Volume 8:
Environmental Management System

MADRID-BOSTON PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

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MADRID-BOSTON PROJECT
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Table of Contents

List of Figures

FIGURE **PAGE**

List of Tables

TABLE **PAGE**

List of Appendices

Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

AQMP	Air Quality Management Plan
CEA Agency	Canadian Environmental Assessment Agency
CEAA	*Canadian Environmental Assessment Act*
EHS	Environment, Health, and Safety
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
EPP	Environmental Protection Plan
HSLP	Health Safety and Loss Prevention
IC	Implementation Committee
IEAC	Inuit Environmental Advisory Committee
IIBA	Inuit Impact and Benefit Agreement
INAC	Indigenous and Northern Affairs Canada
JHA	Job Hazard Assessment
KIA	Kitikmeot Inuit Association
MMER	Metal Mining Effluent Regulations
MSDS	Material Safety Data Sheet
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
OMS	Operation, Maintenance and Surveillance
SERP	Surface Emergency Response Plan
SOP	Standard Operating Procedure
THA	Task Hazard Assessment
TIA	Tailing Impoundment Area
TMAC	TMAC Resources Inc.
UERP	Underground Emergency Response Plan

VEC	Valued Ecological Component
VSEC	Valued Socio-economic Component
WMMP	Wildlife Mitigation and Monitoring Plan

1. Overview

1.1 APPROACH TO THE DEVELOPMENT OF MANAGEMENT PLANS

TMAC has a functioning environmental health and safety management system (EHSMS) composed of numerous management plans that were developed and approved under its NIRB Project Certificate No. 003, and, Type A Water Licence 2AM-DOH1323 for the Doris mine of the Hope Bay Belt development. TMAC Resources Inc.'s (TMAC; the Company; the Proponent) vision is to continue to utilize existing plans for all developments on the Hope Bay belt, and only modify the plans as required and at the appropriate stage of permitting or development of the Project. Separate management plans will not be required for every new development on the belt as activities at each new site will largely duplicate activities and management requirements already in place for the Doris Project and associated infrastructure. Any site specific requirements not already accounted for under an existing plan will be addressed under revisions to the plans as required.

Management plans provided as part of this EIS have been updated where applicable to incorporate components of the Madrid-Boston Project. These plans may be subject to annual review and may undergo further revisions later in the development process, during water licencing, fisheries authorization permitting, or prior to facility construction. As requested in NIRB guideline 9.1, Table 1.1-1 provides an overview of TMAC's existing management plans. TMAC agrees with the NIRB's guidance that it is:

> *"recognized that various items may be dependent on the Proponent's development plans for the Project, which will continue to be refined throughout the NIRB's review process. While some information required under these plans might not be available for the Proponent's Draft EIS submission, the Proponent shall include a scheduled timeline relating to the stages of the NIRB's process or the later licencing/regulatory processes when this information will become available (i.e., Technical Meeting, Final EIS, Final Hearing, and Water Licensing). In addition, the NIRB recognizes that flexibility in the arrangement of the information requested in the following sections may be required and the Proponent may use its judgement in consolidating or arranging the information in the most effective fashion." (NIRB Guideline – section 9.1).*

In the spirit of NIRB Guideline 9.1 and in consideration of existing TMAC plans and the guidance provided in NIRB guidelines 9.2 through 9.6, Sections 2 through 4 of this document presents an overview TMAC's Management Plans for the Hope Bay Belt. With respect to NIRB guidelines presented under. Table 1.1-1 of this environmental management system (EMS) indicates where existing plans and plans that have been updated for the Project are located, and the proposed timing for update if required.

1.2 INTRODUCTION TO TMAC'S ENVIRONMENTAL MANAGEMENT SYSTEM

The purpose of the EMS is to provide the framework for TMAC to achieve its environmental, health and safety goals through a consistent review and evaluation. The EMS outlines how goals and objectives are established to manage regulatory, licence and or permit requirements and agreements with the Kitikmeot Inuit Association. The EMS also provides a framework for governance and environmental management practices. These practices demonstrate how TMAC will avoid, reduce, or minimize the potential adverse environmental effects identified in the Project Environmental Impact Statement (EIS). The core elements of the EMS are described in Section 2.

Table 1.1-1. List of EMPs for Madrid-Boston

NIRB Guidelines Section	Plan Included in NIRB Guideline	Management Plans	Comment	Expected Creation/Revision
Environmental Management System (EMS)				
9.1	Environmental Management System	This Document (EIS Volume 8).	As per NIRB guideline 9.1, existing EMPs and additional EMPs will be developed during the NIRB and NWB processes as the Madrid-Boston Project is refined and reviewed by relevant parties.	As required.
9.2	Environmental Protection Plan	To be developed prior to construction of Madrid-Boston.	An Environmental Protection Plan will be developed prior to construction as per NIRB Guideline 9.2.	Prior to Construction of the Madrid-Boston Project.
Biophysical Management Plans				
9.4.1	Risk Management and Emergency Response	*Surface Emergency Response Plan, TMAC Resources, December 2017 (Volume 1, Annex V1-7, Package P4-1).* *Underground Emergency Reponses Plan, TMAC Resources, December 2017 (P4-2).* *Oil Pollution Prevention Plan (OPPP)/Oil Pollution Emergency Plan (OPEP), TMAC Resources, August 2017 (Volume 8, Annex V8-1).*	Updated Surface Emergency Response Plan and Underground Emergency Reponses Plan are provided with this EIS. TMAC's OPPP/OPEP has been approved by Transport Canada and it is provided as part of this EIS.	As required post NIRB-NWB review.
9.4.2	Fuel Management	*Oil Pollution Prevention Plan (OPPP)/Oil Pollution Emergency Plan (OPEP) TMAC Resources, August 2017 (V8-1).* *Hope Bay Project Spill Contingency Plan, TMAC Resources, December 2017 (P4-3).*	TMAC's OPPP/OPEP has been approved by Transport Canada and it is provided as part of this EIS. An updated Hope Bay Project Spill Contingency Plan is being provided as part of EIS.	As required post NIRB-NWB review.
9.4.3	Spill Contingency	*Hope Bay Project Spill Contingency Plan, TMAC Resources, December 2017 (P4-3).* *Oil Pollution Prevention Plan (OPPP)/Oil Pollution Emergency Plan (OPEP) TMAC Resources, 2016 (V8-1).*	An updated Hope Bay Project Spill Contingency Plan is being provided as part of EIS. TMAC's OPPP/OPEP has been approved by Transport Canada and it is provided as part of this EIS.	As required Post NIRB-NWB review.

NIRB Guidelines Section	Plan Included in NIRB Guideline	Management Plans	Comment	Expected Creation/Revision
Biophysical Management Plans *(cont'd)*				
9.4.4	Site Water Monitoring and Management	*Doris Project Domestic Wastewater Treatment Management Plan. TMAC Resources, December 2017 (P4-4).* *The Hope Bay Project, Boston Sewage Treatment Operations and Maintenance Management Plan. TMAC Resources 2017 (P4-5).* *Hope Bay Project Groundwater Management Plan. TMAC Resources, December 2017 (P4-6).* *Hope Bay Project Doris-Madrid Water Management Plan. TMAC Resources, December 2017 (P4-7).* *Hope Bay Project Boston Water Management Plan. TMAC Resources, December 2017 (P4-8).* *Water and Ore/Waste Rock Management Plan. SRK 2009 and June 2010 Addendum (P4-12).* *Hope Bay Project: Boston Sewage Treatment Operation and Maintenance Plan. TMAC Resources 2017 (P4-5).* *Hope Bay Project Doris- Madrid Tailings Impoundment Area Operations, Maintenance, and Surveillance Manual December 2017 (P4-9).* *Hope Bay Project Boston Tailings Management Area Operations, Maintenance, and Surveillance Manual December 2017 (P4-10).*	Site Water Management for the Project includes: • Domestic wastewater treatment. • Groundwater. • Surface water. • TIA water. • Quality Assurance and Quality Control Plan. Where applicable these plans have been updated to address the Madrid-Boston Project and are provided as part of this EIS.	As required post NIRB-NWB.
9.4.5 and 9.4.6	Ore Storage and Waste Rock Management	*Hope Bay Project Waste Rock and Ore Management Plan, Nunavut, TMAC December 2017 (P4-11).* *Hope Bay Project Water and Ore/Waste Rock Management Plan for the Boston Site. SRK 2009 and June 2010 Addendum (P4-12).*	The Hope Bay Project Waste Rock, Ore and Mine Backfilling Management Plan has been updated and is being provided as part of this EIS. This Hope Bay Project Water and Ore/Waste Rock Management Plan for the Boston Site is provided to describe management at the existing Boston Site permitted under the Type B Water Licence 2BB-BOS1727.	As required post NIRB-NWB review.

NIRB Guidelines Section	Plan Included in NIRB Guideline	Management Plans	Comment	Expected Creation/Revision
Biophysical Management Plans *(cont'd)*				
9.4.6	Tailings Management	*Hope Bay Project Doris- Madrid Tailings Impoundment Area Operations Maintenance and Surveillance Manual. December 2017 (P4-9).* *Hope Bay Project Boston Tailing Management Area Operations, Maintenance and Surveillance Manual. December 2017 (P4-10).*	These plans have been updated and are provided as part of the EIS.	As required post NIRB-NWB review.
9.4.7	Waste Management	*Hope Bay Project Non-hazardous Waste Management Plan. TMAC Resources, Dec 2017 (P4-13).* *Hope Bay Project Hydrocarbon Contaminated Material Management Plan. TMAC Resources, Dec 2017 (P4-14).*	Updated management plans provided with the EIS to address components of the Madrid-Boston Project.	As required post NIRB-NWB review.
9.4.8	Hazardous Materials Management	*Hope Bay Project Spill Contingency Plan, TMAC Resources, December 2017 (P4-3).* *Hope Bay Project Hazardous Waste Management Plan. TMAC Resources, December 2017 (P4-15).*	Hazardous substance management is currently addressed under the updated Spill Contingency Plan and the updated Hazardous Waste Management Plan provided with the EIS.	As required post NIRB-NWB review.
9.4.9	Incineration Management	*Incinerator Management Plan, Hope Bay, Nunavut. TMAC Resources, Dec 2017 (P4-16).*	Updated Plan provided as part of the EIS.	As required post NIRB-NWB review.
9.4.10	Roads Management	Activities and infrastructure related to road management are addressed by various mechanisms.	Activities and infrastructure related to road management are addressed by various mechanisms. Aspects of road management such as dust control are addressed under the Air Quality Management and Mitigation Plan. Speed limits will be addressed site wide. Aspects of road design will comply with the *Mines Safety Act*. Road design involving water crossings will involve review and authorization from DFO.	As per NIRB guideline 9.1, TMAC does not believe that a stand-alone plan is applicable or required.
9.4.11	Shipping Management	Not applicable.	Shipping is regulated by the *Canada Shipping Act* and the *Arctic Waters Pollution Prevention Act*. TMAC will address any requirements in procurement contracts with applicable shipping companies.	As per NIRB guideline 9.1, TMAC does not believe that a stand-alone plan is applicable or required.

