

APPENDIX P SHIPPING MANAGEMENT PLAN



BACK RIVER PROJECT

SHIPPING MANAGEMENT PLAN

DATE
13 March, 2025

REFERENCE



DOCUMENT DETAILS

The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from the Word file, but should be deleted from the PDF.

PROJECT NAME	Back River Project
DOCUMENT TITLE	Shipping Management Plan
PROJECT NUMBER	
Date	13 March, 2025
Version	3
Author	

DOCUMENT HISTORY

Version	Date	Author	Comments
1	November 2015	Sabina Gold and Silver Corp. (Sabina)	Published for FEIS submission
2	August 2018	Sabina Gold and Silver Corp. (Sabina)	Submitted to NIRB prior to commencement of shipping
3	March 2025	B2Gold Back River Corp. (B2Gold Nunavut)	Update branding to B2Gold Nunavut and updated to reflect the 2021 Ballast Water Regulations (SOR/2021-120)

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AWPPA	Arctic Waters Pollution Prevention Act
B2Gold Nunavut	B2Gold Back River Corp.
CSA	Canadian Shipping Act
DWT	Dead Weight Tonnage
ERD	Explosives Regulatory Division (of NRCan)
MARPOL	International Convention for the Prevention of Pollution from Ships
MLA	Marine Laydown Area
NEEC	National Environmental Emergencies Centre (Environnement Canada)
NRCan	Natural Resources Canada
OHF	Oil Handling Facility
OPEP	Oil Pollution Emergency Plan
OPPP	Oil Pollution Prevention Plan
Project	Back River Project
Sabina	Sabina Gold & Silver Corp.
SOPEP	Shipboard Oil Pollution Emergency Plan
TDGR	Transportation of Dangerous Goods Regulation
TEU	Twenty-foot Equivalent Unit
WIR	Winter Ice Road

PREFACE

GENERAL INFORMATION

The Back River Mine (the Mine) is a gold project owned and operated by B2Gold Back River Corp. (B2Gold Nunavut), formerly Sabina Gold and Silver Corp. (Sabina), within the West Kitikmeot Region of southwestern Nunavut. It is situated approximately 400 kilometres (km) southwest of Cambridge Bay, 95 km southeast of the southern end of Bathurst Inlet (Kingaok), and 520 km northeast of Yellowknife, Northwest Territories. The Project is located predominantly within the Queen Maud Gulf Watershed (Nunavut Water Regulations, Schedule 4).

The Project is comprised of two main areas (Goose Property and the Marine Laydown Area) with a 160 km long interconnecting winter ice road (WIR). The Marine Laydown Area (MLA) is situated along the western shore of southern Bathurst Inlet. Bulk fuel resupply will be completed using the MLA.

This Shipping Management Plan (the Plan) outlines the procedures related to shipment of materials and goods to and from the Project. This Shipping Management Plan will be executed within the scope of normal operations.

ANNUAL REVIEW

The Shipping Management Plan will be reviewed at least annually and updated as needed. Completion of the annual review of the Shipping Management Plan will be documented through signatures of the personnel responsible for reviewing, updating and approving the Shipping Management Plan.

RECORD OF CHANGES AND REVISIONS TO PLAN

A record will document all significant changes that have been incorporated in the Shipping Management Plan subsequent to the latest annual review. The record will include the names of the persons who made and approved the change, as well as the date of the approval.

DISTRIBUTION LIST

This plan shall be provided to all shippers to the Project and submitted as revised to the Nunavut Impact Review Board with the annual Project Certificate Report.

PREAMBLE

All shipping companies operating in Canadian territorial waters must abide by the Canadian regulatory framework. The Shipping Management Plan was developed in accordance with federal legislation.

Shipping in Canada is regulated by the following:

- ◆ *Canada Shipping Act, 2001* (<http://www.tc.gc.ca/eng/acts-regulations/acts-2001c26.htm>).
- ◆ *Arctic Waters Pollution Prevention Act* (<http://www.tc.gc.ca/eng/acts-regulations/acts-1985ca-12.htm>).
- ◆ *Marine Liability Act* (<http://www.tc.gc.ca/eng/acts-regulations/acts-2001c6.htm>).
- ◆ *Coasting Trade Act* (<http://laws-lois.justice.gc.ca/eng/acts/C-33.3/>).
- ◆ *Navigable Waters Protection Act* (<http://laws-lois.justice.gc.ca/eng/acts/N-22/>).
- ◆ *Marine Transportation Security Act* (<http://www.tc.gc.ca/eng/acts-regulations/acts-1994c40.htm>).

In the Arctic, three of these Acts combine to provide Canada's operational regulatory regime governing marine safety and environmental protection issues: the *Canada Shipping Act, 2001*, the *Marine Liability Act*, and the *Arctic Waters Pollution Prevention Act* (AWPPA).

These federal laws and regulations aim to promote marine safety, prevent pollution, provide a framework to respond to incidents, and address related liabilities and compensation issues. Transport Canada is the lead agency regulating shipping. Other federal agencies and departments, such as Fisheries and Oceans Canada, the Canadian Coast Guard and Environment Canada, have distinct but interrelated responsibilities for the management of marine transportation safety and environmental protection in the Arctic. Transport Canada works with these federal agencies and departments to establish the regulatory framework and mechanisms that provide a coherent and consistent approach to aspects of marine transportation safety and environmental protection.

The *Canada Shipping Act* provides an overall mechanism to protect safety and the environment for vessels operating in Canadian jurisdiction – waters out to the 200 nautical mile limit. Its regulations include requirements for a vessel's construction, how it manages ballast water, its pollution control equipment, arrangements for emergency response, and its crew qualifications. The AWPPA provides enhanced protection for vessels operating in Canadian jurisdiction north of 60°North latitude. It provides specific construction standards for vessels engaged in Arctic shipping, a system of shipping safety control zones, a ban on discharges of oil, hazardous chemicals, and garbage, and requirements for vessels to carry insurance to cover damages from any of these discharges. The *Marine Liability Act* sets out a regime that requires vessels operating in Canadian jurisdiction to carry insurance to pay for damages from oil spills. In the event of a conflict between the AWPPA and the *Marine Liability Act*, the latter applies. All three of these Acts are implemented based on the "polluter pays" principle.

B2Gold Nunavut is not a shipping company and does not own any vessels. B2Gold Nunavut intends to contract all its shipping and resupply requirements to Canadian shipping providers. B2Gold Nunavut does not possess the expertise to impose navigational requirements in terms of safety at sea, emergency responses on ships, crew qualifications, or other specialized requirements on shipping providers. This expertise lies with Transport Canada and the Canadian Coast Guard.

1. INTRODUCTION

The Back River Mine (the Mine) is a gold project owned and operated by B2Gold Back River Corp. (B2Gold Nunavut), formerly Sabina Gold and Silver Corp. (Sabina), within the West Kitikmeot Region of southwestern Nunavut. The Project includes a Marine Laydown Area (MLA) located at Bathurst Inlet, approximately 130 km north northwest of the Goose site. The MLA will be connected via winter ice roads to both the Goose Property and the George exploration camp. It will be used to receive fuel, cargo, and consumables through all phases of the Project.

