Baffinland Iron Mines Corporation

Borrow Pit and Quarry Management Plan

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Revision History

Revision No.	Section	Revision Date	Changes	Approval
D	Document Wide	March 6, 2013	Document H337697-7000-07-126-0006 has been superseded by H349000-1000-07-126-0011. Revision succession has been kept for continuity	T. Mackay
D	Document Wide	March 6, 2013	Quarry/Blasting activities will not occur within 100m of fish bearing streams, as opposed to 31m as previously stated.	J. Millard
D	Document Wide	March 6, 2013	Updated to address work to be completed in 2013	J. Millard
D	Section 4	March 6th , 2013	Project organization chart and structure updated.	J. Millard
D	Section 8	March 6, 2013	Reference drawings updated.	J. Millard
D	Annex's	March 6, 2013	Annex ordering adjusted for relevance to viewers.	J. Millard
D	Annex 2	March 6, 2013	Protocol for the Assessment for the Potential for Acid Rock Drainage updated. (Annex 2)	J. Millard
D	Annex 3	March 6, 2013	Addition of Blasting Management Framework (Annex 3).	J. Millard

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1. Introduction

1.1 Purpose and Approach

This management plan is prepared within the context of the Baffinland Mary River Final Environmental Impact Statement (FEIS), and is meant to provide supporting information for consideration towards a Type A Water Licence for the project. A more complete Project description of all components can be found in Volume 3: Project Description and further management plan descriptions in Volume 10: Appendix 10-D of the FEIS. The purpose of the Borrow Pit and Quarry Management Plan is to set out the objectives and measures to maintain and enhance environmental performance of the quarries while avoiding to the extent practical, remedying, and mitigating any potential adverse environmental effects associated with quarrying.

The goal of the Management Plan for the Type A Water Licence is to provide regulators with a selection of quarry operations necessary for the Mary River Project. In total, 67 quarries will be required for railway and road construction, plus additional material for infrastructure. Rather than evaluating separate management plans for each site, it was agreed that an overall management strategy would be prepared, and that a more detailed description of quarry operations would be provided for six separate quarries. These would include three quarries primarily utilized for construction of infrastructure Steensby Inlet (QS2), Mary River Mine Site (QMR2) and Milne Inlet (Q1), and three quarries for construction of the railway bed, representing the north section (Quarry Q7+500), the centre section (Q77 + 200) and the south section (Q133 + 500) of the route. This provides a good representation of the different terrain and issues likely to be encountered for the entire project.

Although the terrain differs over the project study area, it should be noted that the actual quarry management strategy will remain relatively constant. All quarries will be blast / crush type of operations, with an attempt to minimize the creation of depressions that would permanently alter water regimes. All quarries will avoid, as much as is practical, sensitive areas and features. All quarries will be relatively free of soils piles, due to the limited soil overburden throughout the area.

Figure A-1 in Annex 4 shows the location of all quarries under consideration for the Mary River Project, and Table A-2 in Annex 4 summarizes the quarry yields (where available).

1.2 Regulatory Requirements

Under the guidelines provided by the Nunavut Water Board (NWB), quarrying is not specifically listed as an activity that requires a Type A Water Licence. Under Guideline 3 Activities Requiring Licence Types, Table 2: Summary of Type B and A Water Licence Criteria pursuant to the Regulations, Industrial Undertakings,3(c), quarrying is listed as only requiring a Type B Licence.

The Mary River borrow pit or quarry development requires a quarry permit under the Territorial Quarrying Regulations, and if activities include the use of equipment that exceeds the thresholds of the applicable land-use regulations, a land-use permit is required. Both permits include terms and conditions specifying how operations must be conducted. A quarry lease may be applied for instead of a quarry permit if longer-term tenure is desired.

Quarry operations that require blasting might require regulatory approval from the Worker's Safety and Compensation Commission.

1.3 Baffinland's Commitments

Baffinland provides adequate resources to implement and maintain the Environmental, Health, and Safety (EHS) Management System including the necessary human, material and financial resources.

Baffinland's 2011 Sustainable Development Policy is included in Annex 1.

1.4 Application of this Management Plan

Aggregate requirements for the Mary River Project are described elsewhere in this document and will be supplied by the quarry and borrow sites located at Milne Inlet, Mary River and Steensby Inlet, and along the railway corridor. Volume 3, Section 2.1.6 of the FEIS describes the overall strategy for sourcing aggregate. The following summarizes the sources and applications.

Aggregate will be used during construction activities at the Mary River Mine Site, Milne Inlet Site, and the Steensby Inlet site as both general fill and structural fill for activities such as site grading for airstrips, laydown areas, backfill, foundations for fuel storage, camp expansion, local roads and administration and maintenance facilities, and heavy equipment storage. The aggregate will be obtained from borrow sources located within the PDA and pit overburden and rock quarries at various locations).

Development of a number of quarries along the railway corridor will be necessary for the construction of the rail bed, and the temporary access road. These quarries will be developed as the construction of the rail line progresses, and will be sequenced on an "as needed" basis.

Results of geochemical testing conducted to date for acid rock drainage and metal leaching indicate that quarry materials that have been targeted generally have low potential for acid generation (ARD) and metals leaching (See FEIS Volume 6, Appendix 6 B 2). Based on the results of studies to date, the individual quarry sites are being assessed for potential ARD/ML on a case by case basis.

This Borrow Pit and Quarry Management Plan will be updated to reflect situations related to incident investigations, regulatory changes, or other Project-related changes. Start of the construction phase will be a major milestone for the Project.

1.5 Relationship to other Management Plans

This plan should be viewed in concert with the following additional management plans. All management plans can be found in FEIS, Volume 10 under their respective headings as follows:

- Emergency Response and Spill Contingency Plan (Appendix 10C-1).
- Surface Water and Aquatic Ecosystems Management Plan (Appendix 10D-2).
- Fresh Water Supply, Sewage and Wastewater Management Plan (Appendix 10D-3).
- Explosives Management Plan (Appendix 10C-4).
- Preliminary Mine Closure and Reclamation Plan (Appendix 10G).
- Site specific Quarry Operations and Blasting Management Plans for individual quarries.

In addition, completed management plans as described in the FEIS should be consulted if other details are required.

2. Targeted Valued Ecosystem Components

Valued Ecosystem Components (VECs) were established in the studies and evaluations related to the FEIS. For the construction work, targeted VECs for the Pit and Quarry Management Plan are:

1. Health and safety (compliance with Baffinland's Health and Safety Management Plan).
2. Surface water quality.
3. Air quality, noise, and vibration.
4. Terrestrial wildlife.