NIRB Guidelines Section	Plan Included in NIRB Guideline	Management Plans	Comment	Expected Creation/Revision
Biophysical Management Plans *(cont'd)*				
9.4.12	Borrow Pits and Quarry Management	*Hope Bay Project Quarry Management & Monitoring Plan. TMAC Resources, December 2017 (P4-17).*	Updated belt wide plan to include quarry management and monitoring for the proposed Hope Bay Project is provided as part of the EIS.	As required post NIRB-NWB review.
9.4.13	Explosives Management	*Hope Bay Project, Explosives Management Plan, TMAC Resources December 2017 (P4-23).*	A draft Explosives Management Plan is being provided as part of this EIS.	This plan may be updated post NIRB-NWB review process.
9.4.14	Air Quality Monitoring and Management	*Hope Bay Project Air Quality Management Plan, TMAC Resources Dec 2017 (V8-2).*	This plan has been updated to address components of the Madrid-Boston Project and it is provided with this EIS.	As required post NIRB-NWB review.
9.4.15	Noise Abatement Plan	*Hope Bay Project Noise Abatement Management Plan, TMAC Resources December 2017 (V8-8).*	Updated Management Plan is being provided as part of this EIS.	As required post NIRB-NWB review.
9.4.16	Aquatic Effects Management Plan	*Hope Bay Project Doris Aquatic Effects Monitoring Plan. TMAC Resources, December 2017 (P4-18).*	The AEMP has been updated to address components of the Madrid-Boston Project and is provided with this EIS. Further updates may be developed through the NIRB and NWB process.	As required post NIRB-NWB review.
9.4.17	Wildlife Mitigation and Monitoring Plan	*Hope Bay Project Wildlife Mitigation and Monitoring Plan. TMAC Resources, December 2017 (V8-3) 3).*	This plan has been updated to address components of the Madrid-Boston Project and is provided with this EIS. Further updates may be developed through the NIRB process.	As required post NIRB-NWB review).
9.4.18	Conceptual Offsetting Plan	20100916 NU-02-0117.3 SEP10 Updates to No Net Loss Plan for Tail Lake. 20100916 NU-02-0117.3 SEP10 Updates to No Net Loss Plan for Tail Outflow.	In line with *Fisheries Protection Policy Statement* (DFO 2013), TMAC address the requirement for a NNLP as outlined in NIRB guideline 9.4.18 through the development of a fisheries offsetting plan. A conceptual Fisheries Offsetting Plan is included in the FEIS (Appendix V5-6AA).	To be assessed during NIRB and NWB review and finalized with DFO at the Licensing phase.
Socio-economic Management Plans				
9.5.1	Business Development	Addressed in Schedule F of TMAC's IIBA with the KIA.	Addressed in the IIBA.	As per NIRB guideline 9.1, TMAC does not believe that a stand-alone plan is applicable as business development is addressed under the IIBA.

NIRB Guidelines Section	Plan Included in NIRB Guideline	Management Plans	Comment	Expected Creation/Revision
Socio-economic Management Plans *(cont'd)*				
9.5.2	Occupational Health and Safety	*Hope Bay Project Health and Safety Management Plan. TMAC Resources. December 2017 (V8-4).*	The plan is updated for the Hope Bay Project and is provided with this EIS. Further updates may be developed through the NIRB-NWB Process.	As required post NIRB-NWB review.
9.5.3	Community Involvement	*Hope Bay Project Community Involvement Plan. Dec 2016 (V8-5).*	This plan is provided with this EIS. Further updates may be developed through the NIRB-NWB process.	As required post NIRB-NWB review.
9.5.4	Cultural and Heritage Resources Protection	*Hope Bay Heritage Resource Protection Plan TMAC Resources Dec 2016 (V8-6).*	This plan has been updated for the Hope Bay Project and is provided with this EIS. Further updates may be developed through the NIRB-NWB process.	As required post NIRB-NWB reviewas required.
9.5.5	Human Resources	*Hope Bay Project Human Resources Plan. TMAC Resources Sept 2016 (V8-7).*	This plan has been is provided with this EIS. Further updates may be developed through the NIRB process.	As required post NIRB-NWB review.
9.6 and 9.6.1	Mine Closure and Reclamation Plan	*Hope Bay Project, Doris-Madrid Interim Closure and Reclamation Plan. SRK Nov 2017 (P4-21)* *Hope Bay Project, Doris-Madrid Interim Closure and Reclamation Detailed Cost Estimate. SRK Nov 2017 (P4-22).* *Hope Bay Project - Boston Conceptual Closure and Reclamation Plan SRK Nov 2017 (P4-19)* *Hope Bay Project – Boston Conceptual Closure and Reclamation Plan, Detailed Cost Estimate. SRK Nov 2017 (P4-20).*	These plans have been developed for the Madrid-Boston Project and are provided with this EIS. Further updates may be developed through the NIRB-NWB review process. Detailed Cost Estimates memos for the Doris-Madrid and Boston Sites provide a detailed description of the costing assumptions and associated closure and reclamation cost for the Project sites. These memos should be read in conjunction with the associated Reclamation and Closure Plans .	As required post NIRB-NWB review.

As part of the EMS, specific management plans (EMPs) are used to provide the overarching direction for environmental and socioeconomic management for the Project and form the basis for the ongoing development of further detailed environmental documentation through permitting and the different phases of the Project. These plans focus on specific Valued Ecological Components (VECs) and Valued Socio-economic Components (VSECs). Where relevant, the EMP outlines or identifies:

- the purpose of the plan;
- the legislative context, consisting of Acts, regulations, guidance documents or permits;
- the targeted VECs and VSECs and potential effects resulting from Madrid-Boston;
- the objectives of the plan;
- key mitigation and management measures for measurement of performance; and
- monitoring, reporting, auditing and review requirements.

An overview of the EMPs is presented in Table 1.1-1 and are outlined further in Sections 2 through 4. The finalization of the EMPs will be developed through the Nunavut Impact Review Board (NIRB) and Nunavut Water Board (NWB) review and licencing processes respectively and are in accordance with regulatory requirements, good management practices and TMAC's governance commitments and corporate policies. The EMS provides the framework through which the EMPs are implemented. The EMS is the mechanism through which TMAC will ensure compliance with legal requirements pertaining to the Project.

The EMS offers flexibility for each EMP to respond to changes in Madrid-Boston execution, the regulatory regime, the biophysical and socio-economic environments, technology, research results, and the understanding of traditional knowledge or any other situations that arise. Where applicable, threshold values and indicators are or will be established (depending on the phase of Project development) and are used to confirm compliance and/or trigger management actions. A system of accountability is also outlined and implemented under each EMP.

Section 1.4 of this document outlines the follow-up and adaptive management programs that are conducted through all phases of the mine life. These provide an overview of the monitoring plans for the biophysical and human environment required of operating mines. It is expected that these plans will be modified and refined through discussions with regulatory authorities and during the permitting phase.

1.3 TMAC'S ENVIRONMENTAL MANAGEMENT SYSTEM

TMAC is committed to operating in a safe and environmentally responsible manner. Change is continual and thus an adaptive management approach is essential. The EMS strategy is developed and anchored on an effective adaptive management philosophy. The key aspects of the EMS are:

- to review environmental goals;
- to identify environmental impacts and legal requirements;
- to set environmental protection measures to reduce environmental impacts;
- to comply with legal requirements and conform with aboriginal commitments;
- to establish programs to meet objectives and targets;
- to monitor and measure progress in achieving the objectives;

- to ensure employees' environmental awareness; and
- to continually review progress of the EMS and make improvements.

The EMS integrates the Company's management approach for all environmental, health and safety matters. The EMS is based on a continuous improvement model as defined in the internationally recognized standards ISO 14001:2004, Environmental Management Systems.

1.3.1 Precautionary Principle

The Precautionary Principle acknowledges the potential for a "… t*hreat of serious or irreversible damage*…" (UNCED 1992). Actions to avert risks of serious or irreversible harm to the environment will be enacted given that a sound or credible case that a risk of serious or irreversible harm exists (Privy Council Office, Government of Canada 2003). The use of the Precautionary Principle promotes action to avert risks of serious or irreversible harm to the environment. TMAC integrates the application of the Precautionary Principle in its Environment, Health and Safety (EHS) management practices.). The Company's approach consists of the following elements:

- Incorporating a cautionary approach within the Framework of its EHS Management System:
  - Integrate the application of the Precautionary Principle with the application of and support for other relevant principles;
  - Develop clear and context specific obligations and operational measures with respect to environmental protection and environmental management;
  - Include relevant stakeholders in a transparent process of assessment, risk assessment, decision-making and implementation; and
  - Base cautionary decision-making on the best available information, including that relating to human drivers of threats to the environment that could cause serious or irreversible harm.
- Defining the issues/concerns, options and consequences:
  - Characterize the *issues/concerns*, assess the uncertainties surrounding ecological, social and economic drivers of changes; and
  - Identify the available actions to address *issues/concerns*, and assess the likely and credible consequences of these various courses of action and inaction on the environment.
- Devising the appropriate cautionary measures:
  - Specify that cautionary measures are being taken and be explicit about the uncertainty and likelihood to which the measures are responding;
  - In applying the Precautionary Principle, adopt measures that are proportionate to the likelihood of potential irreversible harm; and
  - Consider social and economic costs and benefits when applying the Precautionary Principle and where decisions would have adverse effects on the community explore ways to avoid or mitigate these adverse effects.
- Implementing effectively:
  - Use an adaptive management approach which includes the following core elements:
    - monitoring of potential impacts based on agreed indicators that are relevant to Project-related effects;
    - establishing an efficient and effective compliance monitoring system;

- promoting research to reduce uncertainty; and
- ensuring periodic evaluation of monitoring results and adjustment of operational activities as required.