Fuel and cargo will be received and staged at the MLA during the ice-free period, typically from August to September, and will be transported to the Project by freight truck via the winter road from January to March. Outside of the aforementioned periods, MLA activities will be limited to on-site storage and monitoring for loss prevention.

During periods MLA activity, crew transport to the MLA will be facilitated by an ice airstrip in the winter months (January to March) and by float planes in the summer months (August to September). Between operational seasons, occasional personnel transport will be supported by helicopter service.

1.1 MLA FUNCTIONAL AND DESIGN CRITERIA

The MLA is currently under construction and has been designed to be capable of off-loading and storing 60ML of diesel fuel and 30,000 t of consumables during operations and off-loading and storing 15 ML of diesel fuel and 20,000 t of materials during construction. A laydown area is required for 1,200 containers (20-ft long, 1 Twenty-foot Equivalent Unit (TEU)), as well as a fuel farm which will be completed in stages.

The MLA comprises the marine infrastructure, the laydown area, and the upland infrastructure. On completion, upland infrastructure will include:

- ◆ Bulk fuel storage facility.
- ◆ Lubricant oil storage.
- ◆ Secure container storage.
- ◆ Secure outdoor cold storage.
- ◆ Cold and heated warehouses.
- ◆ Diesel generator sets.
- ◆ A vehicle maintenance building.
- ◆ Desalination plant.
- ◆ Fresh/fire water storage and distribution.
- ◆ A camp with offices.
- ◆ A staging area for shipping containers.
- ◆ Hazardous waste containment and landfarm.

The marine infrastructure will comprise a grounded terminal barge that will accept lighter barges. Lightering barges will shuttle freight from the ocean-going vessels that are moored at a water depth of

approximately 12 m, to the terminal barge. A foreshore ramp provides access from the terminal barge to the laydown area. The terminal barge will be secured in place by mooring it to onshore bollards, dead men anchors or mobile heavy equipment. The terminal barge will be removed from the water at the end of each sealift season and re-installed for the next year's sealift. For shallow draft barges in preconstruction years a terminal barge may not be necessary, in which case the cargo barge will pull up to shore and offload via a barge foreshore ramp. The MLA layout is shown in Figure 1.

1.2 SHIPPING ROUTES

The MLA is located on a peninsula approximately 30 km south of the settlement of Kingaok (Bathurst Inlet) with the following NAD 83 Zone 13 N UTM coordinates: 7394976N 381254E. This site allows the MLA to be constructed on relatively flat terrain while providing sufficient water depth for ships at a reasonable distance from the shore. The bathymetric information for marine access to the MLA was obtained from Canadian Hydrographic Services.

The Project will ship goods, equipment, material, supplies, and fuel from the St. Lawrence River and Vancouver, BC to Bathurst Inlet. Ships from other Canadian and international ports may also be used. An existing shipping route exists through the Northwest Passage from Bathurst Inlet toward the west through Coronation Gulf or toward the east through Queen Maud Gulf, Victoria Strait, Franklin Strait, Peel Sound, Barrow Strait, and out through Lancaster Sound during the open-water season. The shipping traffic through the Northwest Passage to the east through Nunavut is estimated to be at least 30 to 40 transits between September 1 and October 31 (approximately 60 days). The shipping routes are presented in Figure 1.2-1.

Subject to vessel safety, B2Gold Nunavut will request its shipping providers avoid Prince Leopold Island, specifically the 30 km radius offshore that has been identified as a key marine habitat site for seabird species. As required by Project Certificate No. 007 (Term and Condition # 58) B2Gold Nunavut's Marine Shipping Wildlife Mitigation and Monitoring Standard Operating Procedure requires that shippers maintain a setback distance of at least 500 metres from colonies and moulting aggregations of seabirds and waterfowl during Project shipping transiting through Bathurst/Elu Inlet, Lambert Channel, and Eastern Lancaster Sound.

B2Gold Nunavut will obtain copies of logs and map of ship tracks from its shipping providers and will include this information in annual monitoring reports to assess shipping volume and routes. All vessels will be equipped with appropriate navigational aids as per Transport Canada requirements.

It is expected that all shipping activities will originate from Canadian ports. Should it become necessary to utilize vessels which originate outside of Canada, all regulatory requirements will be met.