3. Mitigation Measures

3.1 Planning and Design

Potential borrow pit and quarry sites have been identified for each area of the construction works for the Project. These sites are located in the footprint of Project facilities.

Volume 10, Appendix 10-D-6 of the FEIS provides further location information and includes quarry boundaries, distances from fish bearing streams (100-m setback), presence of bird-nesting areas, and potential tonnage.

The requirement for a 100m setback from fish bearing streams will ensure minimal adverse impacts of the pit/quarry operation on surface water quality. A similar setback is required from known bird-nesting locations.

An important aspect of planning is to assess suitability of quarry material. Baffinland will avoid using quarry material that has the potential for generating Acid Rock Drainage (ARD). Geotechnical investigations have been carried out at the proposed sites, and ARD sources are being avoided. A Protocol for the Assessment for the Potential for Acid Rock Drainage is attached to this Plan (Annex 2)

3.2 Environmental Concerns and Mitigation Techniques

Environmental concerns for all Project works, including the quarries and borrow areas, are presented in Volume 6 to 8 of the FEIS. Table 3-1 below presents a summary of environmental concerns and mitigation techniques associated with development of borrow pits and quarries

Table 3-1: Pit and Quarry Environmental Concerns and Mitigation Techniques

Development Phase	Activities	Potential Environmental Effects	Mitigation Techniques
Site layout/ Site preparation	• Timber clearing • Vegetation removal • Soil and overburden removal	• Soil erosion • Habitat loss	• Retain vegetation to maintain slope stability • Maintain natural drainage patterns • Maintain vegetation buffer zones to protect water bodies • Construct ditches to direct runoff away from site • Locate the development in a well-drained area • Salvage and properly store organics, topsoil, and overburden for use in reclamation
Operations/ Monitoring	• Blasting • Stockpiling • Crushing • Access road maintenance	• Soil erosion and sediment deposition	• Limit sediment movement using silt fences or straw bales • Use rip-rap to reinforce drainage channel corners and water discharge points • Revegetate where required to stabilize slopes
		• Water quality impacts: ○ Silt ○ Fuel ○ Blasting residue	• Limit sediment movement or use settling ponds before discharging • Use proper fuel containment and handling techniques, and have spill kits accessible • Use proper explosives handling techniques to minimize wastage
		• Water Ponding: ○ Permafrost degradation	• Minimize sources of in-pit water by diverting surface water away from the development area • Place ice-rich material to thaw in a location where melt water will not re-enter pit • Limit pit or quarry depth
		• Dust generation	• Spray water and use dust skirts on conveyors to minimize dust

Source: Northern Land Use Guidelines, Pits and Quarries, INAC 2008

3.3 Development Plans of Borrow Pit and Quarry

A detailed development plan will be prepared by the selected contractor before the starts of extraction of material from each borrow pit or quarry. Site development plans will augment this operations plan with specific details. These development plans will include:

- Site layout and boundaries with the following provisions:
  - Minimum setback of 100m from fish bearing streams.
  - Adequate room for all activities.
  - Estimates of the resources to be extracted.
  - Refuelling station with appropriate containment (if required).
  - Stockpiling location.
  - Dust and noise consideration.
  - Waste management.
  - Water management structures.
  - Sequence of operation.
  - Contractor involved in the operation.
  - Site operating procedures.
  - Spill response procedures.
- Monitoring:
  - Pit wall stability (for quarry).
  - Extent of permafrost or ground-ice.
  - Wildlife interactions or sightings.
  - Contingencies if changes to the original development scenario are required.
- Reclamation:
  - Overburden replacement for site grading and re-contouring.
  - Reclamation of natural drainage.
  - Slope reconstruction.
  - Removal of all garbage and debris.
  - Removal of all temporary storages/structures/equipment.
  - Reclamation of access road and block access (if required).
  - Replacement of all salvaged topsoil (if required).

3.4 Water Management

Site development must ensure positive drainage to prevent water pooling or flooding of the pit. The following measures will be implemented to enhance re-establishment of equilibrium and minimization of erosion and water ponding:

- Where possible, excavations will be minimized by utilizing above grade sources for material (hills and swales), which will minimize water collection and drainage disruption;
- Cut and fill areas will be stabilized by constructing gentle slopes less prone to erosion.
- Cut and fill areas are expected to be relatively small in horizontal and vertical extent. The side slopes of the borrow pits will be 1H:1V to 2H:1V, slightly gentler than natural slopes to reduce erosion.
- In low-lying areas where roadbed fill is in the order of 1 m and permafrost can be expected to rise to a meaningful degree, swales or culverts will be installed as part of road maintenance to prevent water ponding.
- At closure, swales will be left in place, or alternatively, the road bed will be breached to allow drainage.
- Borrow activities will be concentrated in few areas to limit the area of disturbance.
- Thawed layers will be removed sequentially.
- Areas of unexpected settlement will be filled to re-establish natural contours and eliminate water ponding.
- Borrow locations will be regularly inspected and unstable slopes regraded to eliminate depressions and re-establish natural drainage patterns.

3.5 Resource Extraction

Extraction methods will depend on the nature of the material, equipment used, and extent and nature of the permafrost.

In general efforts will be made to minimize excavation of pits and quarries below the water table. If excavated material contains ground-ice, the material will be stored at a location in the pit where it can thaw and drain. Meltwater from such stockpiles must be treated for sediment control (see Appendix 10D-2, Surface Water and Aquatic Ecosystems Management Plan).

Machinery and equipment used on the site will be serviced on a routine maintenance schedule to ensure proper operation and thus minimize emissions and noise.

If fuel storage is required, fuel tanks must be double-walled and placed within a containment berm. A well-stocked spill response kit must be placed in the refuelling area. Vehicles must be equipped with spill response kits and drip trays. Used oil and fuel must not be stored at the pit/quarry sites.

A spill contingency plan must be in place for each quarry site. This plan outlines the logical order of how operators should respond to spills, resources available onsite for spill response, and notification procedures.

3.6 Closure

The abandonment of the Project works and site reclamation for the quarries and borrow pits will be undertaken at or before the close of the Project. The works will be integrated into the overall Project Abandonment and Reclamation Plan, although separate closure plans for each quarry and borrow pit will be required prior to closing each facility. Closure of the Project will involve removing construction materials, equipment and infrastructure and reclaiming the site to self sustaining productive ecosystem near its original condition.