1.3.2 Inuit Participation

Inuit Engagement will consist of the following activities:

- scheduled meetings between Kitikmeot Inuit Association (KIA) and TMAC President,
- regular updating of KIA Board by TMAC Executive,
- attendance at the KIA Annual General Meeting,
- participation in the IIBA Implementation Committee,
- presentation of the IIBA Annual Evaluation Report to the KIA Board,
- meetings with the Inuit Environmental Advisory Committee (IEAC) in order to review Environmental Management Plans, discuss Project-related environmental issues, and obtain advice from knowledgeable Inuit on these matters,
- meetings between TMAC Finance staff and Kitikmeot Qualified Business,
- regular meetings with relevant KIA Lands, Employment and Training and Executive staff,
- regular meetings with individual Inuit job seekers, and
- site visitation by KIA Board, IIBA Implementation Committee, IEAC, and individual harvesters.

1.3.3 Traditional Knowledge

Traditional knowledge has been incorporated into Project design, existing environment characterization, and impact interpretation as described throughout the Madrid-Boston EIS. TMAC has also incorporated traditional knowledge in the design and execution of Project baseline and monitoring plans, with traditional knowledge being solicited to optimize monitoring program design and to, guide implementation of mitigation measures. Such consideration of traditional knowledge will continue to be applied in future development, revision, and implementation of Project management and mitigation systems and plans.

1.3.4 Core Elements of the EMS

The EMS is structured around 10 core elements with associated sub-elements (Table 1.3-1). Each of the elements is addressed in additional detail below. The EMS elements are interrelated and each one is essential for the effective operation of the process. Environment, health and safety are integrated in the EMS framework. Each element describes an essential part of the overall management of matters relating to environmental, health and safety.

Table 1.3-1. Core Elements of Environmental Management System

Element	Title
1	Environmental approach and leadership
2	Planning
3	Organization and resources
4	Documents and records

Element	Title
5	Risk management
6	Regulatory requirements
7	Implementation, monitoring and measurement
8	Emergency and crisis management
9	Monitoring
10	Management review

1.3.4.1 Element 1: Environmental Approach and Leadership

TMAC is dedicated to maintaining a safe environment for both the land it occupies and the people that drive its success. While mining activities and associated infrastructure development cannot occur without an impact on the surrounding natural environment and communities, the company will strive to limit adverse environmental and social impacts and to enhance positive impacts (Appendix V8-1A).

TMAC is committed to managing environment, health and safety issues to the highest standards. TMAC considers leadership accountability and transparency to be key components in the successful implementation of the environmental management process. The commitment of TMAC's executive and management team will demonstrate to employees, contractors, government and the community that the company regards excellence in environmental performance a priority.

1.3.4.2 Element 2: Planning

Effective safety, health and environmental stewardship is based on careful planning, diligent implementation, review and assessment of performance and a desire to improve over time.

TMAC will establish through the NIRB and NWB review process objectives to be addressed in each EMP. The objectives are set alongside business objectives during the business planning process to give a clear indication of the importance placed by TMAC on EMS performance. Programs are developed to ensure that these objectives are achieved. The following subsections detail the key elements to our planning.

TMAC will review and update environmental management plans as required to target specific issues and ensure that responsibilities for individual actions are clearly assigned. Development of these plans is carried out on the basis of a continuous-improvement cycle and defines objectives that are clearly measurable and achievable.

The scope of the EMS applies to all operations and consists of the following issues as they relate to health and safety and environmental management.

Key environmental, health and safety objectives for the Project are to:

- Protect worker health.
- Prevent incidents or workplace accidents and injuries.
- Maintain productivity by directly or indirectly enhancing social conditions to positively affect the well-being of workers.
- Provide a safe and healthy workplace for all employees, contractors and visitors.
- Ensure all people understand zero harm.

- Recognize that social responsibility and environmental management are among the highest corporate priorities.
- Establish and maintain relationships with internal and external stakeholders.
- Maintain information on legislative requirements and environmental and social aspects associated with the organization's activities.
- Assign clear accountability and responsibility for environmental protection and social responsibility to management and employees.
- Facilitate environmental planning through Project life cycle.
- Provide a process for achieving targeted performance levels.
- Provide appropriate and sufficient resources, including training, to achieve targeted performance levels on an ongoing basis.
- Evaluate environmental performance against TMAC's environmental objectives or predictions and seek improvement where appropriate.
- Routinely review the TMAC EMS and identify opportunities for improvement of the system and resulting environmental performance.

Objectives are reviewed regularly through the operations phase to ensure that there is continuous improvement in environmental performance.

1.3.4.3 Element 3: Organization and Resources

TMAC will identify and provide the resources required to implement, maintain and improve the EMS and environmental, health and safety requirements. Similarly, key contractors are required to demonstrate to TMAC's satisfaction that they have appropriate resources and that they have an appropriate organizational structure to meet environmental, health and safety commitments and Project conditions. Responsibilities and accountabilities for the provision of environmental management are assigned to all personnel throughout the organization by means of management plans, procedures and position descriptions.

TMAC and contractor personnel will undertake environmental awareness training to provide an understanding of TMAC's Environmental Policy, the environmental aspects and sensitivities of the proposed activities, and the EMS. All employees are appropriately trained and qualified to carry out their duties under the scope of the EMS. The three key aspects of training are general environmental, cultural awareness and job specific training.

The roles and responsibilities for the implementation of the EHS Management System will evolve with the advancement of the Project and review and permitting process for Madrid-Boston. Throughout the Project lifecycle, the roles and responsibilities of TMAC personnel will be as follows:

<u>Vice-President and Director of Environment</u>

- Provide corporate resources and overall direction to the implementation of the EMS.
- Review and approve revision requests as required.

<u>Site Environmental Coordinator</u>

- Conduct a review of the EMS on an as needed basis.
- Ensure revisions are distributed to managers and supervisors.

- Perform document controls.
- Ensure that managers, supervisors and their staff are familiar with the EMS and its procedures.
- Obtain approvals from management as required.

Site Managers

- Implement the EMS in daily operations.
- Provide training and support to ensure successful implementation of the EMS.
- Initiate changes to improve and update the plan.

Site Personnel

- Familiarize themselves with the EMS.
- Have knowledge of any required reporting procedures.

Environmental Consultants

- Provide technical support to EMS development and on-going revisions.
- Provide monitoring results as part of the EMS, as requested by the VP Environment and Director of Environment.

Stakeholders

- Monitor TMAC operations.
- Provide input and comment as required.

The Construction phase of the Project is expected to be carried out over approximately a four-year period. TMAC will retain contractors to manage aspects of the design and construction of the Project. During the construction period, activities will take place concurrently at various Project locations. Contractors will assume responsibility for aspects of the construction activities, including some environmental management, for this period. The roles and responsibilities of individuals responsible for the implementation and monitoring of the EMS system will be defined as the contractors and team develops leading up to construction.

1.3.4.4 Element 4: Documents and Records

TMAC will maintain documented programs and procedures to address hazards and risks, regulatory requirements, and operating standards identified in the EMS elements. Detailed environmental documentation, e.g., plans, procedures and processes, are developed for the Project to assist in the successful implementation of the EMS. The information is maintained in a suitable medium, in both printed and electronic form, to provide direction to related documentation and to describe the core elements of the management system and how these elements interact. TMAC will ensure that all environmental records are legible, identifiable and traceable to the activity, product or service involved. Environmental records are stored and maintained in such a way that they are readily retrievable.

1.3.4.5 Element 5: Risk Management

As part of the Madrid-Boston development, TMAC will continue to manage risks associated with operations and potential environmental impacts. The Risk Management approach ensures the systematic assessment and management of risk.

TMAC recognizes the risks that can arise from temporary and permanent changes to organization, personnel, systems, processes, procedures, equipment, products, materials or substances, laws and regulations. Work cannot proceed unless the changes are managed through the EMPs. All proposed changes will therefore be managed by implementing the following steps:

1. Identify the change.
2. Assess the risk associated with the change.
3. Establish responsibility to manage the change.
4. Develop a plan of action.

If an alteration is approved by the TMAC management, then the relevant EMPs are revised, or Work Plans, Job Hazard Assessments (JHAs), Task Hazard Assessments (THAs) and/or Standard Operating Procedures (SOPs) can be revised or introduced to reflect the agreed-upon change.

1.3.4.6 Element 6: Regulatory Requirements

TMAC will implement a compliance framework to manage and monitor its regulatory obligations and ensure that performance expectations are met. TMAC will ensure that it achieves full regulatory compliance by the following means:

- Implement awareness training for its employees and contractors.
- Actively use and maintain a permit and licence compliance matrix.
- Conduct regular activities to monitor compliance.

A summary of the government approvals and legislative requirements applicable to the Project is maintained.

1.3.4.7 Element 7: Implementation, Monitoring, and Measurement

TMAC will implement the commitments made during the environmental assessment process, its obligation in agreements with the Kitikmeot Inuit Association and communities, regulatory requirements and corporate goals, objectives and indicators. Monitoring regimes as outlined in the management plans are carried and the results of monitoring are evaluated. The need for procedures is identified by reviewing processes, activities, tasks and assessing their potential impact on personnel, assets and the environment.

TMAC has developed and implemented an incident management and investigation procedure. The intention of this procedure is to ensure that all incidents, including “near misses,” no matter how minor, are recorded, investigated and reported, where applicable. This will achieve the following objectives:

- At risk behaviour is identified.
- Deficiencies in workplace conditions are identified.
- Improvements to methods and equipment are identified.
- Failures in management systems and controls are identified.
- Lessons are learned.
- Regulatory-authority and industry reporting obligations are fulfilled.
- Management systems are continuously improved.

