Baffinland
Iron Mines Corporation

MARY RIVER PROJECT
Pre-Development Works

APPENDIX B.4
SURFACE WATER AND AQUATIC ECOSYSTEM MANAGEMENT PLAN

Rev. No.	Revision	Date	Approved
0	Issued for inclusion in Draft Environmental Impact Statement	December 2010	DEC. 2010
1	Updated for inclusion in Pre-development Work application	September 2011	
2			

Surface Water and Aquatic Ecosystems Management Plan

Contents

SECTION 1.0 - INTRODUCTION

1.1 PURPOSE

This management plan is prepared within the context of the Baffinland Mary River Draft Environmental Impact Statement (DEIS), but applies only to surface waters and aquatic ecosystems that are likely to interact with components required as part of pre-development activities. A more complete project description of all components is found in Volume 3: Project Description, and further management plan descriptions in Appendix 10-D2 of the Draft Environmental Impact Statement. The goal of the Management Plan for the pre-development work is to construct necessary facilities while at the same time ensuring that a no-go decision will allow for a return to pre-development conditions.

The Surface Water and Aquatic Ecosystems Management Plan outlines the processes and procedures to document the quality and quantity of water that will interact with pre-develoment activities for the Project. It includes management practices to limit the potential for adverse impacts to receiving waters, aquatic ecosystems, fish and fish habitat. The Plan details the management of runoff collection systems at pre-development Project facilities and addresses point and non-point discharges to surface waters from Project components and discharge quality and quantity relative to the receiving water system.

The plan addresses surface water treatment, including the identification of treatment areas and discharge locations of treated waters. It outlines specific mitigation measures required for stream/river crossings works as well as for general operation and construction activities in proximity of water courses. The Plan identifies the roles and responsibilities, specific requirements, and mitigation and management actions for erosion and sedimentation controls for the Project. The plan includes methods for controlling erosion for both temporary and long-term stabilization efforts.

The plan will be updated and submitted to the Nunavut Water Board (NWB) during the permitting phase to support water licensing, and will be updated throughout the Project life as a condition of the company's water licence.

1.2 REGULATORY REQUIREMENTS

Water use is regulated by the NWB through the water licensing process. The pre-developmnet Project components will be subject to a Type B water licence.

It is expected that the pre-development work will fall under the existing water license. Baffinland's existing NWB Type B water licence will need to be updated to reflect evolving activities at the Project site. The Type B water licence regulates water and waste-related activities associated with the exploration/pre-construction phase of the Project.

Specific requirements of current Water Licence 2BB-MRY07, as it relates to site water management during the exploration/pre-construction phase of the Project are as follows:

- Volume of water extracted for the project for this licence will not exceed 515 m^3/d (approximately 60 m^3 for potable water and other camp uses, and the remainder for drilling purposes).
- GPS coordinates (in degrees, minutes, seconds) of all locations where water is used will be recorded and reported to the Inspector before use.
- Daily quantities of water used will be measured and recorded, in cubic metres, for camp, drilling, and other purposes.
- Surface water samples will be collected throughout the Mary River Exploration Property, including Deposit No. 4, and at sites near Milne Port and Steensby Port (subsequent laboratory analytical results will be used to identify water quality trends and potential impacts on surface water).
- Quantities of domestic waste, sewage, and hazardous waste hauled offsite for disposal will be measured and recorded, in cubic metres, and the location and name of the disposal facility(s) and date waste was hauled offsite will be recorded.
- Water for domestic purposes will be obtained from Camp Lake (Monitoring Station MRY-1), Phillips Creek (Monitoring Station MRY-2), Km 32 Lake (Monitoring Station MRY-3), nnamed lake at Km 32 along the Milne Inlet Tote Road, Deposit No. 4 Camp (location to be identified before use), unnamed lake adjacent to Rail Camp, unnamed lake near Steensby Port, the alternate source for freshwater identified in the Application, or at an alternate location approved by the NWB.
- Water intake hoses will be equipped with a screen of appropriate mesh size to ensure fish are not entrained and will withdraw water at a rate such that fish do not become impinged on the screen.
- Camps will not be located, nor material stored, on the frozen surface of a stream or lake, except for immediate use.
- Water supply facilities will be maintained to the satisfaction of the inspector.
- Streams will not be used as a water source unless authorized and approved by the NWB.
- Water for drilling will be taken from sources adjacent to drill locations or as otherwise approved by the NWB.
- No land-based drilling will be conducted within 30 m of the ordinary highwater mark of any waterbody, unless a request has been submitted and received by the NWB, 10 days in advance of drilling. The request must include a thorough description of proposed activities and the following:
- an appropriately scaled site map, complete with approximate GPS coordinates of planned drilling locations and associated waterbodies
- locations of waste deposition, consistent with Part F, Item 4
- planned mitigation measures before, during drilling, and following if required to protect water
- Drilling waste, including water, chips, mud, and salt,, in any quantity or concentration, from land-based drilling, will be disposed of in a properly constructed sump or an appropriate natural depression located at least 30 m from the ordinary highwater mark of any adjacent waterbody, where direct flow into a waterbody is not possible and no additional impacts will be created.
- If artesian flow is encountered, drill holes will be immediately sealed and permanently capped, and flow reported to the NWB.
- If the bottom of permafrost is broken through by the drill, depth and location will be recorded and reported to the NWB.
- If water is required in sufficient volume as to cause drawdown of the waterbody, approval by the NWB will be obtained 30 days before use. Details to be submitted include volume required, hydrological overview of waterbody, details of impacts, and proposed mitigation measures.
- Streambanks will not be cut and material will not be removed from below the ordinary highwater mark of any waterbody unless authorized.
- The licensee will not cause erosion to the banks of any waterbody and will provide necessary controls to prevent such erosion.