In addition to the measures described in Section 3.1 to Section 3.5 above, the general abandonment and reclamation plans include the following:

- Dismantle and transport all fuel/chemical storage and handling infrastructure to an approved facility or for reuse where applicable.
- Dismantle and remove all buildings and related infrastructure.
  - Any remaining concrete piles will be cut to below grade and covered with overburden.
- Dismantle water and sewage treatment plants for re-use or disposal at an approved facility.
- Remove all hazardous waste and explosives.
- Regrade as necessary to establish safe slopes and restore the natural drainage to the area.
- Test soils and granular materials for hydrocarbon content; contaminated soils will be remediated.

4. Environmental Roles and Responsibilities

4.1 Roles and Responsibilities

Personnel responsible for the Environment Health and Safety (EHS) on the project are divided into three distinct groups, each with their own representatives and responsibilities. Baffinland Iron Mines Corporation's (Baffinland) senior management is ultimately responsible for all the policy creation, while the Baffinland onsite management team is responsible for monitoring and reporting to senior management and regulatory bodies. The respective contractors will each have their own EHS personnel to ensure compliance and implementation of their scope of work with regards to EHS.

These are described in detail in the following sections. For the sake of clarity the focus has been on those roles relevant to environment and site reporting procedures.

The organizational chart, as shown in Figure 4-1 provides further detail. The second organizational chart in Figure 4-2 demonstrates the communication and reporting lines and responsibilities.

4.2 Environmental Project Team

4.2.1 The Baffinland Environmental Team

The Baffinland Environmental Team will oversee all environmental and community works on and off site.

The Baffinland Corporate Environmental Team based in Baffinland's head office will be responsible for: environmental permitting applications/amendments and regulatory responsibilities, design and implementation of the overall Environmental Management System (EMS) and the Construction Environmental Protection Plan (CEPP), monitoring and baseline studies, government and community relations. Further responsibilities of the Baffinland's corporate team are summarized in Table 4-1.

Table 4-1: Baffinland Iron Mines Corporation Senior Management

Baffinland Iron Mines Corporation Senior Management	
Position	**Responsibilities and Accountabilities**
Project Director	- Reports to Baffinland's CEO - Overall accountability for the Project execution - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during Construction of the Project - Accountable for on-site environmental, health and safety performance during construction of the Project
VP Operation	- Reports to Baffinland's CEO - Overall accountability for the Operation of the Project once constructed - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during Operation - Accountable for on-site environmental, health and safety performance during Operation
VP Sustainable Development, Health, Safety & Environment	- Reports to Baffinland's CEO - Establish corporate environmental policies and objectives - Monitors and reports on Baffinland's performance related to environmental, health and safety policies and objectives - Community liaison - Liaise with regulatory authorities - Obtains necessary permits and authorizatons - Monitors compliance with terms and conditions of permits and licences - Routine EHS audit of contractor performance while on site
Manager Purchasing & Contract	- Reports to Baffinland's Project Director - Accountable for procurement and purchasing - Ensure that environmental commitments, policies and objectives are included in all contract documents
VP Corporate Affairs	- Reports to Baffinland's CEO - Accountable for external communication (Governments, media, NGO, others) related to Baffinland's press release and overall communication of site incidents/events

The on-site Baffinland environmental team will be led by an Environmental Manager, reporting to Baffinland's VP Sustainable Development, Health, Safety & Environment. Reporting to the Environmental Manager will be the Environmental Superintendents/Coordinators based at both Milne and the Mine-site. In addition there will be Environmental Monitors carrying out sampling, supervision and other tasks in all areas of operation. There will also be a Construction Manager on-site who will be liaising with the Environmental Manager and reporting to the Project Site Director.

The Baffinland environmental team will be responsible for the implementation of the Environmental Management system, training programs, environmental status reports, leading site visits by regulators, and managing contractors and site inspections. The Company's environmental management staff will oversee all environmental activates on site. Table 4-2 summarizes these responsibilities.

Table 4-2: Baffinland Iron Mines Corporation On-Site Management Team

Baffinland Iron Mines Corporation On-Site Management Team	
Construction Manager	- Reports to the Project Director - Responsible for daily on-site management of construction activities - Accountable to the Project director for site environmental, health and safety performance - Organize and provides necessary induction, safety and environmental training for all employees - Ensure that all contractors on-site abide by Baffinland's policies, EHS commitments
Environmental Manager	- Reports to VP EHS & Sustainability - Monitors environmental performance of contractors on site - Monitors compliance with permits, licences and authorizations - Regulatory environmental monitoring and reporting (monthly, annual) - Routine audit of contractor's environmental performance on-site - Initiate/supervise environmental studies - Investigate and reports on accidents and incidents when they occur - Review and update environmental management plans
Environmental Supervisor (s)	- Reports to Environmental Manager - Specific accountabilities for environmental monitoring and reporting - Provides induction and environmental awareness training to new employees and contract workers
Environmental Support Group	- Reports to the Environmental Supervisor - Environmental database management - Various sampling, monitoring and reporting activities as required by permits, licences and environmental management plans - Prepare updates to environmental protection plan and management plans
Environmental Monitors	- Reports to the Environmental Superintendent

4.2.2 Construction Contractor's Environmental Team

The Construction Contractor will designate a Construction Manager with overall responsibility for environmental management of the contractor's activities. The Construction Manager must be suitably qualified with construction experience and have knowledge of environmental management. In addition to this the Construction Manager will appoint site specific EHS supervisors who will oversee environmental components of the day to day activities on the individual sites. The responsibilities of the Construction Contractors environmental team is summarized in Table 4-3.

Table 4-3: Construction Contractor(s)

Construction Contractor(s)	
Construction Manager	- Reports to the Baffinland's Construction Manager - Accountable for the EHS components of his scope of work - Accountable for implementation of the Construction Environmental Protection Plan - Co-ordination/interaction with Baffinland and Baffinland's Representative Environmental Monitors.
EHS Superviser	- Reports to the Contractor's Construction Environmental Manager - Liaise with Baffinland's Environmental Superintendent and monitors. - Holds daily EHS briefing - Monitors and ensures that Contractor complies with requirements of management plans, terms and conditions of all authorization, licences and permits associated with the Contractor's scope of work - Investigate, reports and follow up on environmental accidents and incident - Provides site specific environmental monitoring - Daily supervision of construction activities for environmental performance - Attendance at all environmental meetings/Project meetings (as required). - Routine interaction with construction crews to ensure all construction activities are in compliance with requirements of the CEPP and Contractors Environmental Method Statements - Monitor the environmental permitting status of the Project to ensure that no work proceeds until appropriate and complete permitting is received for the applicable facility.

4.3 Mary River Project Organizational Charts

For further information regarding the Mary River Projects organizational structure, please refer to Figure 4-1 and Figure 4-2 below. Figure 4-1 shows the organizational structure while Figure 4-2 provides an overview of the communication channels between individuals. The organizational structure is relevant for the entire project.