This procedure follows clear and documented guidelines to ensure that all incidents are uniformly, methodically and effectively investigated to a degree commensurate with their potential severity. The objective is to establish the facts, determine the root cause(s) and to take the appropriate action to prevent a recurrence of the event. All incidents, investigations and corrective and preventive actions are inputted to an incident reporting database and tracked until closure.

As future permits are received, TMAC will review the terms and conditions. A Regulatory Compliance Matrix will then be populated and maintained to capture the permit conditions and compliance requirements from the permits received. The spreadsheet is reviewed as required to update status, incorporate new conditions and edit or remove conditions that have changed or no longer apply.

The matrix can be used to display type of terms and conditions, conditions that are specific to timing, and/or responsible party. These can be applied by Project phase to further develop environmental performance check-sheets used for daily monitoring activities.

1.3.4.8 Element 8: Emergency

Plans and procedures are detailed in the subsequent chapters to identify potential emergency threats associated with TMAC's operations. A rapid and effective response to emergency situations can significantly reduce any impact on personnel safety, the environment and nearby communities. This response is achieved by implementing prevention, preparation, response and recovery strategies.

For Madrid-Boston, potential for accidents and malfunctions are identified using the hazard identification and risk assessment tools discussed in Volume 7 of the EIS. The Surface and Underground Emergency Response Plans will be updated as required to account for mining at Madrid and Boston deposits once the Project is sanctioned for detailed design. Procedures that are directly related to response to environmental spills and incidents are presented in relevant EMPs (e.g., the Spill Contingency Plan and Hazardous Materials Management Plan).

The Surface and the Underground Emergency Response Plans contain the identification of key roles and responsibilities, and the procedures to be followed if the plans are activated. Relevant personnel receive sufficient training to ensure that they have the skills and competence to respond to an emergency.

1.3.4.9 Element 9: Monitoring

Monitoring is conducted to ensure the following:

- There is compliance with regulatory requirements, Project approval conditions, and licence conditions.
- The identified objectives of the Project and applicable permits and licences are being achieved.

Monitoring Programs

Monitoring programs are designed to provide an indication of changes in environmental media that might be of future concern. With monitoring, additional mitigation measures can be implemented and the appropriate EMP modified if required.

Adaptive Management

As part of continual improvement, management plans are revised to accommodate new and amended legislation, evolving industry standards, emerging community concerns, or changes to the Project's design or schedule. By taking an adaptive management approach, rigorous plans can be developed early based on the best information available before project detailed engineering and construction.

After the detailed engineering design phase, these plans can be adjusted if needed, and monitoring implemented to measure whether the actions in the management plans are working as designed.

1.3.4.10 Element 10: Management Review

To ensure continuous improvement, reviews of the suitability and effectiveness of the Management Process and its associated implementation documents are scheduled periodically. Management reviews are based on the following considerations:

- review of incident investigation outcomes,
- changes in organization and/or operational practices,
- changes in statutory environmental requirements,
- assessments of monitoring objectives have been met, and
- analyses of the continuing adequacy of the EMS.

Implementation documents (e.g., management plans, procedures and monitoring programs) are reviewed periodically to assess their effectiveness and to ensure that they remain applicable to current operations. Management review outcomes, including observations, conclusions and recommendations, are documented and tracked through to completion.

1.3.5 Overview Environmental Management Plans

The development and implementation of the EMPs in this volume are key tools for the environmental protection and management measures necessary to avoid, reduce or mitigate the potential effects of the Project on the environment. Figure 1.1-1 shows where the EMPs are placed in relation to other EMS documentation.

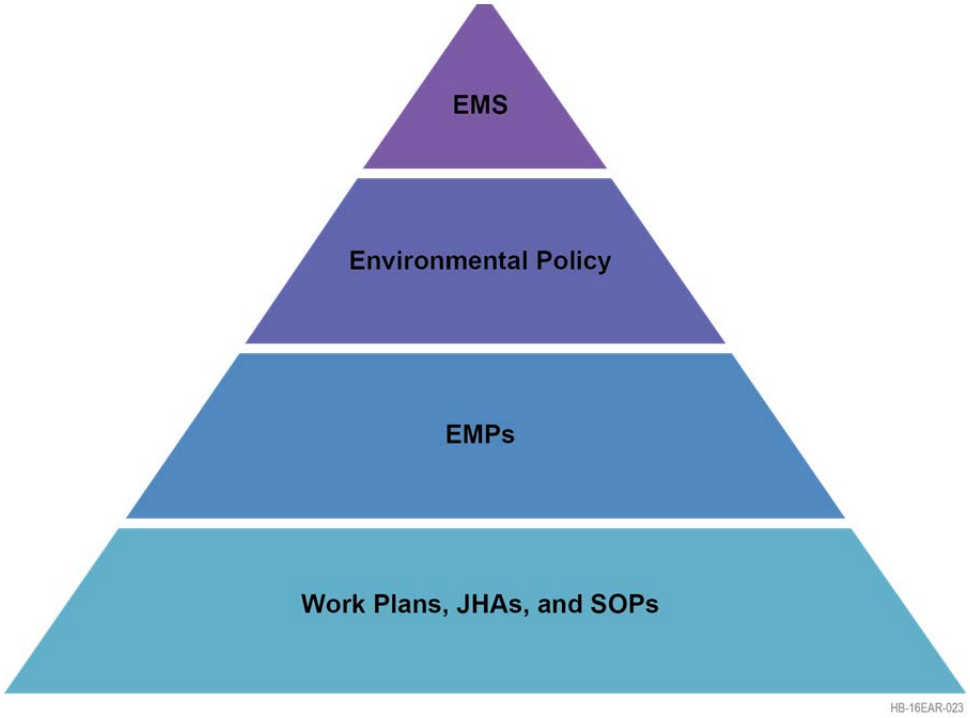

Figure 1.1-1. Hierarchy of Environmental Management

Certain EMPs are further advanced than others at this time, with certain plans at a conceptual stage of development. Refinements to EMPs are developed as permitting progresses prior to the construction and operations phases to manage the identified potential impacts on the social and terrestrial VECs and VSECs assessed for this Project.

In addition to these plans, work instructions and procedures are developed to support the EMPs and ensure that they are effectively implemented. A greater level of detail on the technical input and practical application of the management and control measures will become available as the Project moves towards the construction phase following regulatory review through the NIRB and NWB processes. These further details are used in an ongoing program of improvement and refinement of EMP documentation to ensure that the objectives are achieved. These EMPs will serve as a guide and framework for the development of more detailed construction EMPs and, in due course, operations EMPs.

For each of the EMPs, TMAC has set out objectives with consideration of the following:

- TMAC's Environmental Policy,
- environmental aspects and impacts,
- relevant federal and provincial standards,
- legal and other requirements,
- measurable objectives, and
- opportunities for continuous improvement.

Environmental objectives are described below to promote consistent application and to ensure that all parties concerned interpret them in the same way:

- Several EMPs will have high-level objectives which are consistent with conditions set out in TMAC's Project Certificate or licences.
- To gauge the extent to which environmental objectives have been achieved, 'threshold values' or narrative statements are outlined in the EMPs for specific indicators which, if reached, will trigger specified management responses.
- The setting of target thresholds in the EMPs are based on an environmental indicator which is a significant physical, chemical, biological, social, or economic variable that can be measured in a defined way for management purposes.

1.4 FOLLOW-UP AND ADAPTIVE MANAGEMENT

Follow-up monitoring is an essential tool for ensuring that a project is implemented as planned, that mitigation measures are effective, and potential adverse effects are avoided or minimized. It is through monitoring that any unanticipated adverse environmental effects can be discovered and prevented through adaptive management. Adaptive management is a planned and systematic process for continuously improving environmental management practices by learning about their outcomes. Adaptive management provides flexibility to identify and implement new mitigation measures or to modify existing ones during the life of a project (CEA Agency 2009).

The mitigations incorporated in the Project are based on best management practices and are expected to avoid, prevent or minimize adverse environmental or socio economic effects. Ongoing monitoring will inform TMAC regarding the effectiveness of these mitigation measures and verifying the accuracy

of the predictive effects. If any unforeseen adverse effects occur during the life of the Project, measures are taken to correct them.

As part of an adaptive management process, the EMS fully supports changes and updates by providing regular review of the adequacy of the environmental management programs and operational controls in light of concerns or other outcomes. EMS elements can then be updated as needed based on results and associated training programs can then be enhanced to improve the level of environmental protection. In this way, continual improvement of the Project EMS and mitigation programs are assured.

Details of the proposed monitoring plans are refined through discussions with regulatory authorities, communities and other stakeholders as review of the Project proceeds.

2. Biophysical Environment

TMAC has a functioning environmental health and safety management system (EHSMS) composed of numerous management plans that were developed and approved under its NIRB Project Certificate No. 003, and, Type A Water Licence 2AM-DOH1323 for the Doris mine of the Hope Bay Belt development. TMAC Resources Inc.'s (TMAC; the Company; the Proponent) vision is to continue to utilize existing plans for all developments on the Hope Bay belt, and only modify the plans as required and at the appropriate stage of permitting or development of the Project. Separate management plans will not be required for every new development on the belt as activities at each new site will largely duplicate activities and management requirements already in place for the Doris Project and associated infrastructure. Any site-specific requirements not already accounted for under an existing plan will be addressed under revisions to the plans as required.

All TMAC environmental management plans provided in this application are subject to annual review, and if required, updates to these plans will occur later in the development process, during and post-water licencing, fisheries authorization permitting, or prior to facility construction. As requested in NIRB guideline 9.1, Table 1.1-1 provides the expected stage in the process at which management plan updates would be made if required. TMAC agrees with the NIRB's guidance that it is:

> *"recognized that various items may be dependent on the Proponent's development plans for the Project, which will continue to be refined throughout the NIRB's review process. While some information required under these plans might not be available for the Proponent's Draft EIS submission, the Proponent shall include a scheduled timeline relating to the stages of the NIRB's process or the later licencing/regulatory processes when this information will become available (i.e., Technical Meeting, Final EIS, Final Hearing, and Water Licensing). In addition, the NIRB recognizes that flexibility in the arrangement of the information requested in the following sections may be required and the Proponent may use its judgement in consolidating or arranging the information in the most effective fashion." (NIRB Guideline – section 9.1).*

In the spirit of NIRB Guideline 9.1 and in consideration of existing TMAC plans and the guidance provided in NIRB guidelines 9.2 through 9.6, Section 2 through 4 of this document presents an overview of TMAC's Management Plans for the Hope Bay Belt.