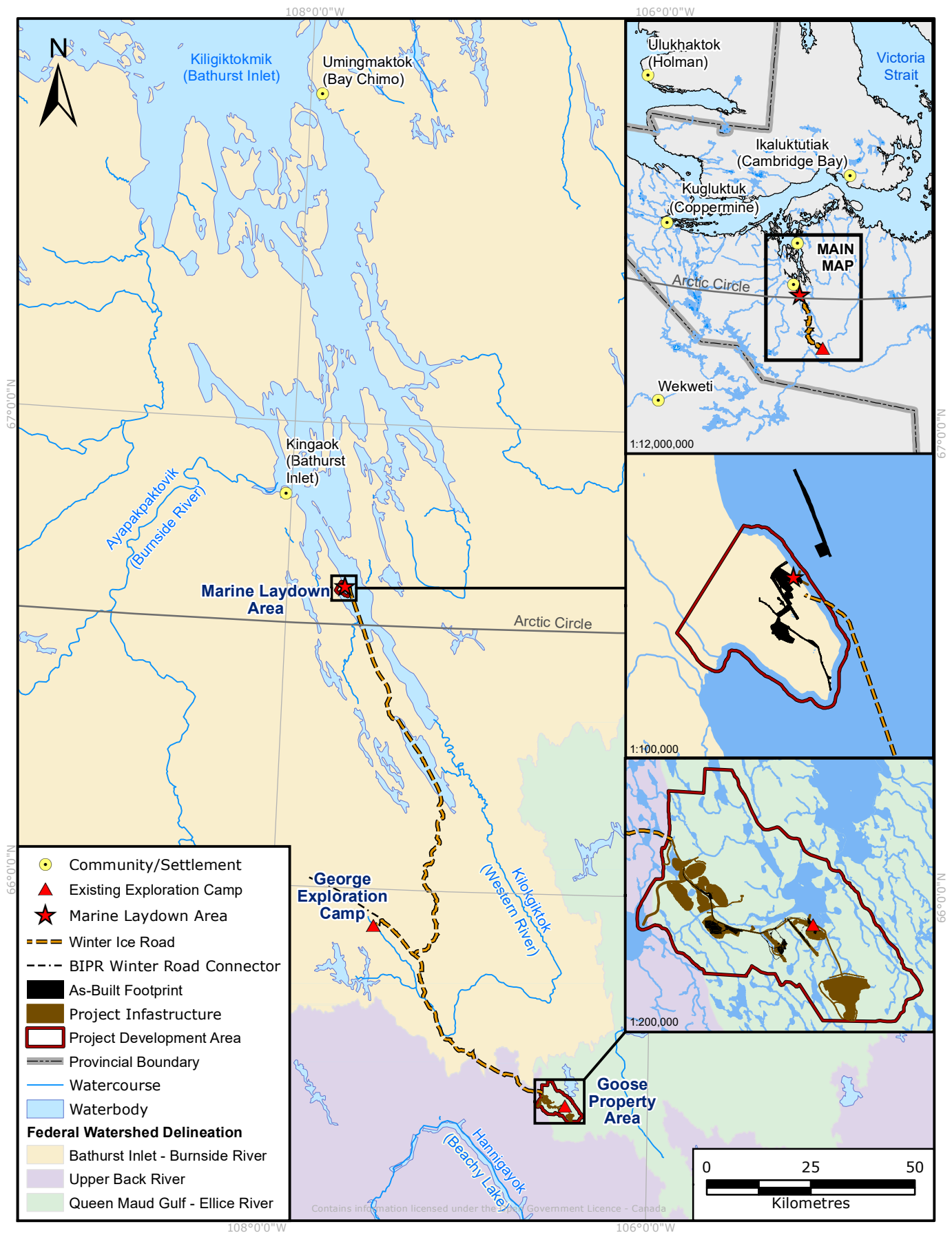
1.3 LISTS

The aspects of shipping which are under B2Gold Nunavut's control include:

- ◆ Shipping schedule for freight and fuel deliveries.
- ◆ Ship to shore transfer of freight and fuel.
- ◆ Oil handling facility at the Marine Laydown Area.
- ◆ Security at the Marine Laydown Area.

The Shipping Management Plan addresses shipping activities on which B2Gold Nunavut can exert influence or control through contractual agreements with shipping providers or direct management of the Marine Laydown Area sealift activities.

B2Gold Nunavut has also developed a Marine Shipping Wildlife Mitigation and Monitoring Standard Operating Procedure that is used by shippers to document and manage interactions with marine wildlife. B2Gold Nunavut will also develop a marine security plan for the MLA as required by the *Marine Transportation Safety Act*.



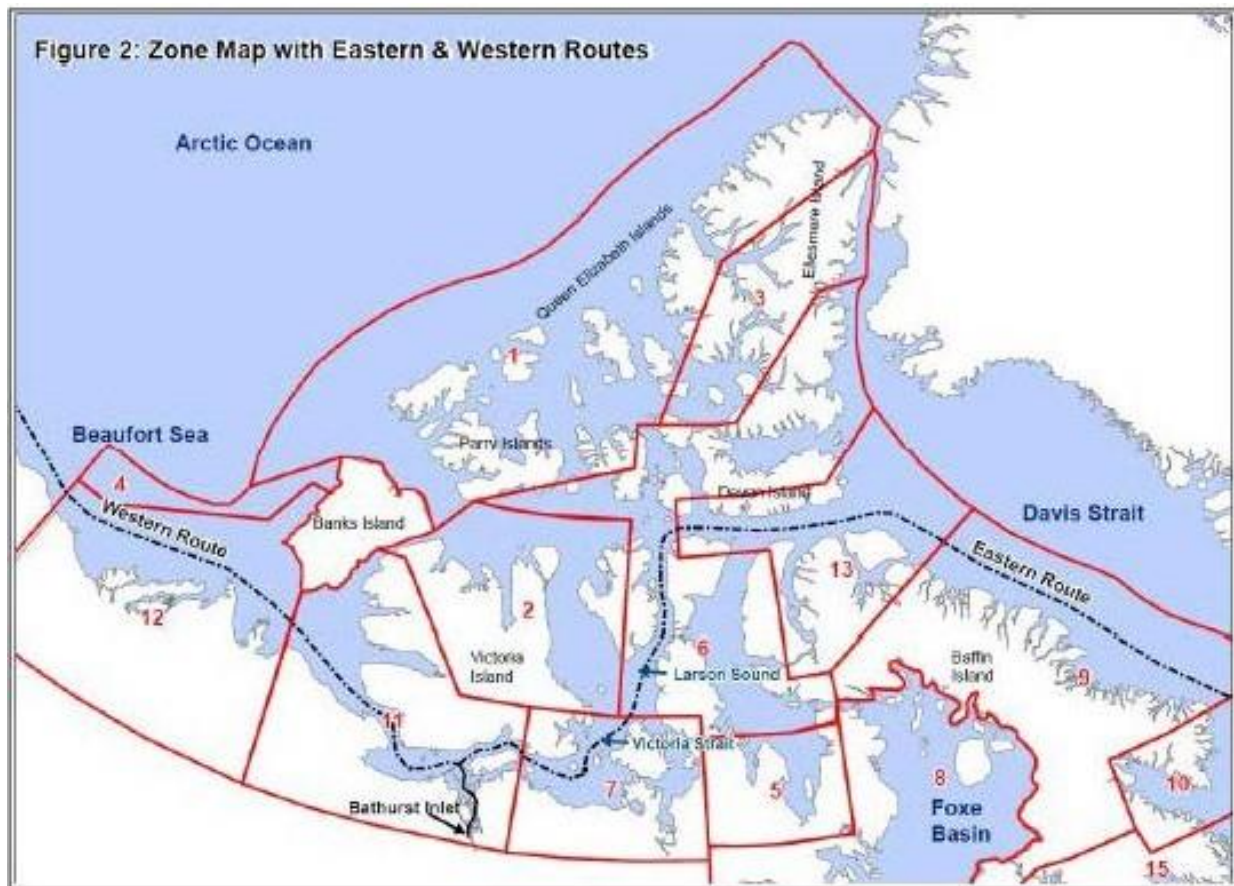
CLIENT: B2Gold
GIS NUMBER: BAC-19-014a

DATE: 21 March 2024

PROJECTION: NAD 1983 UTM Zone 13N
SCALE: 1:1,250,000 when printed at 8.5x11

FIGURE 1 BACK RIVER PROJECT OVERVIEW

Figure 1.2-1. Shipping Route



2. RELATED MANAGEMENT PLANS

The Shipping Management Plan must be viewed in concert with:

- ◆ Shipboard Oil Pollution Emergency Plan (shipping companies).
- ◆ Risk Management and Emergency Response Plan.
- ◆ Spill Contingency Plan.
- ◆ Oil Pollution Emergency Plan.
- ◆ Occupational Health and Safety Plan.
- ◆ Wildlife Mitigation and Management Plan Marine Wildlife Monitoring Plan.
- ◆ Marine Shipping Wildlife Mitigation and Monitoring Standard Operating Procedure.

2.1 SHIPBOARD OIL POLLUTION EMERGENCY PLAN

Section 27 of the Vessel Pollution and Dangerous Chemicals Regulations requires the owner of every Canadian oil tanker of 150 tonnes gross tonnage or more, and every other Canadian ship of 400 tonnes gross tonnage or more that carries oil as fuel or cargo, to submit four copies of the vessel's Shipboard Oil Pollution Emergency Plan (SOPEP) to Transport Canada for review. All SOPEPs are ship-specific.