- With respect to access roads, pad construction, and other earthworks, debris and sediment will not be deposited into or on any waterbody. The materials will be deposited at least 30 m from the ordinary highwater mark in such a fashion that they do not enter the water. Chemicals, fuel, or associated waste will not be allowed to enter any waterbody.
- Stream crossings will be located so as to minimize approach grades. Approaches will be stabilized during construction and on completion to control runoff, erosion, and subsequent siltation to any waterbody.
- Machinery will not travel up the streambed of a waterbody. Fording will be kept to a minimum and limited to one area and a one-time event for each piece of equipment, where possible. Equipment will be well cleaned and free of oil and grease and fluid leaks.
- Pollutants from machinery fording water crossings will not enter the water.
- Activities will be conducted to minimize impacts on surface drainage, and corrective measures will be undertaken if surface drainage is affected.
- Sites will be prepared to prevent surface rutting.
- Fill material used during construction will be from an approved source and free of contaminants.
- Sediment- and erosion-control measures will be implemented before and maintained during the operation to prevent entry of sediment into water.
- Equipment storage holding areas will be located on gravel, sand, or other durable land, at least 30 m from the ordinary highwater mark of any waterbody to minimize impacts on surface drainage and water quality.
- Equipment and vehicles will not be used unless the ground surface is in a state capable of fully supporting equipment or vehicles without rutting or gouging. Overland vehicle travel will cease if rutting occurs.
- An area at least 30 m from the ordinary highwater mark of any waterbody will be designated for deposition of excavated and stockpiled material.
- In-stream activity will be limited to low-water periods, and will not be undertaken during fish migration, unless approved.
- Except where approved, winter lake and stream crossings will be constructed entirely of water, ice, or snow, with disturbance minimized by situating ice bridges in areas with minimal approach grading and short crossing routes. Stream crossings will be removed or the ice notched before spring breakup.
- GPS coordinates (in degrees, minutes, seconds) will be determined for all locations of temporary and permanent storage areas where waste associated with camp, drilling, and infrastructure operations is deposited. These locations will be reported to the Inspector before waste is deposited.
- All waste disposal areas will be located a minimum of 30 m from the ordinary highwater mark of any waterbody, such that the quality, quantity, or flow of water is not impaired, unless otherwise approved.
- All polishing/waste stabilization pond (PWSP) discharge will be released in a manner that minimizes surface erosion.
- PWSPs will be bermed to ensure there is no seepage.
- All greywater not directed to the wastewater treatment facility (WWTF) will be contained in a sump located at least 30 m from the ordinary highwater mark of any waterbody, at a site where direct flow into the waterbody is not possible and additional impacts are not created, unless otherwise approved.
- Latrines will be located at least 30 m from the ordinary highwater mark of any waterbody.
- The Inspector will be notified of any discharge from waste facilities at least 10 days before discharge.

Other requirements may be added by the NWB.

1.3 RELATIONSHIP TO OTHER MANAGEMENT PLANS

This plan should be viewed in concert with other environmental monitoring and mitigation plans (EMMPs) as it is an integral part of each EMMP. As well, this plan should be viewed with the following management plans:

- Environmental, Health, and Safety Management System (SD-STD-001)
- Environmental Design Guidelines (EIS Volume 10, Section 3)
- Environmental Protection Plan (SD-EPP-001 to 021)
- Emergency and Spill Response Plan (SD-ERP-001)
- Milne Port and Steensby Port Oil Pollution Emergencies Plans (SD-ERP-002 and SD-ERP-003)
- Explosives Management Plan (SD-ERP-004)
- Waste Rock Management Plan (SD-EMMP-005)
- Borrow Pit and Quarry Management Plan (SD-EMMP-006)
- Roads Management Plan (SD-EMMP-008)

1.4 BAFFINLAND'S COMMITMENT

Baffinland provides adequate resources to implement and maintain the Environmental, Health, and Safety (EHS) Management System, including the necessary human, material, and financial resources. For Baffinland's Sustainable Development Policy, see Figure 1.1.

Sustainable Development Policy

We are committed to conducting all aspects of our business in accordance with the principles of sustainable development. Based on our values of protecting the environment, operating safely and fiscally responsible and creating authentic relationships, we will:

Governance

- Evaluate and manage risk on a continuing basis, including those that impact the environment, employees, contractors, local communities, customers and shareholders.
- Ensure adequate resources are available and systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
- Measure and review performance with respect to our environmental, safety, health, socio-economic commitments and set annual targets and objectives.
- Conduct all activities in compliance with applicable legal requirements and internal standards.
- Implement employee performance review processes to ensure accountability at all levels.
- Communicate this EHS Policy to the public and all employees and contractors.
- Undertake an annual review of this Policy.

Health, Safety Workplace and People

- Strive to achieve a safe workplace for our employees and contractors free from occupational injury and illness.
- Respect human rights, and the traditional culture, values and customs of the Inuit people.
- Report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.
- Foster and maintain a positive culture of shared responsibility based on participation, behavior and awareness.

Social and Economic

- Contribute to the social, cultural and economic development of sustainable communities adjacent to our operations.
- Engage with governments, employees, local communities and the public to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration in making decisions.
- Employ our shareholder's capital effectively and efficiently.
- Demonstrate honesty and integrity by applying the highest standards of ethical conduct.

Environment

- Employ a balance of scientific and traditional Inuit knowledge to safeguard the environment.
- Apply the principles of pollution prevention and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
- Use energy, raw materials and natural resources efficiently and effectively.
- Ensure closure plans are in place and progressive reclamation is undertaken to reduce potential long-term environmental and community impacts.

Every employee, contractor, and visitor is expected to demonstrate through their actions a personal commitment to this Policy.

R.D. McCloskey
Chairman and Chief Executive Officer
November 2010

Baffinland
Iron Mines Corporation

Figure 1 Sustainable Development Commitment

UPDATE OF THIS MANAGEMENT PLAN

The Surface Water and Aquatic Ecosystems Management Plan for the overall Project is presented in the DEIS as Appendix 10D-2, and should be consulted. The overall plan is a "living document" and its content reflects the current level of activity on the Project site and provides an overview of proposed water management activities described in EIS Volume 3: Project Description. Throughout the Project, the plan will be regularly updated based on management reviews, incident investigations, regulatory changes, or other Project-related changes.

This plan reflects only those activities and components that make up the Pre-development aspects of the project, as described in Sections 3.0 to 6.0 in this document.

SECTION 2.0 - TARGETED VECS

Targeted VECs for the Surface Water and Aquatic Ecosystems Management Plan are:

water quantity
surface water quality
aquatic ecosystems
fish
fish habitat

Water is considered a valued ecosystem component and the protection of regional water quality and quantity is important to residents of Baffin Island. There are no reasonably foreseeable long-term downstream users (i.e., local residents), but there is potential for incidental water use by hunters and others using the land. There is also potential to affect fish and fish habitat from either water withdrawals that are too large, or by degrading water quality.