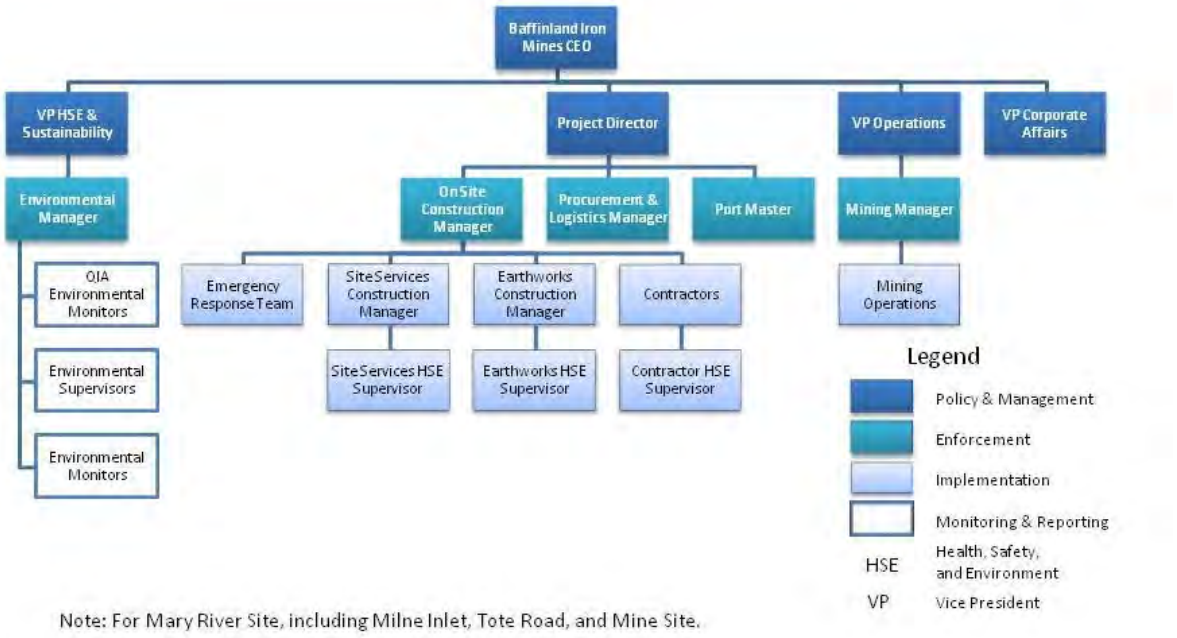

Figure 4-1: Mary River Project Organizational Chart

Note: quarry management responsibilities shall be shared by the Earthworks contractor and the Site Services contractor.

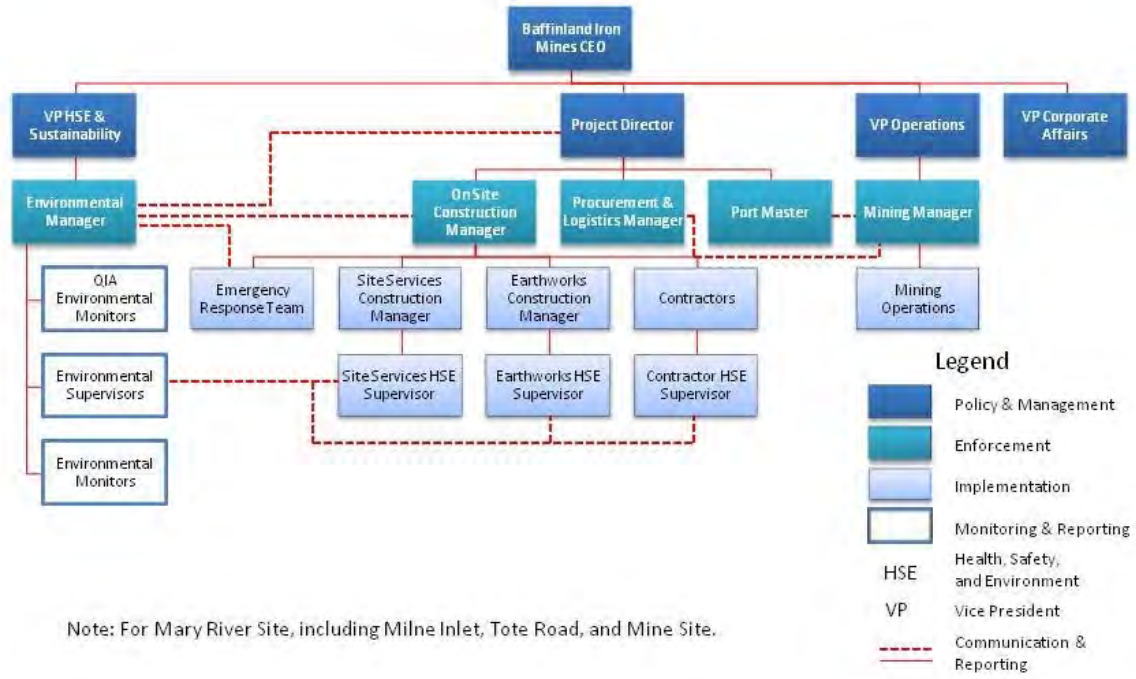

Figure 4-2: Mary River Project Organizational Chart with Communication Channels

Note: quarry management responsibilities shall be shared by the Earthworks contractor and the Site Services contractor.

5. Performance Indicators and Thresholds

The performance indicators for the pit/quarry are visual and depend on regular inspection and maintenance of the pit/quarry site. These indicators are:

- Site safety and security.
- General site condition and “housekeeping”.
- Positive drainage and absence of water pooling/ponding on the pit/quarry site.
- Ground/slope stability.
- Adherence to Blasting Management Framework (Annex 3) and Protocol for the Assessment for the Potential for Acid Rock Drainage (Annex 2).

6. Monitoring and Reporting Requirements

Operation of the borrow pits and quarries must be monitored to ensure they are proceeding according to the Borrow Pit and Quarry Management Plan and remain in compliance with regulations and land-use permits. Monitoring focuses on:

- Regular inspection of site-preparation measures:
  - Site safety and security.
  - Site maintenance and general housekeeping conditions.
- Regular inspection of drainage and water management structures and assessment of their effectiveness.
- Determining if the granular resource material is still suitable for end-use.
- Establishing how much ground-ice is present in the material and behaviour and volume loss of the material as thawing occurs.
- Inspecting records of wildlife interactions and sightings.
- Reporting quantities of material extracted.

Site monitoring is required for several years after closure to assess whether reclamation objectives have been met. Post-closure monitoring requirements will be specified in the land-use permits.

