron ore produced.

Project Design Optimizations:

Baffinland is currently investigating using thermo-electric or fluid heat exchange heat recovery systems from diesel generator exhaust and incinerator capture, although the feasibility of this is yet to be confirmed.

A key component of the proposed amendment to the Project under Phase 2 is the switch from road to rail. Phase 2 is expected to generate approximately 21.6 Mt CO_2e of GHG emissions, which represent a 14.2% reduction relative to the Approved Project.

The following design considerations have also been proposed to be built into the detailed design of the rail embankment:

- Excavations will be minimized, especially in areas of known ice-rich permafrost.
- Prior to embankment construction, ground disturbance will be minimized and vegetation or organic cover left in place to provide the maximum protection of the thermal regime.
- Slopes will be flattened as necessary when being constructed in ice-rich or thaw sensitive materials, and will be protected with thermal and erosion protection material, if required.

- Runoff collection and diversion drainage systems will be implemented in a manner that will mitigate impacts to the thermal regime from runoff and erosion. As part of basic design, thermal modeling will be conducted for each typical embankment condition and configuration to identify the permafrost protection measures required and to predict the nature of the active layer and the effect that construction will have on the thermal regime over the life of the Project.
- Thaw settlement and surface sloughing of cut slopes is expected, particularly during the thaw seasons immediately following construction. The behaviour of both cut slopes and embankment fills will be monitored throughout these thaw seasons and remedial measures will be implemented as necessary.

Future updates regarding Baffinland's GHG emission production and initiatives being undertaken to optimize efficiencies in energy requirements will continue to be reported in Baffinland's Annual Report's to NIRB.

Should you have any questions, please contact the undersigned.

Sincerely,

Megan Lord-Hoyle
Director, Corporate Sustainability Baffinland Iron Mines

cc:
Grant Goddard, Vice-President Sustainable Development and Human Resources, Baffinland Iron Mines
Emma Malcolm Sustainability Specialist, Baffinland Iron Mines
Cory Barker, Nunavut Impact Review Board

Attachments:
Attachment 1 Baffinland Climate Change Strategy

Attachment 1

Baffinland Climate Change Strategy