Project activities will interact with surface water through several means, examples of which are:

- water intakes for potable water in camps and shorter-term construction needs
- Temporary Access road stream crossings and road maintenance
- sewage treatment and disposal at camps
- potential surface water runoff from Project developed areas at Milne Port, Mine Site and Steensby Port
- general site runoff from land disturbances

For a matrix of Project interaction with these VECs, see DEIS Volume 7: Freshwater Aquatic Environment Impact Assessment. For watersheds in the Project study area, see DEIS Volume 7, Figure 7-1.1.

SECTION 3.0 - MITIGATION MEASURES

3.1 PRE-DEVELOPMENT PROJECT ACTIVITIES

The components associated with pre-development work are outlined in Sections 2.0 through 6.0 of this report. Although there is a potential for these activities to become permanent in some instances following permit approval for the Project. However, for the purposes of this presentation, only pre-development timeframes and issues are considered.

GENERAL MITIGATION MEASURES FOR SEDIMENT CONTROL AND EROSION

The sediment- and erosion-control measures described in Section 3.2 will be applied throughout the duration of the Project pre-development phase. Stream crossings for the access road at Steensby Inlet, and lakes/ponds adjacent to construction activities will receive focused attention in this respect. Depending on site-specific conditions, a variety of civil design structures could be used to prevent erosion.

Pre-development components such as the Steensby and Milne Inlet laydown areas will result in soil disturbance and water diversions that require sediment- and erosion-control planning to prevent discharge of soil contact water. Best management practices, including preventive measures, will be used to avoid effects.

Climate, topography, and limited vegetation combine to produce short-term, high-intensity discharge during May, June, and July. Frozen conditions between September and May can result in sediment deposition that can be mobilized during freshets. Because of the extremely slow vegetation growth rate, sediment- and erosion-control techniques that involve vegetative covers (e.g., hydroseeding, bioremediation, erosion-control blanket) have been dismissed as potential mitigation options. Also, straw bales are not permitted in the Arctic because of the potential for introducing foreign species.

The Environmental Superintendent will be responsible for ensuring sedimentation- and erosion-protection measures are applied as appropriate, and that monitoring is done to ensure control measures are working effectively. Reporting will be completed by means of the Water Licence, NIRB, QIA, and other permit requirements.

Table 3.1 Erosion and Sediment-Control Measures

Silt Fences

Description	Silt fences are a geotextile or fabric barrier that impedes the flow of surface water which potentially may cause suspended sediment to be deposited. Silt fences are typically supported using wooden stakes (usually attached to the fabric by the manufacturer) and may be placed using a variety of methods such as digging a trench and backfilling material to ensure stability. Attempts are made to install silt fence in lines of equal elevation (along contour lines) to maximize effectiveness and to prevent channeling or focusing of the runoff. Standards for installation including trench excavation, insertion of fabric, and backfilling and compacting can be found on the Ontario Provincial Standard Drawing (OPSD) 219.110 - Light Duty Silt Fence Barrier and 219.130 - Heavy Duty Silt Fence Barrier.
Typical Location of Use	Silt fences are used in areas where surface water could potentially come into contact with disturbed sites causing elevated suspended solids and turbidity. Typical installation locations are: • downstream of drill rigs • along roads where surface runoff is expected • surrounding material or drill cutting stockpiles • downstream of water-crossing installations • along the edge of a waterbody • downstream of or around disturbed areas and sediment-laden snow piles • to divert water around construction or disturbed areas • routine control of sediment originating from site facility footprint For ease of installation and best performance, silt fences should be used only in low-flow areas or as a barrier between flowing water and sediment. Fence stakes should be shortened as required to increase utility in difficult ground conditions. In some locations, self-supporting silt fences can be used.
Performance Issues	- Difficult/impossible to install properly in frozen or rocky ground. - Soil conditions prevent stakes from being driven into the ground. - Silt fences without stakes driven into the ground and stabilized in position using available rocks (cobbles and boulders) as support. - Not strong enough or permeable enough to be placed in flowing water. - Regular maintenance and clearing of sediment is required, especially before removal.
Benefits	- Relatively quick to install and easily transportable (e.g., using pickups or helicopter). - Can be used in a variety of situations. - Effective in low-flow areas where water can pool and sediment can settle out. - Fences can be used in series. - Effective as a barrier between and parallel to flow and sediment, along channels or diversion channels.
Substitutes	Freestanding silt fences are considered for use in areas where a typical silt fence is impractical, (e.g., on rock or impenetrable surfaces). Diversion/collection channels or berms also used in certain locations.
Silt Barriers	
Description	Non-Woven geotextile placed over a structure which creates a barrier by supporting the geotextile. The upstream edge of the geotextile in anchored to the ground surface. Water is directed into the structure and allowed to filter through.
Installation Locations	- Downstream of culvert during installation. - Downstream or around disturbed areas and downstream side of sediment-laden snow piles. - Silt barriers are easier to install than silt fences; however, non-woven geotextile plugs quickly with silt (sometimes within a day) causing the water to run around or over the structure. They are best suited for short-term work.
Performance Issues	- Not permeable enough to be used in medium or high flows. - Regular maintenance and clearing of sediment is required - especially before removal. - Structures are not very wide so not suited to overland runoff (runoff diverts around structure) – more useful for concentrated flows.
Benefits	- Relatively quick to install and easily transportable. - Effective in low-flow areas, where sediment can settle out. - Can be used in series.