Monitoring results will be summarized in annual reports for the Project.

7. Adaptive Strategies

Baffinland is committed to continuous improvement in its work activities with the aim of reducing risks to the environment and improving operational effectiveness. All development activities will be subject to this approach. All works will need to fit seamlessly into the overall Project plans. The strategy at Baffinland is regular monitoring supported by operational change and adoption of other mitigation measures if warranted.

As per the requirements of Baffinland's EHS Management Framework, the company will conduct and document regular management reviews of its Borrow Pit and Quarry Management Plan. Such reviews will ensure monitoring results for the Borrow Pit and Quarry Management Plan are integrated with other aspects of the Project and that necessary adjustments are implemented as required. These reviews also provide a formal mechanism to assess effectiveness of management in achieving company objectives and maintaining ongoing compliance with Project permits and authorizations references.

8. References

1. Northern Land Use Guidelines, Pits and Quarries, INAC 2008.
2. Milne Inlet Construction Works Site Layout (H337697-7000-10-014-1001).
3. Mary River Mine Site Construction Works Site Layout (H337697-7000-10-014-1002).
4. Steensby Inlet Construction Works Site Layout (H337697-7000-10-014-1006).

Annex 1

Baffinland's Sustainable Development Policy

SUSTAINABLE DEVELOPMENT POLICY

At Baffinland Iron Mines Corporation, we are committed to conducting all aspects of our business in accordance with the principles of sustainable corporate responsibility and always with the needs of future generations in mind. Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and to create authentic relationships. We expect each and every employee, contractor, and visitor to demonstrate a personal commitment to this policy through their actions. We will communicate the Sustainable Corporate Policy to the public, all employees and contractors and it will be reviewed and revised as necessary on an annual basis. These four pillars form the foundation of our corporate responsibility strategy:

1. Health and Safety
2. Environment
3. Investing in our Communities and People
4. Transparent Governance

1.0 HEALTH AND SAFETY

- We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness from the very earliest of planning stages. Why? Because our people are our greatest asset. Nothing is as important as their health and safety.
- We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.
- We foster and maintain a positive culture of shared responsibility based on participation, behaviour and awareness. We allow our workers and contractors the right to stop any work if and when they see something that is not safe.

2.0 ENVIRONMENT

- We employ a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.
- We apply the principles of pollution prevention and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
- We continuously seek to use energy, raw materials and natural resources more efficiently and effectively. We strive to develop pioneering new processes and more sustainable practices.
- We understand the importance of closure planning. We ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.

3.0 INVESTING IN OUR COMMUNITIES AND PEOPLE

- We respect human rights and the dignity of others. We honour and respect the unique culture, values and traditions of the Inuit people.
- We contribute to the social, cultural and economic development of sustainable communities adjacent to our operations.
- We honour our commitments by being sensitive to local needs and priorities through engagement with local communities, governments, employees and the public. We work in active partnership to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration when making decisions.

4.0 TRANSPARENT GOVERNANCE

- We will take steps to understand, evaluate and manage risks on a continuing basis, including those that impact the environment, employees, contractors, local communities, customers and shareholders.
- We ensure that adequate resources are available and that systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
- We measure and review performance with respect to our environmental, safety, health, socio-economic commitments and set annual targets and objectives.
- We conduct all activities in compliance with the highest applicable legal requirements and internal standards
- We strive to employ our shareholder's capital effectively and efficiently. We demonstrate honesty and integrity by applying the highest standards of ethical conduct.

Tom Paddon
President and Chief Executive Officer
September 2011

Annex 2

Protocol for the Assessment for the Potential for Acid Rock Drainage

Introduction

During the life of the Project, quarries will be developed along the Milne Inlet Tote Road and Rail Alignment for the production of aggregate for applications such as the construction of laydown areas, embankments for roads and railway, surfacing materials, retention ponds, culvert installations, rip rap,, and other uses. Rock materials everywhere have the potential for Acid Rock Drainage (ARD) and Metal Leaching (ML). However, screening level geochemical studies to date[1,2], indicate that there is a low potential of ARD./ML for rock materials located at prospective quarry sites along the Milne Inlet Tote Road and Rail Alignment.

To mitigate against risk, potential quarry sites have already been identified in excess of what is expected to be required to allow flexibility and choice as both geomaterial and geochemical characterization of quarry sites proceeds in advance of construction. Further, the following protocol has been developed to assess the potential for ARD/ML on a site specific basis to ensure that materials for construction aggregate meet acceptable geochemical requirements. In particular, the work will use industry standard methods and guidance[3] to confirm that aggregate materials used will have a low potential for ARD/ML. Professional engineers or geoscientists will be engaged to conduct the quarry geochemical assessments and will ensure that the evaluation reasonably represents the conditions within the currently proposed quarry development areas.

General Approach for ML/ARD Predictive Assessment at Quarry Sites

The following summarizes the general project approach for ML/ARD assessment at proposed quarry sites; the initial assessment of potential quarry sites will consist of the following steps:

- Review existing geological information and data (surface geological maps, borehole logs and any available test results) applicable to the site.
- Conduct site reconnaissance including further geological inspection and sampling of surface materials if appropriate.
- Conduct additional investigations (geologic mapping, sampling and geochemical testing) of priority sites as required.

After completion of the above initial assessment, decisions will be made regarding the development of quarry sites. Quarry sites that exhibit the potential for ML/ARD will either not be developed, or will be subject to further investigation to confirm ML/ARD characteristics.

Sample Analyses

Representative test sample(s) of the quarries will be retrieved by means of surface grabs, test pits, or exploratory core drilling and analyzed for the potential to produce ARD/ML using standard analytical

[1] Interim ML/ARD Assessment of Railway Quarry Rock Samples. Baffinland Mary River Project, December 2010.
[2] Baffinland Mary River Project – Trucking Feasibility Study. Interim ML/ARD Assessment of Tote Road Quarry and Borrow Pit Samples, Rev1, December 2010..
[3] MEND 2009, Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. Natural Resources Canada.

procedures that will include acid-base accounting tests for total sulphur and sulphide-sulphur, modified Sobek neutralization potential, carbonate content, pH, total metals and selected samples for shake flask extraction (SFE). Accepted test methods will be based on the methods outlined in MEND (2009)[3]. In addition to geochemical analyses, samples can also be sent for mineralogical and petrographic analyses, if necessary, so that the geochemical results can be understood in context with the occurrence, texture and relationships of the actual minerals present.

Quarry Development

The final recommendation for the development of a particular quarry will be based on the results of geochemical analyses, petrographic and mineralogical studies, and other geological information such as larger scale lithological and structural characteristics of the quarry and regional characteristics of the geological regime under consideration. This recommendation will be provided in the site specific quarry management plan.