The SOPEP provides guidance to help the ship master deal with shipboard emergency situations, including discharge of fuel, should one occur. The required SOPEP(s) will be in place prior to the commencement of shipping.

2.2 OIL POLLUTION EMERGENCY PLAN (OPEP) & OIL POLLUTION PREVENTION PLAN

As the owner and operator of an Oil Handling Facility (OHF), the CSA 2001 and its regulations require B2Gold Nunavut to maintain a minimum level of spill prevention and response preparedness at all times. OHFs must each have onsite emergency and prevention plans, equipment, personnel, and training that allow deployment of an immediate response in the event of a fuel spill. Transport Canada's regional Pollution Prevention Officers enforce the OHF regulations by reviewing the facility's OPEP, and inspecting the facilities and response resources to ensure compliance with the OHF regulation.

B2Gold Nunavut's Oil Pollution Emergency Plan (OPEP) is revised and provided annually to Transport Canada prior to bulk fuel transfer activities.

2.3 MARINE SHIPPING WILDLIFE MITIGATION AND MONITORING STANDARD OPERATING PROCEDURE

The Marine Shipping Wildlife Mitigation and Monitoring Standard Operating Procedure outlines the monitoring and mitigation procedures for shipping companies contracted by B2Gold Nunavut to avoid potential effects to marine mammals and seabirds. It outlines:

- ◆ How to avoid or adjust shipping speed near sensitive wildlife habitat along shipping routes.
- ◆ How to record observations of marine mammals and seabirds.

- ◆ Potential mitigation if marine mammals or large groups of seabirds are observed
- ◆ How to record and report mitigation measures taken, if applicable.
- ◆ How to record and report ship strikes of marine mammals or seabirds.

3. TARGETED VECS AND VSECS

The targeted valued ecosystem components (VECs) and valued socio-economic components (VSECs) are:

- ◆ Marine water quality.
- ◆ Marine mammals.
- ◆ Sea birds and ducks.

4. SHIPPING SCHEDULE

4.1 OPEN WATER SEASON

All shipping activities will take place during the open water season, ending on October 15 each year unless emergency or unforeseen circumstances occur.

4.2 GOODS AND MATERIALS RECEIVED

The quantities and volumes of goods and material received will vary depending on the phase of the Project. Deliveries will begin during the pre-construction phase and continue throughout operations.

4.3 LIGHTERING PROCEDURES

4.3.1 DRY CARGO

During the operations and construction phases, cargo will be transported by barges and ships. The design cargo barge has a Dead Weight Tonnage (DWT) of 16,500 t with maximum draft of 5.9 m. The design cargo ships have a DWT of 17,000 t with draft of 9.7 m. The ships and barges will be self-sufficient for offloading cargo by using their own equipment.

The port marine infrastructure comprises a single grounded terminal barge that will accept lightering barges. Lightering barges will be used to transfer cargo from the vessel to the Lightering Barge Terminal. A foreshore ramp provides access from the terminal barge to the laydown area. The terminal barge will be secured in place by mooring it to onshore bollards which will be secured to the ground by using rock anchors. Freight will then be hauled to a laydown area where it will be stored until the annual winter ice road is open.

Most dry cargo will be transported in marine shipping containers (Twenty-foot Equivalent Units) stacked on the deck of general cargo vessels fitted with cranes. Shipping containers will be offloaded and stacked in the MLA laydown yard prior to transport to the Goose Property over the winter ice road. The use of shipping containers serves to provide protection for cargo, secondary containment against spills, and facilitates rapid transfer from ship to shore.

Navigation of tugs and other vessels at the MLA will proceed at a slow speed in periods of low visibility. Traffic will be coordinated through communication between tugs, vessels, and MLA personnel.

Masters of tugs, large and small tankers, and dry cargo ships are responsible for their vessels at all times and for the safe navigation of their vessels from the port of departure to the MLA. For tugs this also includes responsibility for the barge they are towing or pushing. When a barge is laid alongside a dry cargo vessel for lightering containers or equipment to the barge, a loading supervisor on the ship will take charge of the barge. When a cargo barge is secured to the lightering barge, a shore supervisor will take charge of the cargo barge.

At the end of the shipping season or when all the dry cargo has been received by B2Gold Nunavut for the year, outgoing cargo will be loaded on the barges for the return trip to southern ports. Outgoing cargo could include construction equipment being demobilized following the completion of construction and/or hazardous or other waste being sent to a certified waste management facility for treatment, recycling and/or disposal in another provincial or territorial jurisdiction.

The Lightering Barge Terminal is designed to be removed at the end of each sea-lift season and re-installed prior to the arrival of the first sea-lift vessel the following year. Currently there is no plan for barges, fuel vessels or tugs to remain at Bathurst Inlet over the winter. Should it become necessary, all regulations for overwintering will be met.

4.3.2 DIESEL FUEL

Fuel will be transported to the MLA using double-hull vessels. When necessary, fuel vessels will use anchors to secure the ship offshore during off-loading. During the initial pre-construction season the MLA will have a Level 1 OHF classification which will permit transfer rates to a maximum of 450 m³/h. Fuel offload procedures and requirements are detailed in B2Gold Nunavut's OPEP/OPPP.

4.3.3 EXPLOSIVES AND HAZARDOUS MATERIALS

All hazardous and dangerous material will be packaged, handled, stored and transported in accordance with the Canadian Transportation of Dangerous Goods Regulation (TDGR).

Part of the dry cargo received each year will be ammonium nitrate, which will be used on site to manufacture explosives. Bulk ammonium nitrate will be shipped as prill, which is inert and will not require special handling during transit. The ammonium nitrate will remain in sea containers or be stored in sealed bags at the MLA until it can be transported to the mine sites over the winter ice road. The design of all storage facilities will meet government regulations and will be located according to required separation distances as regulated by the Explosives Regulatory Division (ERD) of Natural Resources Canada (NRCan). During the construction of the MLA, there may be temporary storage and use of packaged explosives. Explosives will be stored using the magazines that will be permanently installed at Goose or as otherwise appropriate according to applicable regulations. During operations packaged explosives will be not be stored at the MLA.

All handling, transport, storage, manufacture and use of explosives will be subject to federal approval under the *Explosives Act*, and the *Nunavut Mine Health and Safety Act*.

Hazardous waste and contaminated soil will be stored at the MLA until it can be shipped off site. Hazardous waste will be appropriately packaged for transport in sea cans and sent via a dry cargo vessel to a certified hazardous waste management facility for treatment, recycling and/or disposal in another jurisdiction.