Turbidity (Silt) Curtain	
Description	Woven geotextile, typically 2m wide and 30m long supported by foam floats above and anchored by chain below. The turbidity curtain is placed in low or no flow conditions to create a barrier between a work zone and the downstream waterbody, or at the outlet of a stream to a lake/pond. The curtain prevents the transport and dispersion of silt from the stream to the lake/pond. The turbidity curtain can also be supported by stakes, in no flow conditions.
Installation Locations	- To surround in-water work in no-flow or very low-flow conditions or at the outflow of a stream. -Designed to hang in water. Although they would be of limited use for Tote Road upgrades due to flows present in waterbodies, they would be very effective for work on shoreline of a lake.
Performance Issues	- Not permeable enough to be placed in streams with greater than low flow. Very difficult to anchor the base against flow. - Difficult to install due to weight and susceptibility to wind.
Benefits	- Work very well in shoreline construction work. - Were used effectively to surround the installation of the bin walls for box culvert crossings that were installed during open-water conditions.
Filter Dam	
Description	Permeable rock or gravel berm placed across a channel. Used to slow the flow of water and create sedimentation pools.
Installation Locations	- In channels or ditches with flows of turbid water. - Constructed in channels to slow the water velocity and cause sediment deposition.
Performance Issues	- Suitable construction material not always available. - Dependent on channel characteristics. - Need enough area to create a pool behind the berm to allow the sediment to settle. - Regular maintenance is required to remove the accumulated sediment.
Benefits	- Constructed from local materials - if available. - Effective in cleaning higher flows with sediment-laden water.
Diversion/Collection Channel or Berm	
Description	Diversion/collection channels or berms are used to locally direct surface water runoff. When required, the channels or berms are constructed using suitable materials to divert the surface water without causing erosion or suspension of additional sediment. Excavation of channels may be an option; however, construction of berms using soil or man-made structures such as sand bags/tubes are also evaluated.
Installation Locations	Channels or berms are used in locations where there is a requirement to divert or collect surface water. Diversion structures are installed to prevent runoff from entering a site where the surface soil has been disturbed and would cause suspension of sediment. Additionally collection channels or berms may be constructed to collect runoff emerging from an area of soil disturbance. One possible use of a diversion/collection channel or berm is to ensure runoff is directed to a constructed mitigation measure such as an in-ground sump.
Substitute	Silt fences can be used as an alternative to constructing a channel or berm.
Containment Berm	
Description	A containment berm can be constructed to establish a sump, basin or pond to contain or collect water. The sump could be used to contain discharge water to allow settling of sediment before discharge or to temporarily contain the water for re-circulation (e.g., drilling activities). The berm is constructed using native soils or acceptable man-made products. Care is taken when constructing berms to ensure the base is on a solid foundation. Soil placed to construct the berms is nominally compacted to provide strength for the structure. Berm heights are minimized (e.g., typically <1 m).

Installation Locations	Containment berms are constructed across small valleys, around natural depressions, to augment the capacity of the berms, and where other control measures are ineffective,
Substitute	In-ground sumps or portable containment sumps or tanks can sometimes be used in place of a containment berm.
In-ground Sump	
Description	An in-ground sump can be constructed to establish a sump, basin or pond to contain or collect water, similar to the containment berm. An in-ground sump is constructed by excavating a depression into soil to provide water containment. Excavated material from the sump can be used to construct a containment berm surrounding the sump to augment the capacity of the sump.
Installation Locations	In-ground sumps are used in some areas where excavation of soil is possible and other control measures are impractical or ineffective.
Substitute	Containment berms, or portable containment sumps or tanks can sometimes be used in place of an in-ground sump.
Portable Containment Sump	
Description	Portable containment sumps are used to contain water from a source such as a drill rig. The portable sump requires excavation or construction to provide a level base for the sump. A series of portable containment sumps can be connected together to provide additional containment or settling capacity if required. Collected sediment or drill cuttings from the portable containment sumps are removed from the sumps as necessary and disposed of in pit locations approved by Baffinland management and located at distances of at least 30 m from waterbodies.
Installation Locations	Portable containment sumps are used in areas where containment berms or in-ground sumps are impractical such as steep topography or in areas where overburden is not readily available.
Substitute	Containment berms or in-ground sumps can sometimes be used in place of a portable containment sump.
Performance Issues	Portable containment vessels must be transported to locations where required, their effectiveness is limited by ease of mobilization to site. Limited capacity of containment vessels (relative to where flows are high)
Flocculent	
Description	Co-polymer blended flocculent blocks are an environmentally friendly means of controlling siltation in ditches and streams, commonly used on construction sites throughout North America. Placing co-polymer blocks in a runoff stream causes sediment particles to settle by flocculation. Once introduced into the runoff stream, polymers transform elevated levels of fine suspended particles, including colloidal clays, phosphorus, and nutrients into masses easily removed from moving water. Therefore, construction site storm water can be clarified before discharge into receiving waters. Adequate mixing and settling times for the flow rate, temperature, and sediment load must be achieved for optimum polymer performance. Flocculent can also be added at the inlet of sedimentation ponds.
Installation Locations	This product will be used in non-fish habitat runoff streams, particularly in areas of rugged relief where other methods of sediment/siltation control are not effective (e.g., access road to Deposit No. 1). Flocculent blocks could potentially substitute for other methods of sediment/siltation control where those methods are ineffective due to factors such as stream velocity, equipment access, rugged topography, and frozen ground conditions. The use of flocculent blocks, if effective, could reduce the degree of disturbance caused by other more intrusive sediment control measures.

GENERAL MITIGATION MEASURES FOR EROSION CONTROL

A description of general mitigation measures for erosion control are shown below.

Table 3.2 Mitigation Measures for Erosion Control

Armouring	
Description	Armouring is used as a barrier between water flow and materials susceptible to erosion. Quarry rock and/or naturally occurring granular borrow material are used to protect underlying fined grained materials from scour and erosion.
Installation Locations	Armouring may be used in areas of cuts/excavations and for installation of culverts, typically on exposed erodeable slopes.
Substitute	Water diversion, berms, sumps and/or silt fencing may be used where armouring is impracticable or due to low risks of impacts to downstream receptors.
Riprap	
Description	A rock lining that can be installed on the ground surface or structures to prevent erosion of underlying material. Can be placed over non-woven geotextile to provide additional protection.
Installation Locations	- On sides of road embankment. - On upstream and downstream ends of culverts. - At any location where flows exist than might cause erosion of the existing surface materials. - In areas where there is concentrated flow.
Performance Issues	Shortage of available material (that can be used for riprap) at many locations at the Project site
Benefits	- Constructed from local materials - if available. - Effective in protecting embankments and preventing erosion. May be used in combination with non-woven geotextile.
Geotextile (Woven and Non-Woven)	
Description	Low erodible material placed as temporary erosion protection.
Installation Locations	As a liner along water channels / ditches. Use on stream embankments often in combination with riprap.
Performance Issues	Needs to be well anchored or will be ineffective. Difficult to remove from streambeds, etc, when no longer required.
Benefits	Very effective as an erosion barrier on a variety of embankments. Ease of installation.

STREAM CROSSINGS

Pre-development activities include the construction of a temporary access road at Steensby Inlet. This will include three stream crossings. General mitigation measures for stream crossings are described below in Table 3.3.