Operational Testing.

Once quarries are under development, confirmation geochemical and visual testing will be undertaken by means of collection of a set frequency of samples, based on quantity to be quarried and available site specific characterization information. Methods of sampling to be used could include systematic sampling of muck after blasts or sampling of blast hole cuttings. The analytical methods to be adopted will be as for the predictive sampling (MEND, 2009) or a defined alternative that has been shown to be predictive of ARD/ML. If operational testing indicates results vary significantly from original geochemical predictions, characterization, then the quarry activities for that quarry site will be suspended and regulators contacted. The geologist or engineer responsible for geochemical assessment for the quarry will be retained to conduct further studies as appropriate. Quarry operations would proceed again only under the recommendations of the geologist or engineer.

Reporting

Predictive testing results for each quarry will be provided in the site specific quarry management plan. Operational testing will be included in the annual reporting for the project.

Annex 3

Blasting Management Framework

Blasting Management Framework

1. Background

Soluble inorganic nitrogen compounds such as ammonium nitrate (AN) are commonly used in explosives to support mining operations throughout the world. Large quantities of AN will be shipped and stored at the Mary River site and used in the manufacture and use of explosives used in blasting operations. The framework focuses on the control and mitigation of key potential risks arising from the management and use of AN explosives associated with quarrying and mining operations during the construction and operations phase of the Project. The potential risks arise from the aqueous dissolution of soluble nitrogen compounds and the potential pathways/impacts to surface water bodies which may support aquatic life.

1.1 Ammonium Nitrate Explosives - Potential Risks

The primary ecological concerns with ammonia are acute end-of-pipe toxicity and chronic toxicity in downstream lakes. Secondary issues relate to ammonia as a nutrient and the fact that ammonia nitrifies to nitrate in the environment. Some forms of nitrogen such as anionic ammonia or free ammonia and nitrite can be detrimental to fish at elevated concentrations. Nitrate, in the presence of phosphorus, can contribute to the process of freshwater eutrophication. The natural concentration of phosphorus in lakes in North Baffin region is low and measures will be implemented to limit phosphorous loading to both the aquatic receiving environment. This involves control of sediment loading to surface waters during construction and the minimization of phosphate in effluent discharge.

The primary source of inorganic nitrogen typically found at mine sites is undetonated ammonium nitrate (AN)-based explosives. Explosives represent a significant cost at EKA TITM, thus there are economic as well as environmental incentives to control losses.

1.2 Potential Pathways

Ammonium nitrate is highly soluble and can readily leach into surface water by one or more of the following pathways:

- Spillage, which is the most common source of ammonium nitrate loss and the easiest to control.
- Improper selection of explosives medium, leading to losses of explosives through incomplete detonation.
- Site peculiarities such as geology and groundwater affecting the migration of explosives into permeable fractures or fault systems and causing incomplete detonation.

Due to potential environmental concerns related to the introduction of nitrogen compounds at the Mary River Project, operating procedures will implemented to limit, control and mitigate the release of undetonated explosives originating from blasting operations.

2. Blasting Management Framework

Baffinland is committed to implementing best management practices in its use of explosives. To this end a Blasting Management Framework has been developed based on a review of similar plans implemented at other Northern mines such as the Diavik and Ekati diamond mines.

Baffinland in concert with its Company Representative contractor will develop site specific operating procedures to limit, control and mitigate the release of undetonated explosives from blasting operations. A Blasting and Operations Plan will be developed for each quarry based on the site specific geologic and biophysical conditions encountered at each quarry location.

The specific objectives for the framework Plan are as follows:

- To identify and implement explosives management practices that will result in the lowest practical losses of undetonated explosives to the receiving environment, and,
- To ensure that explosives are used and site runoff water is managed in such a way that explosives losses do not result in a change in the trophic status of receiving water bodies.

2.1 Source Controls

Proactively controlling the source of AN explosives has a positive net environmental effect versus managing ammonia after dissolution in water which is much more difficult. The AN-based explosives handling procedures require that personnel who handle explosives take the necessary precautions to prevent spillage during blasting operations. When AN-based explosives come in contact with water, some dissolution of ammonium nitrate occurs. To limit explosives-water contact, areas that are subject to shallow groundwater flows are identified, and dewatered prior to blasting. Proper selection of explosives types can prevent dissolution and release to the receiving environment. For example, emulsion based ammonium nitrate-fuel oil (ANFO) mixture contains emulsifiers that can minimize AN dissolution in water and improve blast performance. The types of procedures to be developed and actions to be taken will include the following:

- Loading explosives in wet blast holes and limiting stand time for explosives in wet holes.
- Rigorous employee orientation and training procedures for managing, transporting and loading explosives into blast holes.
- Selecting, adopting, and manufacturing the optimum explosive mix types and loading procedures for site specific applications.
- Quarry and pit plans will incorporate a site specific drainage control plan.

3. Performance Monitoring

A performance monitoring program will be implemented to ensure that AN release to receiving waters from AN explosives is minimized Site specific performance targets will be developed and finalized in concert with the site contractors. The performance monitoring targets may include the following key elements:

- Blast performance monitoring to optimize blasting efficiency.

- Monitoring and auditing of field operations related to explosive selection, manufacturing, handling, blasting, and pit/quarry development to ensure acceptable field implementation of procedures and delivery of associated training.
- Based on the drainage plan and site conditions, there may be surface flow or runoff from the quarry to the downstream receiving environment. Discharge and runoff to the aquatic receiving environment (fish habitat), will meet water licence requirements for total suspended solids, and ammonia/nitrate will be at concentrations that are non-acutely toxic.

In the event that performance monitoring indicates that targets are not being met, corrective actions will be taken to improve performance and contingency measures will be taken to prevent acutely toxic discharges to the aquatic receiving environment.