2.1 ENVIRONMENTAL PROTECTION PLAN (EPP)

The EPP provides a practical way to facilitate field implementation of environmental regulations, practices, and procedures required to eliminate or reduce potential environmental effects. It is a working document for use in the workplace by Project personnel and contractors, as well as at the corporate level for ensuring commitments made in policy statements are implemented and monitored. The content of the EPP is developed in recognition of applicable permits, authorizations, approvals, and Inuit Knowledge.

The specific purposes of the EPP are as follows:

- Provide a plainly written reference document to ensure that commitments to minimize environmental effects will be met.

- Document environmental concerns and ensure appropriate protection measures are implemented.
- Provide concise (short and clear) instructions to Project personnel regarding procedures for protecting the environment and minimizing environmental effects.
- Provide a reference document for personnel when planning and/or conducting specific routine activities and working in specific areas.
- Provide for a training aid during implementation efforts.
- Communicate changes in the program through the revision process.
- Provide a reference to applicable legislative requirements and guidelines.

The format of the EPP is intended to enhance its use by Project personnel in the workplace and to provide an important plainly written support document. The EPP summarizes the overall approach to environmental protection planning and the requirements in various permits, approvals and authorizations issued for specific Project components and activities.

The EPP is subject to ongoing updates. The content will vary (expand or contract) depending on the phase of the development of the Project. Many of the specific EPP procedures will be developed by contractors as they begin construction on site.

Prior to the commencement of the Construction Phase (NIRB Guideline 9.2), the content of the EPP will be developed to ensure that appropriate and adequate environmental protection are in place for construction activities at all construction sites.

2.2 RISK MANAGEMENT AND EMERGENCY RESPONSE

Updated versions of the Surface Emergency Response Plan (SERP; P4-1) and an Underground Emergency Response Plan (UERP; P4-2) are provided for the Hope Bay Development.

TMAC is committed to providing a safe workplace for personnel and contractors. The goals of the SERP and UERP are thus to protect the health and safety of site personnel.

The objectives of the SERP and UERP are to provide TMAC employees and contractors with guidance on the systematic and effective response to emergency situations, thus containing and controlling such situations and mitigating the consequences to staff, contractors, or site visitors. The existing plans contain the required information regarding the following:

- emergency contact details;
- response procedures and levels of emergency;
- notification and alarm systems;
- prescribed actions per type and location of emergency;
- assembly areas; and
- specified responsibilities for critical personnel and the Emergency Response Group in particular.

These plans are subject to regular review and will be revised as necessary. In line with section 9.1 of the NIRB EIS Guidelines, these plans may be updated later in the licensing/regulatory process as well as the various development phases to address components of the Madrid-Boston Project as they become

refined through Project review with NIRB and NWB. The updates to these plans will build on the existing plans and will be adopted post-permitting.

2.3 FUEL MANAGEMENT

The NIRB EIS guidelines for the Project suggest that a Fuel Management Plan be developed that is linked to the Spill Contingency Plan and which includes the following:

- federal and territorial regulatory requirements;
- conceptual designs and procedures for fuel storage and bulk transfer;
- substances covered by the plan (e.g., oil, fuel, hazardous materials, chemicals and other deleterious substances);
- training for emergency response staff that includes distribution of Material Safety Data Sheets (MSDSs) to designated personnel;
- procedures for alerting, notification and reporting; and
- duties and responsibilities of designated organizations and personnel.

These NIRB guidelines are addressed in two management plans for the Project area:

- Hope Bay Project Spill Contingency Plan (P4-3); and
- Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (V8-1).

The Project's Spill Contingency Plan is described in Section 2.4. This plan makes specific reference to regulatory requirements, provides design, location and inventory details, describes training and personnel responsibilities, and establishes notification and reporting procedures for the Project. As this plan encompasses all the fuel types, i.e., hydrocarbon substances, in use at the Project, the information within is believed to adequately address the NIRB EIS guidelines as far as a Fuel Management Plan is concerned for Madrid- Boston Project.

In addition, the Project's Oil Pollution Prevention Plan/Oil Pollution Emergency Plan is substantially focussed on the shipping, transfer, handling and storage of bulk fuel at the Roberts Bay facility. The plan establishes comprehensive measures to ensure all shore preparations, emergency preparedness, equipment and personnel are in place to co-ordinate between TMAC and the other Project participants to transfer fuel between an anchored tanker and a barge, and from a barge moored at the jetty in Roberts Bay to the on-shore bulk fuel storage facility at Roberts Bay. The plan has been prepared by TMAC to meet regulatory requirements set out in the following applicable legislation and standards pertaining to Oil Handling Facilities (OHF):

- *Canada Shipping Act,* 2001, Part 8, Paragraphs 168(1),168(2), 168(3) and 182(a);
- Part II of the Response Organizations and Oil Handling Facilities Regulations;
- Part 2 and 3 of the Vessel Pollution and Dangerous Chemicals Regulations, 2012, including the Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants, 2009;
- *Canadian Environmental Protection Act* (CEAA), 1999; Release and Environmental Emergency Notification Regulations, 2011; and
- Oil Handling Facilities Standards, 1995.

The plan contains all steps involved from barge mooring, offload hose placement, hose-tank connection, communications, fuel transfer, fuel line monitoring, and hose disconnection, to ensure clear instructions are in place to prevent potential incidents from occurring. Environmental and safety measures are addressed throughout the process. The plan is intended to function utilizing existing site emergency plans and management systems, including the Surface Emergency Response Plan and the Hope Bay Spill Contingency Plan. Most aspects of fuel management are contained in the Project's Oil Pollution Prevention Plan/Oil Pollution Emergency Plan and this fulfills the requirement for a Fuel Management Plan as per the NIRB EIS guidelines for Madrid-Boston.

The plans are subject to regular review and are revised as necessary. If required, and in line with section 9.1 of the NIRB EIS Guidelines, these plans may be updated later in the licensing/regulatory process to address components of the Madrid-Boston Project as they become refined. The updates to these plans will build on the existing plans and will be adopted by the Project post-permitting.

2.4 SPILL CONTINGENCY

An updated Hope Bay Project Spill Contingency Plan is being provided as part of this EIS (P4-3). The Spill Contingency Plan will be utilized for the proposed Project to safeguard against accidental spills of harmful substances that may negatively affect the environment. Implementation of spill prevention systems are critical to avoid such accidents, followed by a response system that is timely and efficient if spills do occur, and contains and mitigates the negative environmental consequences.

This plan was developed in accordance with the Spill Contingency Planning and Reporting Regulations developed under Section 34 the Government of Nunavut's *Environmental Protection Act* (RSNWT Nu 1988), and was developed specifically to address the requirements of Water Licences 2AM-DOH0713, 2BE-HOP1222, 2BB-MAE1727 and 2BB-BOS1217, and Project Certificate Number 003. This provides a consistent spill response framework that is available to all site personnel so they can effectively and efficiently respond to a spill of petroleum products and/or hazardous materials regardless of where on the Hope Bay site they are encountered.

The plan contains detailed inventories and measurable quantities of all on-site hazardous materials. These will be expanded to include the additional materials and their handling and storage as detailed design and activities become more refined for post-NIRB-NWB review process for the Madrid-Boston Project. Spill response resources are also described in detail, together with their routine maintenance and inspection.

The availability and organization of the human resources put in place to respond to spill events is described in this plan, with the responsibilities of specified personnel and response teams clearly defined. External notification and communication in the event of spill events are addressed and the importance of TMAC's access to the resources of the Mackenzie Delta Spill Response Corporation is recognized. There is also a specified and comprehensive system of internal reporting, some of which is required to be submitted to external regulators. Spill response training as appropriate for personnel at different levels of responsibility is described. This plan also considers, and will address where needed, the requirements of the Environmental Emergency Regulations (SOR/2003-307).

Prescribed spill response actions are comprehensively specified in this plan and have been categorized as follows:

- fuel spills on land;
- fuel spills on fresh water;

- fuel spills on snow;
- fuel spills on ice;
- fuel spills and spill response in a marine environment;
- spills of salt or brine;
- spills of compressed gas; and
- spills of other chemicals.

The Plan is subject to annual review and is revised as necessary. In line with section 9.1 of the NIRB EIS Guidelines, this plan may be updated later in the licensing/regulatory process, to address components of the Madrid-Boston Project as they become refined. The updates to this plan will build on the existing plan and will be adopted by Project post-permitting.

2.5 WATER MANAGEMENT

Water management on the Hope Bay Belt is currently divided into four separate management areas which address the following activities:

- Surface Water Management;
- Groundwater Management;
- Domestic Wastewater Treatment; and
- Tailings Management.

Updates to existing Hope Bay Project water management plans and new water management plans for the Madrid- Boston Project have been provided with this EIS and are outlined in Table 1.1-1. TMAC's existing Hope Bay Project Water Management plan has been divided into two new water management plans for the Madrid-Boston Project to address site specific water management. These plans include the Hope Bay Project Doris-Madrid Water Management Plan (P4-7) and Boston Water Management Plan (P4-8).These plans outline the surface water management practices for the Hope Bay Project, including the management of intercepted water, excess water management, and interim water management measures. The objective of these Plans is to provide guidance and procedures required to operate, monitor and maintain water management on site in accordance with the existing licences associated with development. The Water Management Plans outline legislation and guidance relevant to the Project, and describes the water management facilities for Doris-Madrid and Boston respectively. It also identifies various water management issues, and the mitigation measures to be implemented during operations, closure and care and maintenance at each of the respective sites.

The existing Hope Bay Project Groundwater Management Plan has been updated for the Madrid-Boston Project (P4-6) and describes how groundwater inflows to underground developments will be managed, minimized, monitored and discharged in accordance with applicable legislation, guidance, and existing requirements, and in a manner that maintains mine operability and protects mine personnel and the environment., Management practices and relevant legislation outlined in this plan are applicable to groundwater management throughout the Hope Bay Belt.