Table 3.3 Mitigation Measures for Stream Crossings

Armouring	
Description	Armouring is used as a barrier between water flow and materials susceptible to erosion. Quarry rock and/or naturally occurring granular borrow material are used to protect underlying fined grained materials from scour and erosion.
Installation Locations	Armouring may be used in areas of cuts/excavations and for installation of culverts, typically on exposed erodeable slopes.
Substitute	Water diversion, berms, sumps and/or silt fencing may be used where armouring is impracticable or due to low risks of impacts to downstream receptors.
Riprap	
Description	A rock lining that can be installed on the ground surface or structures to prevent erosion of underlying material. Can be placed over non-woven geotextile to provide additional protection.
Installation Locations	- On sides of road embankment. - On upstream and downstream ends of culverts. - At any location where flows exist than might cause erosion of the existing surface materials. - In areas where there is concentrated flow.
Performance Issues	Shortage of available material (that can be used for riprap) at many locations at the Project site
Benefits	- Constructed from local materials - if available. - Effective in protecting embankments and preventing erosion. May be used in combination with non-woven geotextile.
Geotextile (Woven and Non-Woven)	
Description	Low erodible material placed as temporary erosion protection.
Installation Locations	As a liner along water channels / ditches. Use on stream embankments often in combination with riprap.
Performance Issues	Needs to be well anchored or will be ineffective. Difficult to remove from streambeds, etc, when no longer required.
Benefits	Very effective as an erosion barrier on a variety of embankments. Ease of installation.

GENERAL MITIGATION MEASURES FOR FISH AND FISH HABITAT

Pre-development work is unlikely to affect fish or fish habitat directly, although indirect effects are possible. General mitigation measures for fish and fish habitat are included below in Table 3.4.

Table 3.4 Mitigation Measures for Fish and Fish Habitat

Freshet Mitigation

Extreme flows during the freshet can result in significant erosion and damage to creek crossing structures and fish habitat. Several operating procedures have been developed to mitigate the negative impacts caused by freshet events. These measures include: • establishing/marking locations of susceptible crossings so they can be identified in the spring, before snow/ice melt • clearing snow from roads where culverts/crossings are located • excavating downstream and upstream of crossing before onset of freshet • monitoring culverts for clearance of snow and ice • where snow and ice blockage occurs, ensuring that blockage is removed to re-establish adequate flow • regular monitoring of crossing conditions to ensure acceptable conditions for fish migration • performing repairs/modification to crossing structures as required, based on results of monitoring and risk assessment
Fish Habitat Protection
• For locations where there is a problem with culvert outlet scour and erosion, construction of rocky ramps downstream of the crossings will be considered. Occasionally, reinstalling culverts is required, or installation of additional overflow culverts will be required. • During construction of docks, for all works requiring the use of explosives (blasting) in or near waterbodies, the *Guidelines for Use of Explosives In or Near Canadian Fisheries Water*, 1998" will be followed. For any locations where the guidelines cannot be conformed with, DFO will be consulted before blasting starts. • For dock construction (dredging, piling, backfilling), a silt curtain will be used to prevent dispersion of sediment in marine waters. • Bubble curtains will be used to attenuate noise in marine water.

EVALUATION OF SEDIMENT- AND EROSION-CONTROL MEASURES

A summary of sediment- and erosion-control measures applicable to the Project are shown below in Table 3.5, which includes a ranking of which measures are best-suited for use in the arctic environment. Personnel onsite will continuously evaluate effectiveness of erosion- and sediment-control techniques, and work to develop new techniques suited to the Project environment.

Table 3.5 Sediment- and Erosion-Control Measures

Name of Measure	**Basis for Development**	**Assessment of Arctic Effectiveness**	
		Ranking	**Description**
Limit Clearing	Limit extent of soil disturbance	very high	Soil disturbance will be limited to the extent possible to protect vegetation and minimize erosion. This is the most important aspect of erosion and sediment control for the project.
Diversion Channel or Berm	Manage surface flow	High	Channels will be lined to avoid erosion and suspension of sediment. Berms are preferable, but preventing underflow is difficult.
Tarp	Reduce erosion on temporary stockpiles	High	Effective, temporary measure.
Benching	Reduce erosion on steep slopes	Medium	

Silt Fences (Light or Heavy Duty)	Reduce or remove sediment from surface runoff and sheet or rill erosion	Medium	Have a moderately good success rate, however very difficult to properly install in frozen ground, bedrock, or coarse substrate.
Freestanding Silt Fence	Reduce or remove sediment from surface runoff and sheet or rill erosion	medium to high	Have a moderately good success rate, however difficulties are: elimination of underflow, difficult to construct at sufficient width to prevent water from flowing around the structure. Non-woven geotextile used as the filter material silts up quickly, thereby stopping/slowing the flow and causing backup of water and flooding. Works more effectively than silt fence on frozen or impenetrable ground.
Check Dam (Silt Fence, Sand Bag or Rock)	Reduce the gradient of a ditch and allow sediment to settle out	Medium	Moderate success has been achieved on the road to Deposit No. 1. Generally of limited effectiveness because of quantity of water impounded.
Chute		Medium	One chute constructed using woven geotextile was installed with very good results. The material was anchored using rocks.

Name of Measure	**Basis for Development**	**Assessment of Arctic Effectiveness**	
Cofferdam		Low	Cofferdams have been used upstream of culvert installations, but are typically used in conjunction with a diversion channel.
Outlet Protection	Prevent scour and erosion at water conveyance outlets		
Retention Basin or Settling Pond	Retain storm water runoff and remove sediment by settling	Low	Generally there is not enough area to construct a pond onsite. Further, an excavated pond might increase the amount of sediment in the water.
Swales	See discussion above		Need to be lined.
Containment Berm	See discussion above	High	
Excavated Sediment Trap		Medium	
Dewatering Trap		Medium	
Turbidity (Silt) Curtain	See discussion above	Medium	Turbidity (silt) curtains have not been used much at site. It was installed in one culvert installation in a creek as a diversion around the culvert. However, the flow was to strong and anchoring the base to the ground was not successful. A proper installation in slow-flowing water has not yet been completed.

Erosion Control Blanket	Reduce erosion and allow for vegetation regrowth	Low	Vegetation regrowth rate extremely slow in the Arctic.