Annex 4

General Quarry Site Information

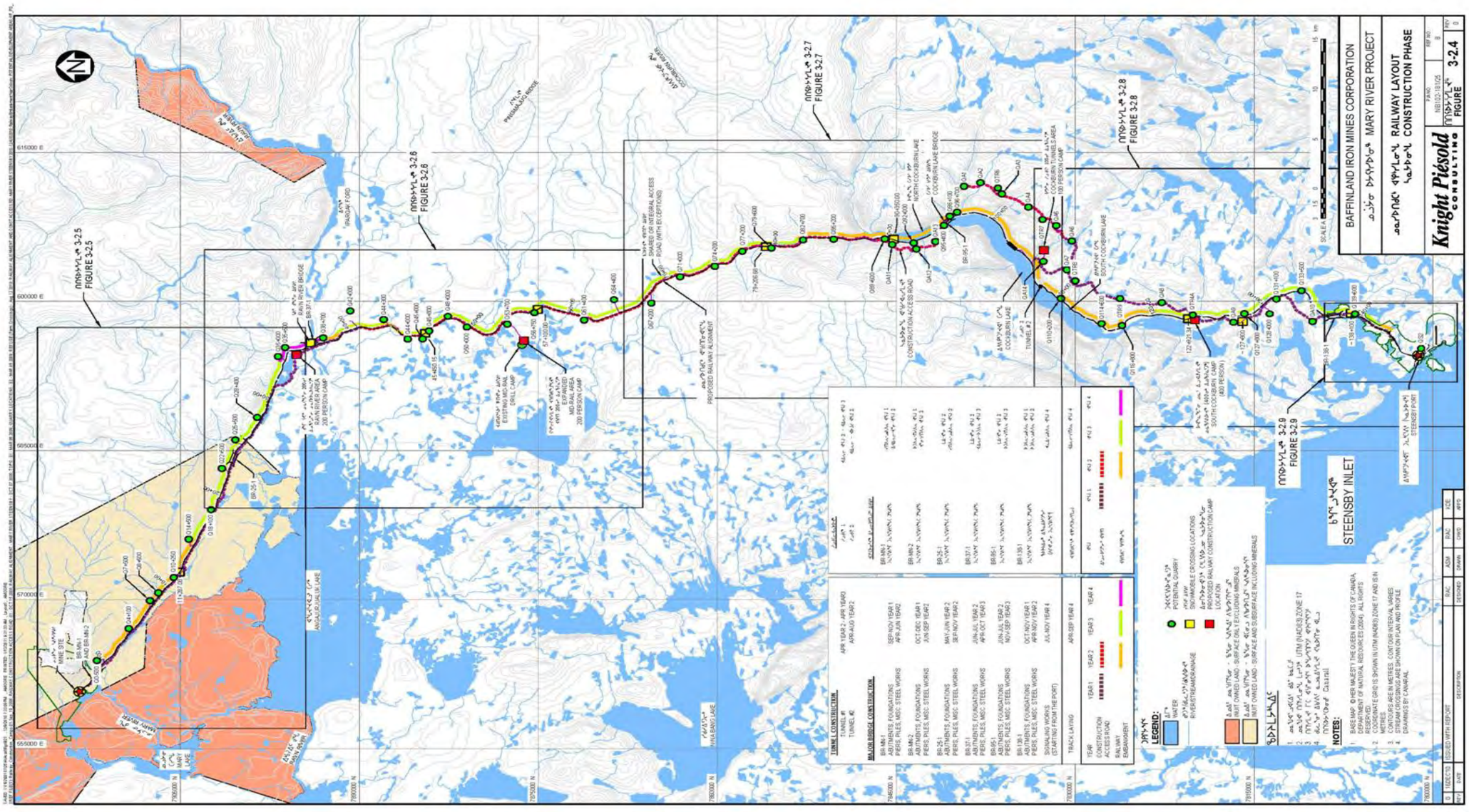

Figure A-1: Quarry Locations (from Baffinland Iron Mines FEIS; Volume 3, Figure 3-2.4)

Table A-1: Yields for Quarries for Mary River Project along Rail Corridor

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Volume with Contingency (m^3)[2]			Drilled in 2011
				Railway	Road	Total	
QMR2	Mary River	7,914,203	560,128	491,079	47,052	538,130	Yes
Q-0+500	- 0+500	7,911,899	563,668	826,508	196,174	1,022,683	Yes
Q4+100	4+100	7,909,418	566,698	570,968	199,833	770,801	Yes
Q7+500	7+500	7,907,667	569,432	619,585	174,374	793,959	Yes
Q10+250	10+250	7,905,378	572,883	1,007,536	206,620	1,214,157	Yes
Q14+500	14+200	7,904,382	575,868	1,232,091	240,446	1,472,537	Yes
Q18+100	18+100	7,902,853	578,804	1,463,455	263,943	1,727,398	Yes
Q22+500	22+500	7,901,663	583,415	1,484,696	230,582	1,715,278	Yes
Q25+500	25+500	7,900,221	586,954	755,019	124,801	879,820	Yes
Q28+400	28+400N	7,898,617	588,240	158,886	104,426	263,312	Yes
Q31+500	31+500N	7,897,863	590,944	53,356	128,885	182,242	Yes
Q35+000	35+000N	7,896,866	594,445	77,971		77,971	
Q35+500	35+500N	7,896,244	595,477	248,555	118,172	366,726	Yes
Q38+700	38+700N	7,893,140	596,368	342,908	116,780	459,687	Yes
Q40+600	40+600N	7,889,375	596,009	812,884	153,489	966,373	
Q42+000	42+000N	7,890,881	598,151	305,177	96,131	401,308	Yes
Q44+300	44+300N	7,888,054	598,208	302,919	62,185	365,104	Yes
Q44+000	44+000	7,885,927	596,138	178,149	38,931	217,080	Yes
Q45+000	45+000	7,884,724	596,201	54,862	29,020	83,882	Yes
Q45+800	45+800	7,884,147	596,990	34,368	42,430	76,798	
Q48+000	48+000	7,882,597	598,495	28,241	58,397	86,637	
Q50+000	50+000	7,881,100	597,357	134,915	70,757	205,672	Yes
Q53+700	53+700	7,877,567	597,616	339,267	78,350	417,616	Yes
Q56+750	56+750	7,875,280	598,852	426,916	87,668	514,583	Yes
Q60+000	60+000	7,871,954	599,087	327,131	102,084	429,214	
Q64+400	64+400	7,868,565	600,221	203,898	94,957	298,854	
Q67+200	67+200	7,865,619	600,161	156,728	79,560	236,288	
Q71+000	71+000	7,863,169	602,398	161,614	71,915	233,530	
Q74+200	74+200	7,860,226	603,469	109,863	63,161	173,024	
Q77+200	77+200	7,857,588	604,840	86,660	65,983	152,642	
Q79+600	79+600	7,855,411	605,366	145,051	77,616	222,666	
Q82+700	82+700	7,852,449	605,710	166,692	90,198	256,890	Yes
Q85+200	85+200	7,850,087	606,073	227,871	89,196	317,067	Yes
Q88+800	88+800	7,846,674	605,956	238,151	63,999	302,150	Yes
QTR21	90+400	7,845,379	605,707		51,239	51,239	
Q92+000	92+000	7,843,535	605,816	98,287		98,287	
QTR22	92+000	7,843,330	605,243		47,682	47,682	
QTR23	93+600	7,841,721	606,018		33,456	33,456	
Q95+400	95+150	7,840,905	607,500	16,898	56,143	73,041	
Q96+100	96+100	7,840,533	608,580	17,031	149,531	166,562	
Q96+700	96+700	7,839,908	608,976	6,493		6,493	
QTR10	97+300	7,839,328	611,431		203,081	203,081	
QTR11	98+700	7,838,013	611,995		134,433	134,433	
QTR6	98+900	7,836,409	611,377		101,012	101,012	
QTR13	100+700	7,833,967	609,448		165,509	165,509	Yes
QTR12	101+100	7,836,190	610,857		162,040	162,040	Yes