5. APPLICABLE LEGISLATION AND GUIDELINES

5.1 LEGISLATIONS

The *Fisheries Act* is the main environmental legislation addressing environmental protection of the marine environment. The transportation of all cargoes between Canadian ports is regulated by the Government of Canada through a variety of legislation, including:

- ◆ Canada Shipping Act.
- ◆ IMO Code for the Safe Handling of Bulk Cargoes.
- ◆ Canada Labour Code.
- ◆ IMDG Code for the Safe Handling of Dangerous Goods.
- ◆ Canadian Transportation Accident Investigation and Safety Board Act.
- ◆ Canadian Transportation Act.
- ◆ Canadian Transportation of Dangerous Goods Act.
- ◆ Department of Transport Act.
- ◆ Marine Transportation Security Act.
- ◆ Navigation Waters Protection Act.
- ◆ Oceans Act.
- ◆ Arctic Waters Pollution Prevention Act and Regulation.
- ◆ Safe Containers Convention Act.
- ◆ Ballast Water Control and Management Regulations.

The following regulations issued under the *Canada Shipping Act* regulate Canadian vessel operations and foreign vessels while operating in Canadian waters:

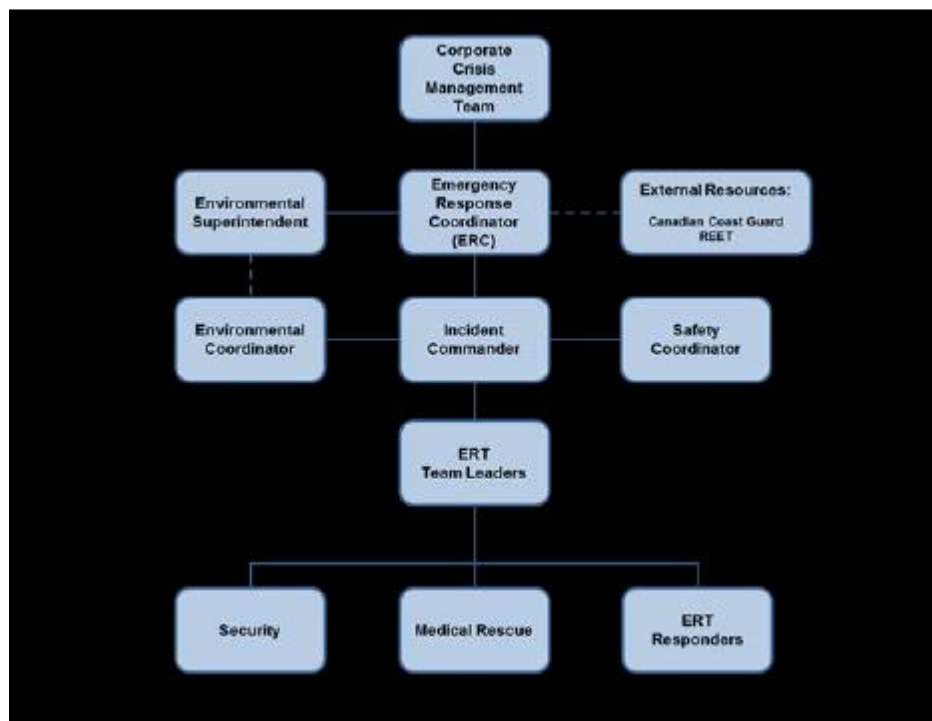
- ◆ Aids to Navigation Protection Regulations.
- ◆ Air Pollution Regulations.
- ◆ Boat and Fire Drill Regulations.
- ◆ Charts and Nautical Publications Regulations.
- ◆ Dangerous Chemicals and Noxious Liquid Substances Regulations.
- ◆ Classed Ships Inspection Regulations.
- ◆ Collision Regulations.
- ◆ Crew Accommodation Regulations.
- ◆ Dangerous Bulk Materials Regulations.
- ◆ Dangerous Goods Shipping Regulations.

- ◆ Eastern Canada Vessel Traffic Services Zone Regulations.
- ◆ Fire Detection and Extinguishing Equipment Regulations.
- ◆ Garbage Pollution Prevention Regulations.
- ◆ Home-Trade, Inland and Minor Waters Voyages Regulations.
- ◆ Hull Inspection Regulations.
- ◆ Marine Transportation Security Regulations.
- ◆ Life Saving Equipment Regulations.
- ◆ Marine Certification Regulations.
- ◆ Marine Crewing Regulations.
- ◆ Marine Machinery Regulations.
- ◆ Navigating Appliances and Equipment Regulations.
- ◆ Non-Canadian Ship Safety Order.
- ◆ Oil Pollution Prevention Regulations.
- ◆ Pilot Ladder Regulations.
- ◆ Pollutant Discharge Reporting Regulations.
- ◆ Pollutant Substances Regulations.
- ◆ Response Organizations and Oil Handling Facilities Regulations.
- ◆ Safe Working Practices Regulations.
- ◆ Safety Management Regulations.
- ◆ Ship Station Radio Regulations.
- ◆ Ship Station Technical Regulations.
- ◆ Ships' Tonnage Survey and Measurement Fees Regulations.
- ◆ Shipping Casualties Reporting Regulations.
- ◆ Shipping Inquiries and Investigations Rules.
- ◆ Ships' Crews Food and Catering Regulations.
- ◆ Ships' Elevator Regulations.
- ◆ Steering Appliances and Equipment Regulations.
- ◆ Tackle Regulations.
- ◆ Vessel Traffic Services Zones Regulations.
- ◆ VHF Radiotelephone Practices and Procedures Regulations.

6. ROLES AND RESPONSIBILITIES

For the duration of the shipping season, B2Gold Nunavut will appoint a lead supervisor to oversee the MLA activities. This lead supervisor will act as the designated “Marine Facility Security Officer” for the period of activities at the MLA. He will also fill the role of “Emergency Response Coordinator” for the MLA.

The figure below illustrates the organizational chart for emergency response. In the event of an oil spill during bulk fuel transfer activities the B2Gold Nunavut will follow the Incident Command System outlined in the OPEP/OPPP.



7. POLLUTION PREVENTION

7.1 PREVENTING POLLUTION AND REGULATING VESSEL DISCHARGES

The *Canada Shipping Act* (2001) and the *Arctic Waters Pollution Prevention Act* (AWPPA) and their associated regulations incorporate pollution prevention as set out in international standards of the International Convention for the Prevention of Pollution from Ships, known as MARPOL. This convention sets out detailed technical standards for:

Carrying and handling oil.

- ◆ Carrying and handling noxious liquid substances in bulk.
- ◆ Carrying packaged dangerous goods.
- ◆ Managing vessel sewage discharges.

- ◆ Managing vessel garbage.
- ◆ Managing vessel air emissions.

Canadian regulations also prohibits the use of hull coatings containing tributyl tin, which has been found harmful to marine life, under International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001.

Transport Canada applies these standards through the Vessel Pollution and Dangerous Chemical Regulations under the CSA 2001. These standards are continuously subject to review. Under the Regulations, vessels operating in Canadian waters are subject to the following requirements.