Additionally TMAC has an approved Water and Ore/Waste Rock Management Plan (P4-12) for the existing Boston Site approved under the Type B Water Licence 2BB-BOS1727. TMAC intends to maintain this plan for the existing Boston site until such time as the proposed Phase 2 Boston site has been constructed and is operational. This plan addresses the water management practices for the existing

Boston site and this plan is included as part of this application at it falls within TMAC's suite of EMPs for the Hope Bay belt.

An updated Hope Bay Project Domestic Waste Water Management Plan (P4-4) is provided as part of this EIS. This plan is a belt wide plan having modules to address site specific and licence specific domestic wastewater management on the Hope Bay Belt. The plan describes the management procedures for domestic wastewater, including sewage and greywater, for all Project phases. Additionally this plan outlines the objectives, relevant legislation and roles and responsibilities related to domestic wastewater treatment and disposal, as well as the site-specific requirements. Also included in this EIS is the existing Hope Bay Project Sewage Treatment Operations and Maintenance Management Plan (P4-5) which addresses domestic wastewater treatment at the existing Boston site which is permitted under the Type B Water Licence 2BB-BOS1727. This Plan will remain in place until such time as the proposed Phase 2 Boston Site has been constructed and is operational.

An updated Hope Bay Project Doris-Madrid Tailings Management Area Operations, Maintenance, and Surveillance Manual (P4-9) and a Hope Bay Project Boston Tailings Management Area Operations, Maintenance, and Surveillance Manual (P4-10) is provided as part of this EIS. These manuals address the management and monitoring of tailings and wastes deposited in the Doris TIA and the Boston TMA. Tailings deposition strategy, impoundment dams, tailings and water pump and pipeline systems are also described, and relevant legislation and guidance outlined.

TMAC has an existing Quality Assurance Quality Control Plan for the Hope Bay Project (P4-24) which outlines management practices to be used when conducting environmental sampling, analysis and reporting for the Hope Bay Project, and that the conditions of existing water licences and project permits are met.

2.6 ORE STORAGE AND WASTE ROCK MANAGEMENT

An updated Hope Bay Project Waste Rock and Ore Management Plan (P4-11) is provided as part of this application). This Plan outlines the waste rock and ore management needs on surface for the Hope Bay Project and includes details for the Madrid-Boston Project. The objective of the Plan is to provide guidance and procedures required to deposit and manage waste rock and ore stored on site in accordance with the existing licences associated with development of the Hope Bay Project.

The Plan is intended primarily for use by TMAC and its contractors to ensure that best practices for minimizing potential environmental impacts and liabilities associated with waste rock and ore storage are understood and managed, and that the conditions of the Water Licence are met. This Plan is structured in a manner such that one document pertaining to waste rock and ore management is approved and implemented across all TMAC Hope Bay Project sites, while still addressing site and licence-specific needs: the main document outlines TMAC's approach to waste rock and ore management as it pertains to all TMAC Hope Bay developments. In the event of a new water licence, or an existing licence amendment, the specific modules pertaining to that licence and site will be revised. This is intended for consistency and efficiency across operations and for compliance management.

Additionally, TMAC has an approved Water and Ore/Waste Rock Management Plan (P4-12) for the existing Boston site approved under the Type B Water Licence 2BB-BOS1727. TMAC intends to maintain this plan for the existing Boston site until such time as the proposed Phase 2 Boston site has been constructed and is operational. This plan will address the current ore and waste rock management practices for the existing Boston site and is included as part of this application at it falls within TMAC's suite of EMPs for the Hope Bay belt.

These plans are subject to annual review and will be revised as necessary. In line with section 9.1 of the NIRB EIS Guidelines, this plan may be updated later in the licensing/regulatory process to address components of the Madrid-Boston Project as they become refined through the process. The updates to these plans will build on the existing plan and will be adopted by Project post-permitting.

2.7 TAILINGS MANAGEMENT

An updated Hope Bay Project, Doris-Madrid Tailings Impoundment Area Operations, Maintenance, and Surveillance Manual (P4-9) and Hope Bay Project Boston Tailings Management Area Operations, Maintenance, and Surveillance Manual (P4-10) have been developed. These manuals address the management and monitoring of tailings deposited in the Doris TIA and the Boston TMA. Tailings deposition strategy, impoundment dams, operational requirements and monitoring requirements are also described, and relevant legislation and guidance outlined.

These documents describe how tailings deposition will be carried out and demonstrates how TMAC will ensure the TIA and TMA remains safe and environmentally contained.

Theses OMS Manuals define and describe:

- roles and responsibilities of personnel assigned to the TIA and TMA;
- procedures and processes for managing change;
- key components of the TIA and TMA;
- procedures required to operate, monitor the performance of, and maintain the TIA and TMA to ensure that the facilities function in accordance with design, meet regulatory and corporate policy obligations, and link to emergency planning and response; and
- requirements for analysis and documentation of the performance of the TIA and TMA.

In line with section 9.1 of the NIRB EIS Guidelines these plans may be updated and refined through the NIRB-NWB review phase and are subject to annual review.

2.8 WASTE MANAGEMENT

At present Waste Management for the Hope Bay Project is currently divided into the following management areas which address:

- Non-hazardous Waste Management; and
- Hydrocarbon Contaminated Material Management

An updated Hope Bay Project Non-hazardous Waste Management Plan (P4-13) is provided in this application. This plan covers information pertaining to management of non-hazardous waste generated on the Hope Bay belt and address site specific and licence specific requirements. Non-hazardous waste is generated by the camp, the kitchen and various on-site facilities and contracting groups. The intention of this document is to promote environmental protection and optimal use of resources available.

The plan has been developed to ensure that on-site handling of non-hazardous waste conforms to all licences and permits. This plan will discuss the importance of waste management and reduction of specific waste streams to assist in decreasing the amount of material that must be handled and shipped

off-site for management. Management of non-hazardous waste includes recycling, treatment, and disposal of waste streams based on their specific characteristics. This plan is also intended to ensure that proper documentation, tracking and handling strategies are in place to monitor compliance and take corrective actions as necessary.

An updated Hope Bay Project Hydrocarbon Contaminated Material Management Plan (P4-14) is provided as part of this application for the Madrid-Boston Project. This plan describes the facility designs at both the Doris and Boston sites as it relates to storage and management of hydrocarbon contaminated materials, including soils and water generated at the site and associated facilities. This plan presents the management and monitoring obligations for the facility and demonstrates how these obligations will be met by adopting the existing requirements set for in the Type A Water Licence (No. 2AM-DOH1323) issued by the Nunavut Water Board (NWB). Additionally this plan includes a Module to address management and monitoring obligations for the existing Boston Site Landfarm Treatment Area (LTA) approved under the Type B Water Licence 2BB-BOS1727.

At present, there is no Landfill Management Plan for the Hope Bay Project as there is no existing landfill on the Project Site. In line with the NWB water licencing requirements, a Landfill Management Plan for the Hope Bay Project will be developed in consultation with interested parties six (6) months prior to the development of a landfill, and landfilling will only include non-hazardous materials which are not wildlife attractants. TMAC believes that any landfilling required for the Madrid-Boston Project would be included in this plan when and if required.

These plans are subject to periodic review and are revised as necessary. In line with section 9.1 of the NIRB EIS Guidelines, these plans will be updated later in the licensing/regulatory process, to address components of the Madrid-Boston Project as they become refined through the process. The updates to these plans will build on the existing plans and will be adopted by Project post-permitting.

2.9 HAZARDOUS MATERIAL MANAGEMENT

An updated Hope Bay Project Hazardous Waste Management Plan (P4-15) is provided as part of this application. The plan describes TMAC's management of hazardous waste materials as it pertains to the Hope Bay Belt.

The plan is aimed at ensuring that hazardous waste collection, segregation, handling, storage, transport and disposal procedures are promptly and efficiently carried out, thus minimizing the risk to the site workforce and the environment, as well as reducing the financial cost to the Project.

The applicable legislative and licensing requirements are described in the plan, essentially to meet applicable site specific and licence specific requirements. Details are provided in the plan relevant to the roles and responsibilities regarding hazardous waste management of Project personnel.

The plan describes the purpose-designed hazardous waste management facility. Based on the principles of reduction, reuse and recycling, the plan addresses the following waste streams in terms of their risks, storage and labelling, transportation, and disposal:

- waste glycol (antifreeze);
- waste solvents;
- waste batteries;
- fluorescent tubes;

- penetrable wastes (sharps);
- waste lubricating oils;
- waste aerosols;
- medical wastes and sewage treatment plant sludge;
- applicable incinerator and wood ash;
- contaminated rags, absorbents and soil;
- residue last contained ammonium nitrate packaging; and
- explosives products and explosives residue containers.

The plan indicates training for responsible personnel, as well as for record keeping and transport manifests for hazardous waste shipment.

In addition, TMAC's Hope Bay Project Spill Contingency Plan (P4-3) as mentioned in Section 2.4. The plan contains expected quantities and storage locations of all on-site hazardous materials. These will be expanded to include the additional materials related to Madrid-Boston development, and their handling and storage that will result from the Project. Spill response resources are also described in detail, together with their routine maintenance and inspection.

These plans are subject to periodic review and are revised as necessary. In line with section 9.1 of the NIRB EIS Guidelines, these plans will be updated later in the licensing/regulatory process, to address components of the Madrid-Boston Project as they become refined through the process. The updates to these plans will build on the existing plans and will be adopted by Project post-permitting.

2.10 INCINERATION

An updated Hope Bay Project Incinerator Management Plan (P4-16) is provided as part of this application. This plan outlines TMAC's approach to domestic waste stream segregation and incinerator management as it pertains to all the Hope Bay Project developments. The Madrid-Boston Project will adopt these management practices outlined in this plan.

The objective of the existing plan is to enable the operation of domestic waste incinerators to be undertaken in a safe, efficient and environmentally compliant manner. The regulatory framework within which this occurs is provided by Section 2.2 of the *Consolidation of Environmental Protection Act* (RSNWT. 1988. c.E-7); Guideline: Burning and Incineration Of Solid Waste (Government of Nunavut 2010); Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities (Government of Nunavut 2011), as well as by Canada-wide compliance guidance regarding batch waste incineration and mercury, dioxin and furan emissions standards (Environment Canada 2010).