Quarry Name	Approximate Station[1]	Northing Coordinates	Easting Coordinates	Volume with Contingency (m^3)[2]			Drilled in 2011
				Railway	Road	Total	
NTUN-DH01	102+540	7,835,656	605,976				Yes
NTUN-DH03	102+930	7,835,382	605,698				Yes
NTUN-DH05	103+140	7,835,245	605,535				Yes
STUN-DH03	108+180	7,832,812	601,490				Yes
QTR7	108+300	7,832,685	608,302		132,606	132,606	
QTR17	105+700	7,832,984	603,944		948,392	948,392	
QTR14	104+300	7,831,608	607,681		171,297	171,297	
QTR15	105+200	7,830,326	606,224		227,039	227,039	
QTR16	106+200	7,830,731	603,228		905,620	905,620	
Q110+200	110+200	7,831,193	600,359	253,809		253,809	
QTR8	112+000	7,830,182	602,012		603,136	603,136	
Q114+600	114+600	7,827,828	597,850	382,501		382,501	Yes
QTR9	116+500	7,826,260	600,261		361,991	361,991	Yes
Q116+800	116+800	7,826,194	597,422	764,455		764,455	Yes
QTR18	120+600	7,822,808	599,870		536,571	536,571	
QTR4A	123+000	7,820,410	598,555	958,066	636,598	1,594,664	Yes
QTR19	126+900	7,816,806	597,863		451,609	451,609	
Q127+800	127+800	7,815,755	598,770	545,218		545,218	
Q128+000	128+000	7,813,922	598,828		222,278	222,278	
Q131+100	131+100	7,813,509	600,177	112,666	191,240	303,906	Yes
Q133+500	133+500	7,811,052	601,482				
QTR20	134+100	7,810,467	598,087		169,565	169,565	
Q138+100	138+100	7,807,612	598,865		104,996	104,996	Yes
Q139+600	139+600	7,806,105	598,727		119,999	119,999	Yes
QS3A	Steensby	7,800,000	595,698				Yes
QS3	Steensby	7,799,349	597,500				
QS2	Steensby	7,801,066	595,200		300,000	300,000	Yes
QS1	Steensby	7,803,054	593,500				Yes
SI-OLD-004	Steensby	7,798,314	592,879				Yes
SI-OLD-005	Steensby	7,798,331	592,860				Yes
SI-OLD-006	Steensby	7,798,409	592,876				Yes
SI-OLD-007	Steensby	7,798,424	592,840				Yes
SI-OLD-008	Steensby	7,798,489	592,891				Yes

Notes:
[1] Two sets of stationing are used along the rail alignment. Following the Ravn River realignment, which extends from approximately station 26+100 to station 46+582.93, the stationing resets to 43+830 to be consistent with the stationing used prior to the Ravn River realignment. To avoid confusion, stationing along the Ravn River realignment has an "N" suffix.
[2] Volumes obtained from the DEIS.

Table A-2: Expected Yields for Quarries and Barrow Sources for Mary River Project along Tote Road

Name	Kilometer (km)	Coordinates		Haul distance to road (m)	Direction from Alignment	Estimated Size (m)
		Northing (m)	Easting (m)			
Q1	1+000	7976181	0503426	<25	E	~1000x200x30
Q2	2+000	7975332	0503801	<25	E	~1000x100x30
Q3	3+250	7974577	0503919	<50	E	~1000x100x40
Q4	4+125	7973774	0504325	<50	E	~1000x200x40
Q5	5+000	7973207	0504956	<50	E	~1000x200x40
Q6	5+900	7972500	0505606	<50	E	~1000x200x40
Q7	7+000	7971596	0506543	<150	E	~1000x200x75
Q8	10+300	7969748	0508465	<500	E	500x200x40
Q9	10+500	7969455	0508204	<10	W	500x75x20
Q10	13+500			<10m	W	10x20
Q11	22+200	7962800	05166566	<50	E	300x400
Q12	23+900	7961395	0577477	@ road	W	250x100
Q13	30+800	7956039	0520568	~200	W	>500 in length
Q14	38+600	7947516	0522432	<500	E	n/a
Q15	45+050	7942195	0523415	<500	E	continuous N-S bedrock ridge
Q16	49+900	7937416	0525691	<200	E	continuous N-S bedrock ridge
Q16A	50+000	7937399	0525494	<50	E	continuous N-S bedrock ridge
Q17	54+600	7933202	0527006	~200	E	continuous N-S bedrock ridge
Q18	61+500	7927975 (7928029)	0526660 (0529029)	~200	E	continuous N-S bedrock ridge
Q19	95+200	7915041	0554686	@ road	E	Several ridges/hills, approx dimensions 100x100x10
Q20	97+500	7914882	0555921	100 – 200	N	bedrock knoll, ~200x100x15
P1	62+500	7927089	059303	@ road	E	previously opened
P2	63+000	7926710	052912	@ road	W	previously opened
P3	63+900	7926138	0530139	@ road	W	previously opened
P4	65+100	7925324	0530939	@ road	W	previously opened; 30x100x1
P5	65+100	7925364	0530727	<100	W	150x50x5
P6	67+100	7923616	0531817	@ road	W	previously opened; 20x40x0.5
P7	71+700	7920584	0534800	@ road	W	previously opened
P8	73+800	7920168	0536031	@ road	W	previously opened
P9	75+700	7920709	0538703	@ road	E	previously opened
P10	75+900	7920952	0539391	@ road	W	previously opened; 30x100x1.5m
P11	80+400	7921090	0543685	@ road	S	previously opened; 30x100x1.5m
P12	83+100	7920168	0544796	@ road	S	several ridges and hills; ~100x100x10m
P13	85+500	7919693	0546932	@ road	S & N	on N side 200x150x4m
P14	90+000	797805	0550574	@ road	S & N	S side of road previously opened
P15	91+100	7916730	0551384	@ road	N	~500x250x10m
P16	97+400	7914882	0555921	@ road	N & S	previously opened source