SECTION 4.0 - HYDROLOGY, WATER SUPPLY, AND SURFACE WATER RUNOFF

Surface water is subject to extreme arctic conditions at the Mary River Project location, so much so that a description of the regional conditions is necessary to more accurately understand issues. The region is characterized by long, cold winters and short, cool summers, with continuous daylight from approximately May to August, and continuous darkness from November through February. The ground is snow-covered from September to June and ice persists in the marine offshore throughout most of the year. The following establishes the environmental setting for water.

4.1 REGIONAL LANDSCAPE

Surface landforms and deposits are associated with recent, widespread glaciation on Baffin Island. Surface geology consists of locally abundant Holocene glaciolacustrine sediment, fluvial sediment (alluvial deposits), marine and glaciomarine deltaic sediment, and end moraine till, with occasional outcrops of pre-Quaternary bedrock. The North Baffin region and Mary River area lies within the Committee Belt, a granite-greenstone terrain with intermixed rift basin sediment and volcanic rocks, and bounded by Precambrian mountains to the east and Palaeozoic lowland plateaus to the west. The Project lies in the zone of continuous permafrost, with an active layer thickness of up to 2 m and a permafrost depth that can be as much as 700 m deep, based on extrapolation from temperature gradients measured in a 400-m-deep thermistor-instrumented drillhole located onsite. The active layer throughout the Project area ranges from approximately 1 to 2 m thickness, but can be greater in areas where there is loose, sandy soil at the edges of lakes or ponds or at bedrock topographic highs.

The presence of permafrost greatly increases ground stability at depth but at surface it can affect the rates of soil erosion through formation of ice wedges and patterned ground, pingos, and palsas, massive ground ice, thermokarst, and mass wasting (i.e., solifluction).

4.2 CLIMATE

Baffin Island is one of the northernmost and coldest parts of Canada and the Project is situated toward the northern end of the Island. Regional data near the Project site indicate a mean annual temperature of approximately -15 ^{o}C. Mean daily temperatures are below -20 ^{o}C from November through April, and are only above freezing (0 ^{o}C) June through August, with July mean daily maximum temperatures reaching only 6 to 10 ^{o}C. The long duration of subzero temperatures in this region results in a very short runoff period that typically occurs from June through September, but can extend to late-October in systems where large lakes are present. The frigid temperatures also result in very low precipitation values for northern Baffin Island, from the combined effect of the low moisture-carrying capacity of cold air and

scarcity of liquid water for much of the year. According to Natural Resources Canada, mean annual total precipitation ranges from 200 to 400 mm in the Project area, classifying it as semi-arid. Mean annual precipitation at the closest regional climate stations is closer to the 200 mm end of this range. Pond Inlet experiences 24-hour darkness (with less than two hours of twilight) from November 12 to January 29, and continuous daylight from May 5 to August 7.

4.3 REGIONAL HYDROLOGY

The extremely cold temperatures of the region, combined with permafrost ground conditions, result in a short period of runoff that typically occurs from June to September and possibly October in watersheds with significant lake area. All rivers and creeks, with perhaps the exception of the very largest systems, freeze solid to the bottom during the winter months. For example, the Sylvia Grinnell River near Iqaluit (watershed area of ~4000 km^2), which has been monitored by Water Survey of Canada (WSC) since 1971, freezes solid by April every year. Streams and rivers usually begin to flow in late-May with melting of snow and ice, then peak in June or July with rising temperatures and rapid corresponding snowmelt, before dropping steadily through to September or October when flows essentially cease.

The peak runoff period is quite short and the volume of the annual hydrograph is low, relative to the rest of Canada, because of the region's very low average annual precipitation of approximately 200 mm. However, the proportion of annual precipitation that is realized as runoff is very high, because of the low temperatures (low evaporation), permafrost ground conditions (low infiltration), and minimal vegetative cover (low transpiration). Correspondingly, surface water is abundant, and the region is dotted with thousands of small lakes and streams. Groundwater infiltration and storage in the region is limited because of permafrost. Groundwater flow is restricted to the upper 1- to 2-m summer active layer.

Peak instantaneous flows are quite large because of frozen ground conditions and lack of tall vegetation, which produces very rapid basin runoff response. In larger watersheds, peak instantaneous flows are typically produced by snowmelt during the freshet, but in smaller watersheds (less than a few hundred square kilometres) rainfall, or rain on snow might produce the largest events and can occur any time during the non-freeze period. Floodwater levels in the smaller watersheds typically rise and fall very quickly with runoff response.

4.3.1 Surface Water Runoff Estimation – Mine Site

Complete hydrological information for the various watersheds and waterbodies that are effected at the mine site is available in the DEIS Appendix 10-D2. For the locations and limits of pre-construction catchment areas, see Figures 4.2, 4.3, and Figure 3-2.3, Appendix 10H. Runoff values indicate that from October to May there should be no runoff, and approximately half the flows occur in July.

4.3.2 Surface Water Runoff Estimation – Milne Inlet

Streamflow estimates presented in this section are based on site data collected during the 2006 to 2008 and 2010 field seasons and regional data collected by WSC. For locations of the stream gauging stations, see DEIS Volume 7, Figure 7-1.1. A mean annual unit runoff for the Milne Inlet area of 7.5 L/s/km^2 was selected based on the estimated long-term mean annual runoff at streamflow gauging Station H1 (Knight Piésold, 2009). The monthly flow distribution was also based on the long-term average hydrograph shape estimated at streamflow gauging Station H1. Given this, surface water runoff rates were estimated for six watersheds in the Milne Inlet area (see Table 4.2). For the watersheds and limits of the catchment areas see Figure 3-2.3, Appendix 10H. Runoff values indicate that runoff is negligible from October to May and the majority of runoff occurs in June and July.

For a water management discussion by Project area, see Section 5, Section 6, and Section 7. These sections discuss surface water flow direction and estimated quantities (where possible) for each catchment area affected by the Project.

4.3.3 Surface Water Runoff Estimation – Steensby Inlet

Streamflow estimates presented in this section are based on site data collected during the 2006 to 2008 and 2010 field seasons and regional data collected by WSC. A mean annual unit runoff for the Steensby Inlet area of 7.5 L/s/km^2 was estimated based on hydrologic conditions (e.g., elevation, lake area, latitude, aspect) at Steensby Inlet compared with hydrologic conditions at the monitored sites. The monthly flow distribution was estimated from flow records measured at streamflow gauging Station BR137 during 2008 and 2010. Given this, surface water runoff rates were estimated for three watersheds in the Steensby Inlet area (see Table 4.3) and the watersheds are shown in Figure 3-2.9, Appendix 10H. Runoff values indicate that runoff is negligible from November to May and runoff volumes are relatively high from June to September because of the high proportion of lakes in the area, which attenuate runoff patterns.