This plan essentially ensures that:

- Only appropriate burnable material enters the incinerator waste stream.
- Animal attractants are promptly incinerated.
- The incinerator is operated in a manner that reduces harmful emissions.
- Residual ash is handled and disposed of properly.
- Compliance monitoring and reporting associated with incinerator operations are undertaken.

Responsibilities for waste and incinerator management are defined in the plan, together with performance inspections, record-keeping and reporting. Management of the waste stream by means of segregation, reducing, reusing and recycling, preventing wildlife attraction, and purpose-designed handling and treatment of targeted materials is stipulated in the plan. Operational and monitoring procedures are also prescribed and related training is described.

This Hope Bay Project Incinerator Management Plan is a comprehensive document which represents general incineration practices TMAC implements across the Hope Bay Belt. In line with section 9.1 of the NIRB EIS Guidelines, this plan may be updated later in the licensing/regulatory process, to address components of the Madrid-Boston Project as they become refined. The updates to these plans will be adopted by the Project post-permitting.

2.11 ROADS

The Hope Bay Project will not be connected by road to any community or other project. Design considerations for the proposed Project roads are outlined in the EIS, including:

- the land tenure related to the proposed roads;
- public consultation undertaken with respect to the proposed Project;
- incorporation of TK in Project Design;
- land use of the Project area;
- consideration of Transport Canada's Navigable Waters Protection Program;
- projected traffic volumes and types and numbers of vehicles to be used;
- road design speed limits; and
- measures for preventing the permafrost degradation during construction and operation of ground transportation

Management measures employed at the Hope Bay Project related to roads are incorporated into various management plans as outlined in Table 2.11-1.

Table 2.11-1. Documents Outlining Management Measures Related to Roads

Plan	Relevance to Road Management
Surface Emergency Response Plan (P4-1)	Safety procedures and protocols for emergency events including accidents, accidents causing injuries, vehicle malfunction and emergency protocols
Wildlife Mitigation and Monitoring Plan (V8-3)	Mitigation measures and protocols to be implemented during construction and operations to mitigate potential impacts to wildlife, including explicit thresholds for mitigation of potential wildlife interactions, collisions and follow-up procedures
Air Quality Management Plan (V8-2)	Dust mitigation
Hope Bay Project Doris-Madrid Water Management Plan (P4-7) and Boston Water Management Plan (P4-8)	Measures to control surface runoff, sedimentation, and pooling of water during spring freshet or significant rain events, and mitigation actions such as snow clearing
Hope Bay Project Spill Contingency Plan (P4-3)	Emergency reporting and procedures for fuel/chemical spills
Closure and Reclamation Plans (P4-19 and P4-21)	Plans for site reclamation, including quarry sites and disposal of waste materials and options of final closure and reclamation, as well as consideration of potential future uses (e.g., potential public use)

As a result of the lack of connectivity to any other land users, the consideration of environmental constraints during the design process, and the fact that residual road management issues are addressed under the management plans outlined in Table 2.11-1, no stand-alone road management plan is necessary for the Madrid-Boston Project. As per NIRB guideline 9.1, TMAC believes that the most effective fashion for arranging aspects of road management is under the existing plans and not creating a standalone plan.

2.12 SEALIFTS

As stated in NIRB guideline 9.1, TMAC believes that the most effective fashion for arranging aspects of shipping management is through existing regulations and other plans such as the OPPP and not a separate shipping management plan. The following information explains TMAC's approach. All shipping companies operating in Canadian territorial waters must abide by the Canadian regulatory framework. The following federal legislation is applied to all shipping operations within Canada being 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-1985 ca-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-1994c 40.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 federal lead on 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.

TMAC does not believe that a Shipping Management Plan is required for the Project. TMAC 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. "Transport Canada as the regulator of the Canadian Shipping Act, 2001 (CSA, 2001), the Arctic Waters Pollution Prevention Act (AWPPA), the Coasting Trade Act, the Marine Liability Act (MLA), and the Ballast Water Control and Management Regulations, ensure through its legislation that all vessels operate in a safe and environmentally responsible matter."

The aspects of shipping which are under TMAC'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; and
- security at the Marine Laydown Area.

TMAC's will annually schedule its resupply during the open water season. TMAC's Oil Pollution Prevention Plan/Oil Pollution Emergency Plan (V8-1) is substantially focussed on the shipping, transfer, handling and storage of fuel at the Roberts Bay facility. As described in Section 2.4 above, the plan establishes comprehensive measures to ensure all shore preparations, emergency preparedness, equipment and personnel are in place to co-ordinate between TMAC and the other Project participants to transfer fuel between an anchored tanker and a barge, and from a barge moored at the jetty in Roberts Bay to the on-shore bulk fuel storage facility at Roberts Bay. This plan is reviewed by Transport Canada on an annual basis. As stated in NIRB guideline 9.1, TMAC believes that the most effective fashion for arranging aspects of shipping management is through existing regulations and other plans such as the OPPP/OPEP and not a separate shipping management plan.

2.13 BORROW PITS AND QUARRY

An updated Hope Bay Project Quarry Management Plan (P4-17) is provided in accordance with Framework Agreement between TMAC and the KIA, and existing water licences issued by the NWB for the Hope Bay belt. This plan was prepared to address the management requirements for existing quarries as well as quarries proposed to support the Madrid-Boston Project. Additionally, the plan addresses ongoing management requirements for quarries in the Project area. The Plan currently addresses quarry management during pre-development, operation, and post-construction and addresses components such as quarry material characterization, water management, dust management and blasting management.

This plan is a dynamic document that is subject to regular review and is revised as necessary.

2.14 EXPLOSIVES

A Hope Bay Project Explosives Management Plan is being provided as part of this application to address requirements under NIRB guidelines 9.4.13 on explosives management. This plan address information on explosives transport, manufacturing, storage and use of explosives and all other hazardous material at site which will be conducted in compliance with all applicable laws and regulations, Department of Mines and the *Transportation of Dangerous Goods Act.* The plan outlines protective measures related

to explosives management and provides details on appropriate training required for all personal handling explosives on the Project Site in order to ensure that losses as well as nitrates entrained with runoff are minimized. Explosives on the Project site are stored in accordance with the *Nunavut Mine Health and Safety Act* and Regulations. Detonators and explosives are stored in separately, and inventory is strictly controlled with supervisory control. Explosives storage is located at a minimum distance of 600 m away from other infrastructure (building or work area) in accordance with the requirements of the *Explosives Act*, warning signs are prominently posted and the magazines are regularly inspected. This plan is being provided as a draft to the NIRB and NWB to outline proposed explosives management requirements for the Hope Bay Belt. If required, TMAC intends to update this plan post-permitting as project design becomes refined and once an explosives contactor has been selected for the Madrid-Boston Project.

This plan is subject to regular review and is revised as necessary.

2.15 AIR QUALITY

An updated Hope Bay Project Air Quality Management Plan (AQMP; V8-2) is being provided as part of this application to address air quality management for the Hope Bay Belt. The AQMP outlines legislation and guidance relevant to the plan, and describes the potential sources of emissions to the air, including dust, and the mitigation measures that TMAC will implement during mine construction, operations and care and maintenance. The plan also describes the air quality monitoring and reporting that will be conducted and is intended primarily for use by TMAC and its contractors to ensure that best practices are employed at the Hope Bay Project, thus ensuring water licence and project certificate conditions are met and minimal environmental impacts occur.

This plan is a dynamic document that is subject to routine review and is revised as necessary.

2.16 NOISE ABATEMENT

An updated Hope Bay Project Noise Abatement Plan (V8-8) is being provided with this EIS. The plan describes management of noise and its abatement for the Hope Bay Project. The objective of this management plan is to address applicable Project Certificate requirements during the Construction, Operation, and Closure phases of the Project, as well as to ensure that the Project remains in compliance with the requirements and that appropriate mitigation strategies are met. The plan outlines proposed monitoring, along with abatement measures that will continue to be implemented.

This plan is a dynamic document that is subject to annual review and revisions as necessary.

2.17 AQUATIC EFFECTS MONITORING PROGRAM

An updated Hope Bay Project Aquatic Effects Monitoring Plan (P4-18) is provided as part of this application. The Plan has been developed to address relevant Project Specific Guidelines and the potential impacts associated with the Madrid-Boston Project, including direct discharge of treated effluent to Aimaokatalok Lake. This plan may be revised during the permitting and water licencing phases.

A baseline marine environmental effects monitoring program has been designed to address discharge of mine groundwater and TIA water to Roberts Bay. This program was designed in collaboration with Environment and Climate Change Canada and the Hope Bay Technical Advisory Committee (which includes Indigenous and Northern Affairs and the Kitikmeot Inuit Association) and Fisheries and Oceans Canada to address the environmental effects monitoring (EEM) requirements under the Metal Mining

Effluent Regulations (MMER) related to the discharge of metal mining-related effluents from the Doris Project to Roberts Bay and the additional discharge into Aimaokatalok Lake. The development of an EEM Plan will continue to be developed in consultation with ECCC as required under the MMER. This program will be updated as needed, and as supported by NIRB guideline 9.1.

2.18 WILDLIFE MITIGATION AND MONITORING

An updated Hope Bay Project Wildlife Mitigation and Monitoring Plan (WMMP; V8-3) has been developed to address wildlife mitigation measures implemented at the Hope Bay Project and monitoring of potential wildlife effects from the Hope Bay Project. This WMMP has built upon the Doris WMMP which was first drafted in 2006 and has subsequently gone through multiple revisions and program improvements based on discussion and input from the Government of Nunavut Department of Environment, the Canadian Wildlife Service, and the KIA, and in consideration of ongoing monitoring outcomes, development activities, and improvements in technology or monitoring techniques.