7.2 PREVENTING OIL POLLUTION

Canadian shipping regulations set out requirements to prevent oil pollution and implement Annex I of MARPOL. Oil tankers (vessels carrying oil in bulk) must:

- ◆ Have their plans and specifications approved by their Administration—in the case of a Canadian tanker, by Transport Canada—and by 2015 be double-hulled.
- ◆ Have contained areas where fuel or product is pumped on or off the vessel and tanks for oily residue and sludge oil.
- ◆ Use standardized connections and piping systems and use equipment for cleaning holds that meet international standards.

All ships of 400 tonnes gross tonnage or more and oil tankers of 150 tonnes gross tonnage or more, must:

- ◆ Meet cargo standards for oil even if they carry oil with other cargo.
- ◆ Be able to remotely stop discharge pumps.
- ◆ Have oil filtering equipment to remove oil from discharges down to 15 parts per million (note, in Canadian jurisdiction, north of 60°N, the AWPPA zero discharge regime applies).
- ◆ Have alarms that both alert crew when the filtered product exceeds the standard and automatically shut discharge.
- ◆ Be inspected regularly, with simple inspections carried out annually, more detailed inspections about every three years, and a comprehensive inspection every five years.
- ◆ Carry on board:
 - An onboard Emergency Plan that includes contacts for response organizations.
 - Certificates, namely the International Oil Pollution Prevention Certificate, attesting that the inspections were carried out and that the vessel meets standards.
 - An oil record book that is kept up to date (this includes a record of all discharges of waste oil or of unloading waste oil in port to a reception facility).
 - Procedures and arrangement manual that sets out operating instructions for all equipment used onboard the oil tanker.

The regulations also set out requirements for transfer operations, the loading or unloading of oil or oil products either between an oil tanker and shore facility or between two oil tankers at sea:

- ◆ The operations must be supervised by a person certified to do so and clear communications between all personnel involved must be arranged.
- ◆ The supervisor is responsible for ensuring:
 - Personnel understand all signals, controlling flow rates during the transfer.
 - No hazardous conditions place the transfer operation at risk.
 - Response preparations are in place.
 - Valves and equipment are secure once operations are complete.
- ◆ Only fittings and conduits that meet performance standards for pressure resistance may be used.
- ◆ The facility and vessel are equipped with proper lighting.

7.3 PREVENTING POLLUTION FROM CHEMICALS CARRIED IN BULK

Division 2 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations set out requirements to prevent pollution from chemicals known as noxious liquid substances when carried in bulk and implement Annex II of MARPOL.

The regulations also set out requirements for transfer operations: the loading or unloading of chemical products either between a chemical tanker and shore facility or between two such tankers at sea. These requirements are similar to requirements for oil noted above. Discharge requirements of this Division do not apply in Arctic waters, as the AWPPA applies and prohibits these discharges.

7.4 CARRYING PACKAGED DANGEROUS GOODS

Division 3 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations prohibits the discharge of any substance that is listed as a marine pollutant.

In Canada, carrying packaged dangerous goods is subject to a comprehensive control regime under the *Transportation of Dangerous Goods Act 1992*. The regime includes standards for classifying different types of dangerous goods to ensure proper containment, packaging, handling, control documents, operator training, and emergency response.

7.5 MANAGING VESSEL SEWAGE DISCHARGES

Division 4 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations sets out requirements that all ships of 400 tonnes gross tonnage or more must follow to manage sewage generated on board and implement Annex IV of MARPOL. The provisions setting limits on the discharge of sewage do not apply in Arctic waters as the AWPPA allows for the discharge of untreated sewage.

7.5.1 ON-VESSEL SEWAGE TREATMENT

Vessels are to have an approved sewage treatment plant meeting Canadian standards. Holding tanks with the capacity for all grey and treated sewage while in port are expected to be part of the ship's

infrastructure. Sewage sludge from the sewage treatment plant can be incinerated in the on-board incinerator.

7.6 MANAGING VESSEL GARBAGE

Division 5 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations sets out requirements for vessels to manage the garbage generated on board and implements Annex V of MARPOL. Garbage can include:

- ◆ Waste from the vessel's crew.
- ◆ Operational waste such as galley or maintenance shop waste.
- ◆ Cargo associated waste such as dunnage or packing material or residues of dry cargoes carried in bulk (such as ore or grain).

The provisions setting limits on the discharge of garbage do not apply in Arctic waters as the AWPPA prohibits the discharge of garbage.

7.6.1 ON-VESSEL SOLID WASTE

Solid waste materials are to be incinerated, not disposed of in the marine environment. Modern incinerators operating at very high combustion temperatures are expected on all vessels. These will be capable of incinerating food and other domestic waste, residual oil separated from bilge water, waste oil and in most cases, sewage. Ash from incineration will remain on board and be taken south for treatment, recycling and/or disposal in a certified waste management facility.

The design and operation of shipboard incinerators in Canada are specified under the International Marine Organization, Marine Environmental Pollution Committee 76 (40), Annex V. Standard specification for shipboard incinerators allow for the incineration of solid wastes approximating in composition to household waste and liquid wastes arising from the operation of the ship, e.g., domestic waste, cargo-associated waste, maintenance waste, operational waste, cargo residues, and fishing gear. Ash from the incinerator is stored on-board. The ash is transported south to a certified waste management facility for treatment, recycling and/or disposal in another provincial or territorial jurisdiction.

B2Gold Nunavut requires all of its shipping providers to dispose of waste at the port of origin. No solid or liquid waste will be accepted for treatment at the Marine Laydown Area.

7.7 MANAGING VESSEL AIR EMISSIONS

Division 6 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations sets out requirements for vessels to manage air emissions and implements Annex VI of MARPOL. The requirements:

- ◆ Prohibit emissions of ozone depleting substances.
- ◆ Set controls for emissions of nitrogen oxides (combustion products from nitrogen in the air), sulphur oxides (combustion products from sulphur in the fuel), and volatile organic compounds.
- ◆ Set performance standards for incinerators.

For example, the regulations set a maximum limit for the sulphur content of any fuel oil used on a vessel to 4.5%. In addition, tankers using a vapour collection system for volatile organic compounds are required to meet international standards for the collection system. These criteria will become even more stringent once the new air emissions requirements come into force.

7.8 ANTIFOULING SYSTEMS

Division 7 of Part 2 of the Vessel Pollution and Dangerous Chemicals Regulations requires vessels not to have any tributyl tin compounds present in hull coatings. This applies a global ban on such compounds under the International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001.