4.4 WATER SUPPLY

4.4.1 Current Water Supply

Milne Port The personnel camp and associated support facilities service approximately 60 people during peak periods of use. During 2009 and 2010, only two persons were present for most of the year, with a modest increase in the summer during field activities. Domestic water supply is from Phillips Creek. During higher levels of camp occupancy, domestic water supply is taken from Phillips Creek (Monitoring Location MRY-2) during summer months and from an unnamed lake along the Milne Inlet Tote Road at Km 32 during the winter. These intake locations are permitted under

Baffinland's existing water licence.

Mine Site The personnel camp and associated support facilities service up to 200 people during peak periods. The domestic water supply is from adjacent Camp Lake. This intake is permitted under Baffinland's current water licence.

SECTION 5.0 - WATER MANAGEMENT – PRE-CONSTRUCTION PHASE

5.1 MILNE PORT

The site includes an existing personnel camp and associated support facilities to service approximately 60 people during peak use. During 2009 and 2010, only two personnel were present for most of the year, with a slight increase during summer field activities. During higher levels of camp occupancy (summer), domestic water supply is from Phillips Creek (Monitoring Location MRY-2) and is from an unnamed lake along Milne Inlet Tote Road at Km 32 during winter.

Sewage treatment is in pre-engineered facilities discharging to either a storage pond or to Milne Port via a local drainage ditch. During 2009 and 2010, the treatment system was not operational because of low camp occupancy. Other facilities at Milne Port include:

gravel airstrip
seasonal sea-lift of materials and supplies, as required
fuel storage areas for bulk fuel and barrel fuel, and waste storage areas, each consisting of a lined containment area

5.1.1 Surface Water Direction and Quantity

For the catchment areas for Milne Port, see Appendix 10H, Figure 3-2.1. Estimated surface water runoff quantities are shown in Table 4.2. All drainage flows toward Phillips Creek and Milne Inlet.

5.1.2 Mitigation Measures

The Milne Port camp is not expected to have significant areas of disturbed soils and as such should not have sediment and erosion issues. It can be reasonably expected that there will be some surface soil disturbance in association with seasonal sea-lift activity. The site is regularly monitored. If mitigation measures are required to control sediment and erosion they will be selected and installed as discussed in Section 3.

5.2 MINE SITE

For the current mine site plan and associated catchment basins, see Figure 4.2 and Figure 4.3. The mine

site consists of accommodation facilities and associated support facilities to service approximately 200 people during peak periods. The domestic water supply is pumped from adjacent Camp Lake. Sewage is treated with a pre-engineered facility and treated effluent discharges to either storage ponds or Sheardown Lake. Other facilities at the mine site include:

gravel airstrip
helicopter landing pad and hanger
bulk (fuel bladders and dispensing stations) and barrel fuel storage and handling areas

5.2.1 Surface Water Direction and Quantity

For locations of the catchment areas for the mine site, see Figure 4.2 and 4.3. Surface water at the site is directed toward Camp, Sheardown, and Mary Lakes. For estimated surface water runoff quantities for each catchment area, see Table 4.1.

5.5.2 Mitigation Measures

The mine site is not expected to have significant areas of disturbed soils and as such should not have sediment and erosion issues. The site is regularly monitored. If mitigation measures are required to control sediment and erosion, they will be selected and installed as discussed in Section 3.

5.3 STEENSBY PORT

For the configuration of Steensby Port site, see Appendix 10H, Figure 3-2.9. Facilities and activities at Steensby Port are as follows:

- seasonal drill camp with water flown or pumped (using collapsible water line) from unnamed lake approximately 3 km east of camp
- toilet waste incinerated onsite
- grey water sump used for kitchen and wash tent
- airstrip - no fixed runway at Steensby Port and will be part of pre-development activities; seasonal on-ice runway near the site currently used during winter
- seasonal sea-lift supply of consumables, as required
- fuel storage area consists of lined containment berm(s) with capacity for 7500 drums; additional capacity being installed as part of pre-development activities

5.3.1 Surface Water Direction and Quantity

The catchment areas for Steensby Port are shown in DEIS Appendix 10H, Figure 3-2.9. Surface water at the site reports ultimately to Steensby Port. For estimated surface water runoff quantities, see Table 4.3.

5.3.2 Mitigation Measures

Steensby Port is not expected to have significant areas of disturbed soils and as such should not have sediment and erosion issues. It can be reasonably expected that there will be some surface soil disturbance in association with seasonal sea-lift activity. The site is regularly monitored when in use. If mitigation measures are required to control sediment and erosion they are selected and installed as previously discussed in Section 3.0, General Mitigation Measures.

5.4. Borrow Pits and Quarries

For locations of potential borrow sites and rock quarries for the Tote Road, see Section 2.2, Section 4.2 and Section 5.3 of this report. As stated in Section 7.7 (Borrow Pit and Quarry Management Plan), the following guidelines will be applied for sourcing borrow material and quarries:

- Surficial borrow materials will be obtained by stripping and excavation of the active layer.
- Processing of borrow materials will be limited to screening using a grizzly and segregation of material into temporary stockpiles.
- Excavation will not occur within 30 m of a watercourse, and seasonal drainageways will be re-established during pit development.
- Rock quarries may be developed for various construction purposes.
- Rock will be obtained through drilling and blasting, and crushing, if necessary.
- Quarrying will not occur within 30 m of a watercourse, and drainage will be re-established during quarry development.
- Results of ARD and ML tests on rock samples indicate that, because of the physical environment and rock geochemistry, ARD and ML are very unlikely to occur from quarry materials.

5.5 BULK FUEL STORAGE AREAS

During pre-development activities, the handling and storage of fuel is one of the highest risks of potential impact on the receiving environment. For detailed requirements for managing the bulk fuel depots, see the Sections 7.1 through 7.3 of this report, and detailed plans in Appendix 10-H of the DEIS.

5.5.1 Mitigation Measures

Temporary and permanent storage facilities will be erected in a bermed and impermeable lined containment area in compliance with applicable regulations and best management practices. These containment areas will have a capacity of 110% of the largest tank. The design of tank farms is consistent with the document *Design Rationale for Fuel Storage and Distribution Facilities* published by the Department of Public Works of the Northwest Territories. The lining in the bermed area is an impervious HDPE liner membrane.