In the creation of a belt-wide Wildlife Mitigation and Monitoring Plan, mitigation and monitoring measures established and agreed upon for the Doris Project have been maintained and, where necessary, added to address mining and milling activities at Madrid and Boston based on the Madrid-Boston EIS effects analysis. The WMMP outlines monitoring programs and methodologies specific to individual wildlife species or groups as well as programs designed to monitor habitat loss and alteration and Wildlife observations, incidents and mortalities. Mitigation measures protective of wildlife to be employed by the Hope Bay Project are also described.

This Plan is a living document, and may be revised based on party input, on-going monitoring outcomes, development activities, and improvements in technology or monitoring techniques.

2.19 NO NET LOSS PLAN

NIRB guideline 9.4.18 outlines the requirement for a No Net Loss Plan (NNLP) as outlined in the *Policy for the Management of Fish Habitat* (DFO 1986). In 2012, the *Fisheries Act* was amended to focus efforts on protecting the productivity of commercial, recreational, and Aboriginal fisheries; to institute enhanced compliance and protection tools that are more easily enforceable; to provide clarity, certainty, and consistency of regulatory requirements; and to enable enhanced partnerships with stakeholders.. The *Fisheries Protection Policy Statement* (DFO 2013) was issued on November 1, 2013 and replaced the earlier *Policy for the Management of Fish Habitat* (DFO 1986). The new policy statement does not include the “no net loss” principle, as outlined in the earlier policy, but instead outlines measures to avoid, mitigate, or offset “serious harm to fish”. Additional information is available through scientific guidance documents developed by DFO (Koops et al. 2013; Randall et al. 2013).

Therefore, in line with *Fisheries Protection Policy Statement* (DFO 2013), TMAC has addressed the requirement for a NNLP as outlined in NIRB guideline 9.4.18 through the development of a draft fisheries offsetting plan. The offsetting plan will be developed in consultation with DFO and discussed through the NIRB and NWB process. A conceptual Fisheries Offsetting Plan is included in the FEIS (Appendix V5-6AA) . Consultation with DFO and other stakeholders is documented in Appendix V5-6AB .

3. Socio-economic Environment

3.1 BUSINESS DEVELOPMENT

Requirements under Section 9.5.1 of the NIRB Guidelines related to a Business Development Plan are currently addressed in Schedule F of the TMAC's existing Inuit Impact Benefit Agreement (IIBA) and in TMAC's existing and approved Human Resources Plan for the Hope Bay Project as described in Section 3.5.

On March 30, 2015, TMAC entered into a Framework Agreement with the KIA allowing for surface access rights to the Hope Bay Belt for a 20-year period. The Framework Agreement includes an IIBA supporting project development at Hope Bay, including Doris, subject to IIBA terms and conditions. The IIBA establishes various procedures through which TMAC and the KIA will communicate and maintain a working relationship and provides for certain benefits to the Inuit in the Kitikmeot region, as required by Article 26 of the Nunavut Land Claims Agreement. An Implementation Committee (IC) has been established to oversee certain aspects of the IIBA and commitments thereunder. Pursuant to the IIBA, the Company will provide certain employment, training and education opportunities for Inuit. TMAC will also provide business and contracting opportunities to certain qualified Kitikmeot and Nunavut businesses in connection with the Hope Bay Project.

In addition, TMAC's Human Resources Plan as discussed in Section 3.5 provides a framework for human resources management at the Hope Bay Project. The plan details how the company will seek to provide communities potentially impacted by the Hope Bay Project with jobs, economic growth and training opportunities that extend beyond the economic life of the Hope Bay Project. This plan addresses human resources, Inuit employment, education and orientation and employee wellness. The plan places a strong emphasis on Inuit participation in the Project, both as employees or contractors and incorporates the relevant aspects of the terms and conditions of the IIBA. TMAC will conduct additional activities to ensure awareness of available positions in the Kitikmeot communities which may include, but are not limited to, radio advertisements, career fairs, recruitment posters and social media notifications.

3.2 OCCUPATIONAL HEALTH AND SAFETY

The Hope Bay Project Health and Safety Management Plan is located in V8-4. The purpose of this plan is to outline Health Safety Management and systems adopted by TMAC for the Hope Bay site during start-up and into production, and to provide the framework for their implementation. The TMAC Management Team is committed to providing a healthy and safe working environment for all personnel. This fundamental belief is reflected in its requirement for continuous improvement pertaining to health and safety performance.

This Safety Management Plan describes:

- strategies to be used for implementation;
- management systems required for measuring and auditing safety performance and objectives; and
- proactive identification and elimination (or acceptably managing) of occupational health and safety risk that may be associated with the execution of work.

The commitment to occupational health and safety on the part of the Hope Bay management is based on the principle of controlling risk to provide a proactive and positive safety culture and an incident-free workplace. The objectives in implementing this policy are:

- to have all personnel appropriately trained, responsible and accountable for safety management;
- to incorporate industry best practice for health and safety standards in the engineering, design and processes implemented at all workplaces;
- to comply with all relevant standards and codes of practice, and regulatory requirements; and
- to provide effective training, efficient communication and continuous review of occupational health and safety practices.

This plan is subject to annual review and is revised as necessary.

3.3 COMMUNITY INVOLVEMENT

TMAC has developed a Community Involvement Plan for the Madrid-Boston Project which provides a framework for Community Involvement at the Hope Bay Project in Nunavut (V8-5). The policies and practices align with the Inuit Impact Benefits Agreement with the Kitikmeot Inuit Association.

TMAC seeks to provide communities potentially impacted by the Hope Bay Project with job creation, economic growth and training opportunities that extend beyond the economic life of the Hope Bay Project. The Company provides employment opportunities to members of local communities and, in conjunction therewith, provides additional benefits and opportunities.

TMAC is committed to engaging positively and effectively with stakeholders in a manner that emphasizes respect, integrity and demonstrates a willingness to learn from experience and embrace necessary change. TMAC bases its approach to Community Involvement on the following principles:

1. Identify all stakeholders in our operations.
2. Effectively engage stakeholders and establish a dialogue.
3. Provide stakeholders with means to respond to us.
4. Report to our company and regulators on our Engagements.

This plan applies to the Hope Bay Project with subsequent updates to be made as required.

3.4 CULTURAL AND HERITAGE RESOURCES

An updated Hope Bay Project Heritage Resource Protection Plan (V8-6) is being submitted in this EIS, and has incorporated consideration of the Madrid-Boston Project in addition to other Hope Bay Project activities and developments. The purpose of this document is to provide a framework for the ongoing management and protection of heritage resources associated with the Hope Bay Project as required within the scope of relevant regulations. TMAC is committed to maintaining sound environmental practices in all of its activities. With respect to heritage resources, this means that efforts will be made to identify the possible impacts to archaeological sites, both known and unknown, and to implement procedures to ensure that sites are avoided where possible, or to gather all pertinent cultural information prior to impact where sites cannot be avoided. As the Project moves forward this plan will be subject to routine review, and updates will be made as required.

3.5 HUMAN RESOURCES

TMAC's Hope Bay Project Human Resources Plan (V8-7) to provide a framework for human resources management at the Hope Bay Project which ensures that the needs of all TMAC personnel are addressed throughout the life of the Project. The plan consists of the following elements:

- Human Resources Foundations:
  - management principles and policies;
- Recruitment;
- Employment and Training:
  - Community Awareness,
  - Orientation for new Personnel at Site,
  - Target levels of Inuit Training and Employment;
- Total Rewards:
  - Compensation plans and gain sharing,
  - Benefit programs;
- Business and Contracting Opportunities;
- Temporary or Final Closures; and
- Applicable human resources legislation including Government of Nunavut terms and conditions.

TMAC seeks to provide communities potentially impacted by the Hope Bay Project with job creation, economic growth and training opportunities that extend beyond the economic life of the Hope Bay Project. The Company provides employment opportunities to members of local communities and, in conjunction therewith, provides additional benefits and opportunities. This Plan addresses human resources, Inuit employment, education and orientation and employee wellness. This plan places a strong emphasis on Inuit participation in the Project, both as employees or contractors and incorporates the relevant aspects of the terms and conditions of the IIBA. This plan is subject to annual review and any updates to this plan will build on the existing plan and will be adopted by Project post-permitting.

4. Preliminary Mine Closure and Reclamation Plan

4.1 CARE AND MAINTENANCE

A Hope Bay Project Doris-Madrid Interim Closure and Reclamation Plan (P4-21) and a Hope Bay Project Boston Conceptual Closure and Reclamation Plan (P4-19) is being submitted as part of this EIS. Both these plans have been developed to address components on the proposed Madrid-Boston Project and incorporates consideration of relevant Project Specific Guidelines (NIRB 2012) for the Project. Integral to incorporating these guidelines for the Madrid-Boston Project is an understanding that they are living "living" documents. As Project development advances, the level of detail contained in these plans may undergo further revisions to reflect the progress of the Project and detailed design as well as changes in technology and/or standards or legislation. The NIRB guideline 9.1 supports this approach. These plans include thresholds for monitoring and identifies adaptive management responses. These plans and future revisions take into consideration consultations with communities and other Stakeholders.

Updated Hope Bay Project Doris-Madrid Interim Closure and Reclamation Plan Detailed Cost Estimate (P4-22) and Boston Conceptual Closure and Reclamation Plan Detailed Cost Estimate (P4-20) is provided as part of this submission with the EIS. These cost estimates provide a detailed description of the costing assumptions and associated closure and reclamation cost for the Madrid-Boston Project and should be read in conjunction with the associated Closure and Reclamation Plans. These cost estimates were developed using a model that is consistent with the principles of RECLAIM version 7.0 and assumes that all work is carried out by an independent qualified third party contractor. As with the Closure and Reclamation Plans the detailed cost estimates will be subject to figure revisions.

5. Annexes 1 to 8

Annex 1. Oil Pollution Prevention Plan (OPPP)/Oil Pollution Emergency Plan (OPEP)

Annex 2. Air Quality Management Plan

Annex 3. Hope Bay Project Wildlife Mitigation and Monitoring Plan

Annex 4. Hope Bay Health and Safety Management Plan

Annex 5. Hope Bay Project Community Involvement Plan

Annex 6. Hope Bay Heritage Resource Protection Plan

Annex 7. Hope Bay Project Human Resources Plan

Annex 8. Hope Bay Project Noise Abatement and Monitoring Plan

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