7.9 REPORTING POLLUTION

In the event of an incident involving harmful substances, responsibilities are set out in the AWPPA, Part 3 of the Vessel Pollution and Dangerous Chemicals Regulations. In the event of a polluting incident that requires Environment Canada's involvement, the National Environmental Emergencies Centre (NEEC) is Environment Canada's focal point for the provision of scientific advice, such as weather forecast, contaminant dispersion and trajectory modeling, fate and behaviour of hazardous substances, the establishment of clean-up priorities and techniques, as well as the protection of sensitive ecosystems and wildlife such as migratory birds and fish. These instruments outline when and how a vessel's master or an owner or operator of an oil handling facility must report any discharge of a pollutant that occurs or the probability that such a discharge will occur. Reports are to be made according to either the:

- ◆ Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants, TP 9834 (<http://www.tc.gc.ca/eng/marinesafety/tp-tp9834-menu-1684.htm>).
- ◆ General Principles for Ships Reporting Systems and Ship Reporting Requirements, including Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants, IMO Resolution A.851(20).

Vessels are also required to report the presence of any pollutant in the water under the CSA 2001's Vessel Traffic Services Zones Regulations. Vessels in Arctic waters are subject to the AWPPA. The Arctic Shipping Pollution Prevention Regulations, which set requirements for how vessels operating in Arctic waters must be built and details conditions on the no-discharge regime, and the Arctic Waters Pollution Prevention Regulations, which include a civil liability regime for vessels to ensure there is insurance to cover damages should deposits of wastes occur, both regulate pollution.

8. BALLAST WATER MANAGEMENT

Discharge of ballast water will not be an issue since all ships will arrive to Bathurst Inlet fully loaded. The vessel will take ballast water on board when departing Bathurst Inlet. B2Gold Nunavut will comply with the 2021 Ballast Water Regulations (SOR/2021-120),

9. ACCIDENTS AND MALFUNCTIONS

9.1 FUEL SPILLS ALONG THE SHIPPING ROUTE

The navigation route from the Eastern seaboard of Canada to Cambridge Bay is well known and has been in use for several decades. In addition, Canadian regulations required that fuel tankers navigating in Arctic waters be double-hull vessels.

The following spill prevention measures are essential and must be respected by all shipping providers:

- ◆ The Ship Master's responsibility is to navigate with caution. He is ultimately responsible for the safety of his crew and of the ship.
- ◆ All fuel tankers built after 1993 to be double-hulled to operate in Canadian waters.
- ◆ Vessels have anti-collision devices with alarms and radar to ensure that collisions are avoided.
- ◆ Vessels are equipped with several dual/redundant back-up systems such as twin engines, radar, and have redundancy for navigational systems and communication systems.
- ◆ Shipping route bathymetry is known.

Furthermore, the "rules of the road" for shipping are:

1. Shipping operators must abide by the established regulatory framework.
2. Ships must sail within the established shipping corridor.
3. Ships must have a Shipboard Oil Emergency Response Plan (SOPEP).

The likely scenarios considered that could lead to a spill event are:

1. Ship engine failure at sea (possible; moderate risk) – many ships have dual engines.
2. Ship grounding (unlikely, low risk) – bathymetry along shipping corridor is known.
3. Collision with other vessels (rare, low risk) – radar very low incidence of collision.

Because of the tanker ship double-hull design, systems redundancy on vessels, and the focus placed on prevention of accidents and malfunctions the recorded frequency of such accidents and malfunctions is very low. This is supported by the recent "Tanker Safety Expert Panel" report available for consultation on Transport Canada's website (<http://www.tc.gc.ca/eng/marinesafety/menu-4100.htm#g>).

9.2 FUEL SPILLS DURING SHIP-TO-SHORE TRANSFER OF FUEL AT THE MLA

The Transportation Safety Board of Canada marine statistics for recent years (www.tsb.gc.ca/eng/stats/marine/2014/ssem-ssmo-2014.asp) as well as the worldwide Oil Tanker Spills Statistics for 2011, prepared by the International Tankers Owners Pollution Federation Limited (ITOPF) confirms that the vast majority of spills occurred at dock while loading or unloading fuel and that the vast majority of fuel spills are generally less than 7 tonnes in size. Furthermore, the vast majority of these spills occur at port.

B2Gold Nunavut's emphasis for marine spill preparedness will focus on the MLA. The OPEP/OPPP details the emergency response procedures to deal with small fuel spill during the ship-to-shore fuel transfer operation.

9.3 ACCIDENTS AND MALFUNCTIONS INVOLVING FREIGHT

At the anchor point, cargo will be lightered from the ships onto barges and be delivered to the spud barge via the access passage. The tugs-barges will be highly manoeuvrable. Navigation will be during daylight hours and will proceed at a slow speed in periods of low visibility. Shipping traffic will be coordinated to avoid shipping conflicts and to ensure safety.

Accidents and malfunctions could increase the level of hazard and necessitate associated mitigation measures:

- ◆ Mechanical failure occurring on the ship or tug thereby placing it in jeopardy in the shipping route.
- ◆ Tug-barge or ship running aground due to a navigational error or mechanical failure.
- ◆ Loss or damage to sea cans in heavy seas.
- ◆ Barge tow line breaking in heavy seas.
- ◆ Collision of tug-barge or ship carrying dry cargo and fuel.
- ◆ Tug-barge or ship sinking upon hitting ice.
- ◆ Tug-barge or ship colliding with a small boat.

Mitigation reduces the probability of occurrence and increases safety. The following mitigation/safety measures are proposed:

- ◆ Where available, electronic navigation aids be used in all instances.
- ◆ Ship speeds in open water remain less than 14 knots.
- ◆ Shipping is only carried out during the ice free season. Should ice be encountered, the vessel will either sail around it at a reduced speed or proceed slowly through the ice.
- ◆ Tug-barge or ship will remain within defined sea route.
- ◆ Tug-barge operations will proceed when there is good visibility from the anchor point of the ships to the spud barge and/or adjust their speed according to the conditions.
- ◆ Traffic at the MLA will be coordinated to avoid conflicts and ensure safety.
- ◆ Communication between tugs will coordinate movement at the MLA.
- ◆ B2Gold Nunavut will provide emergency response equipment and materials as outlined in the OPEP for use by the tug or ship in dealing with spills.
- ◆ Crews will follow standard operating procedures and adherence to these will be monitored.
- ◆ Tug-barge or ship crews will be trained for responses to hazards that can normally be expected in northern waters.

10. SAFETY OF PERSONS USING SMALL BOATS

The most likely areas where interactions may occur between small boats and barges-tugs and/or ships/vessels are in Bathurst Inlet, in proximity of the MLA.

Mitigation measures to safeguard the safety of those in small boats will include the following:

- ◆ B2Gold Nunavut will inform communities on the shipping activities that can be expected over the ice free shipping season and consults with organizations/individuals mooring or beaching their boats in proximity of the MLA.
- ◆ Protocols will be developed to minimize the interaction between barge-tug or ship and small boats.
- ◆ Barge-tug or ship will travel at a slow speed when transiting near shore to reduce the wake and not compromise the safety of people travelling in small boats along the shipping route. The slower speed will reduce the wake of the ship while also providing an opportunity for the small boats to move to the side.
- ◆ Barge-tug or ship would only travel through the near shore islands and reefs when there is good visibility or adjust their speed according to the conditions. This would allow the ship and the small boats to see one another.
- ◆ Barge-tug or ship will restrict themselves to the shipping route thereby not surprising any small boat travelling outside the shipping route.
- ◆ The ship will sound its horn if a small boat seems unaware of its presence.
- ◆ B2Gold Nunavut, through the Community Liaison Committee, will recommend that all those in small boats wear personal floatation devices.