Refuelling stations are equipped with a lined and bermed area to contain minor spills or leaks during refuelling. The liner (e.g., 40-mm hypolon liner or equivalent) is protected by sand bedding. Vehicles and mobile equipment drive onto this bedding for refuelling. All fuel transfer is done by pumps.

For each method of fuel storage and transfer, specific procedures related to fuel storage and transfer will be developed, and proper containment and emergency response equipment will be provided to meet or exceed regulatory requirements (see EPP procedures).

5.6 EXPLOSIVES STORAGE

The Explosives Management Plan (SD-ERP-004) outlines the requirements for managing explosives for the Project.

5.6.1 Mitigation Measures

All permanent and temporary explosive storage facilities will be designed and constructed in compliance with regulations (see Explosive Management Plan SD-ERP-004). As per regulatory requirements, the storage sites will be fenced, and erected in secondary containment structures (berms). The EPP will outline detailed handling procedures that will be established for handling, storage, and use of explosives.

5.7 LAYDOWN

Description

For the construction phase, several laydown areas will be constructed at Milne Port, mine site, and Steensby Port, to store equipment and material required for construction of facilities. The EPP provides procedures and guidance for preparation of laydown areas.

Mitigation Measures

Contouring, berms, and silt fences will be applied as necessary for sediment and erosion control. Sediment- and erosion-control measures will be required and will be installed as discussed in Section 3. The site will be regularly monitored.

SECTION 6.0 - ROLES AND RESPONSIBILITIES

6.1 PRE-DEVELOPMENT PHASE

The Environmental Department is responsible for monitoring compliance with applicable regulations and permit requirements. The VP Operation is responsible for implementation of mitigation measures.

Compliance is achieved through ongoing monitoring, development and implementation of operational standards and procedures, and employee training. For roles and responsibilities for implementation of this management plan and the companion EPP, see Table 6.1 and 6.2.

Table 6.1 Roles and Responsibilities

Position	Responsibility
Operations Manager – Mary River	- Accountable for environmental performance onsite - Establishes goal and targets for environmental performance - Responsible for implementation of mitigation measures
Environmental Superintendent	- Responsible for the compliance monitoring - Provides direction on environmental issues to the Site Management Team - Staffing of Environmental Department - Supervise/conduct site inspection and audits - Initiate and manage environmental studies as required - Manage external environmental consultants/specialists - Environmental reporting as required by permits and authorizations - Liaise with regulatory agencies on all environmentally related issues
Environmental Consultants	- Provide specialist advice and input on environmental matters, - Conduct environmental studies and monitoring programs - Conducts audits of operations, as requested - Prepare environmental reports
Contractors / Subcontractors	All contractors / subcontractors are considered equivalent to Baffinland staff in all aspects of environmental management and control and their responsibilities in this respect mirror those of Baffinland personnel. Contractor personnel will be included in the onsite induction process. The responsibilities of the Contractors / subcontractors include the following: - Comply with the requirements of the EPP and related EMMP - The responsibilities of the Contractors / subcontractors Supervisors include the following: - Conduct regular site check / inspection to ensure that regular maintenance is undertaken in order to minimize environmental impacts - Provide personnel with appropriate environmental toolbox / tailgate meetings and training

Table 6.2 Baffinland Management Members and Contact Information

Position	Individual	Telephone Contact	E-mail Contact
Onsite Co-Coordinator	**Cliff Pilgrim, or, Jeff Bush**	**Emergency After Hours Tel: 403-450-8844** Mary River Site Tel: 403-450-7312 Mary River Site Tel: 403-450-7316 Milne Port Site Tel: 647-723-2077 (24 hours)	cliff.pilgrim@baffinland.com jeff.bush@baffinland.com
	Dalton Head, or, David McCann	**Emergency After Hours Tel: 403-450-8844** Mary River Site Tel: 403-450-8838 Mary River Site Tel: 403-450-8843	dalton.head@baffinland.com david.mccann@baffinland.com

EHS Superintendant	**Jim Millard, or, Brian Larson**	Mary River Site Tel: 403-450-8843 Offsite Cell: 902-403-1337 Mary River Site Tel : 403-450-1589	jim.millard@baffinland.com brian.larson@baffinland.com
Operations Manager	**Dave McCann**	Mary River Site Tel: 403-450-8843 Cell: 416-616-8860	david.mccann@baffinland.com
Corporate Contact – VP Sustainable Develop	**Bill Napier**	Office Tel: 416-814-3171 Cell: 844-729-5660	bill.napier@baffinland.com
NOTE: As of June 2010			

6.2 MONITORING AND INSPECTION

For monitoring and inspection requirements, see Section 10. Responsibilities have been assigned to various personnel on the Project team. Where required, third-party resources will be retained to supplement in-house resources and capabilities.

6.3 TRAINING AND AWARENESS

As part of the site orientation, staff and subcontractors working onsite will receive environmental training to achieve a basic level of environmental awareness understanding of their obligations regarding compliance with regulatory requirements, commitments, and best practices.

Operations superintendents and contractor supervisors will be provided with this management plan, and will receive additional orientation with respect to the requirements outlined in this plan. In addition, all supervisory staff and subcontractors will be provided with operational standards (the EPP) as written guidance for their work.

Targeted environmental awareness training will be provided to both individuals and groups of workers assuming a specific authority or responsibility for environmental management or those undertaking an activity with an elevated high risk of environmental impact. These will be delivered in the form of toolbox/tailgate meetings or other means as appropriate.

SECTION 7.0 - ADAPTIVE STRATEGIES

Baffinland is committed to continual improvement in its work activities in the aim of reducing risks to the environment and improving operational effectiveness. The strategy employed at Baffinland is regular monitoring supported by operational change and adoption of other mitigating measures as warranted.

As per the requirements of Baffinland`s EHS Management Framework (SD-STD-001), the company will conduct and document management reviews of its "*Surface Water, Aquatic Ecosystem, Fish and Fish Habitat Management Plan"* on a regular basis. Such reviews will ensure the integration of monitoring results for the waste management plan are. These reviews will provide a formal mechanism to assess the effectiveness of the management in achieving the company's objectives and maintaining ongoing compliance with Project permits and authorizations.