11. WILDLIFE PROTECTION MEASURES

Wildlife protection and monitoring measures related to shipping are outlined in B2Gold Nunavut's Marine Shipping Wildlife Mitigation and Monitoring Standard Operating Procedure. All shipping companies contracted by B2Gold Nunavut are required to follow these standards to avoid potential effects to marine mammals and seabirds. The standards outline:

- ◆ How to avoid or adjust shipping speed near sensitive wildlife habitat along shipping routes.
- ◆ How to record observations of marine mammals and seabirds.
- ◆ Potential mitigation if marine mammals or large groups of seabirds are observed.
- ◆ How to record and report mitigation measures taken, if applicable.
- ◆ How to record and report ship strikes of marine mammals or seabirds.

12. MARINE LIABILITY INSURANCE

12.1 INSURANCE

The ship owner is responsible for insuring the ship hull and machinery. B2Gold Nunavut will require each ship owner to have in place cargo insurance to satisfy the carrier's responsibilities under the *Canadian Carriage of Goods by Water Act*. In addition there is a requirement for the vessels to have standard Protection and Indemnity insurance covering third party claims, including pollution cover, to satisfy the requirements for clean-up, civil liberty and compensation for pollution as required under Part XVI of the *Canada Shipping Act*.

12.2 COMPENSATION

The *Canada Shipping Act*, under Part XVI provides the authority and the legislative process for addressing Civil Liability and Compensation for Pollution. This section is in compliance with the *International Convention on Civil Liability for Oil Pollution Damage*, concluded in Brussels on November 29, 1969 and as amended by any protocol that is in force for Canada.

The Civil Liability and Compensation section of the *Canada Shipping Act* establishes the responsibility and procedures for polluters to compensate affected parties for liabilities. It further provides for and requires the ship owner to provide a guarantor under a contract of liability insurance or other similar security relating to a ship owner's liability under the *Canada Shipping Act*.

Section 702 of the Act provides the authority to establish the Canadian Ship-source Oil Pollution Fund. In addition, Canada supports the "Fund Convention" meaning the *International Convention on the Establishment of an International Fund for Compensation for Oil* concluded in Brussels on December 18, 1971, and the Protocol concluded in London on November 19, 1976.

The *Canada Shipping Act* through Part XVI establishes the liability of the ship owner for pollution. Section 677 (1) states that the Owner of the ship is liable for the following:

- ◆ For oil pollution damage from the ship.
- ◆ For costs and expenses incurred by:
 - The Minister of Fisheries and Oceans.
 - A response organization to whom a certificate of designation has been issued pursuant to subsection 660.4(1).
 - Any other person in Canada.
 - Any person in a state, other than Canada, that is a party to the Civil Liability Convention. In respect of measures taken to prevent, repair, remedy or reduce oil pollution damage from the ship, including measures taken in anticipation of a discharge of oil from the ship, to; or
 - The extent that the measures taken and the costs and expenses are responsible, and for any loss or damage caused by such measures; and
- ◆ For costs and expenses incurred:
 - By the Minister of Fisheries and Oceans in respect of Measures taken to pursuant to paragraph 678(1) (a) in respect of an monitoring, or in relation to the direction of the taking measures or their prohibition, pursuant to paragraph 678 (1) (b) or (c), or
 - By any other person in respect of measures the person was directed to take, or prohibited from taking, pursuant to paragraph 678 (1) (b) or (c), to the extent that the measures taken and the costs and expenses are reasonable, and for any loss or damage caused by such measures.

Under the Act, the Minister is provided with the authority to take necessary measures, as the Minister deems appropriate. Section 678 (1) states that where the Minister believes on reasonable grounds that a ship has discharged, is discharging or is likely to discharge a pollutant, the Minister may:

- ◆ Take such measures as the Minister deems necessary to repair, remedy, reduce or prevent pollution damage from that ship, including the removal or destruction of the ship and its contents, and may sell or otherwise dispose of the ship and its contents.

- ◆ Monitor the measures taken by any person to repair, remedy, reduce or prevent pollution damage from the ship; or
- ◆ Where the Minister considers it necessary to do so, direct any person to take measures referred to in paragraph (b), or prohibit any person from taking such measures.

B2Gold Nunavut will continue to develop policies that will provide safe operations and all events will be planned with the intent of reducing, to the greatest degree possible, accidental discharges.

12.3 IDENTIFICATION OF THIRD-PARTY LIABILITIES

Section 712 of Part XVI of the Canada Shipping Act provides the instrument for claims for loss of income due to a pollution event for:

- ◆ An individual who derives income from:
 - Fishing
 - The production, breeding, holding or rearing of fish; or
 - The culture or harvesting of marine plants.
- ◆ The owner of a fishing vessel who derives income from the rental of fishing vessels to holders of commercial fishing licenses issued in Canada.
- ◆ An individual who derives income from the handling of fish on shore in Canada directly after the landing thereof from fishing vessels.
- ◆ A person who fishes or hunts for food or animal skins for his own consumption or use.
- ◆ A person who rents or charters boats in Canada for sport fishing; or
- ◆ A worker in a fish plant in Canada.

A person affected as a result of a discharge of oil from a ship and whose losses are not recoverable otherwise under any other law, may, within a prescribed time limit, file a claim with the Administrator for past or future loss.

Identifiable third party liabilities related to shipping include:

- ◆ The Hamlets of Cambridge Bay and Kugluktuk in the event of spill in Bathurst Inlet that adversely impact the marine environment.
- ◆ The hunters and trappers should a ship or tanker run aground and adversely impact the marine environment in spilling fuel or other chemicals into the marine environment.

13. MARINE SECURITY

13.1 MARINE SECURITY PLAN

Should it be necessary, B2Gold Nunavut will develop a Marine Security Plan per the requirements of the Marine Transportation Security Act.

13.2 SMUGGLING PREVENTION AND POLICING

Smuggling, particularly alcohol and prohibited substances, could have negative socio-economic effects on the community. Measures to prevent smuggling will include:

- ◆ The crew of the ship will not be allowed to take any tobacco or alcohol ashore.
- ◆ Any crew member under the influence of alcohol or attempting to take alcohol ashore will be disciplined by the ship's Master.
- ◆ B2Gold Nunavut MLA security will send any crew member having alcohol back to the ship for disciplinary action or refer the matter to the Royal Canadian Mounted Police (RCMP) if prohibited substances are involved.

While it is anticipated that the RCMP will not be involved in security matters, all criminal activities or matters of a grave nature will be referred to the RCMP in Cambridge Bay.

14. ADAPTIVE MANAGEMENT

The Shipping Management Plan will be reviewed on an annual basis and revised/updated as required.