



BC EAO EAC Application – Tenas Project

Section 13.0 Management Plans

Chapter 1 Environmental Management System

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Tenas Project

Section 13.0 Management Plans Chapter 1 Environmental Management System

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ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Long form of Abbreviation or Acronym
AEMP	Aquatic Effects Monitoring Plan
AQMP	Air Quality Management Plan (S13.0-C2)
ASTM	American Society for Testing and Materials
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC MECCS	British Columbia Ministry of Environment and Climate Change Strategy
BC MEMLI	British Columbia Ministry of Energy, Mines and Low Carbon Innovation
BC MEMPR	British Columbia Ministry of Energy, Mines and Petroleum Resources
BMPs	best management practices
C	Chapter
C&M	care and maintenance
CEMP	Construction Environmental Management Plan (S13.0-C4)
CMSTHP	Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3)
CNR	Canadian National Railway
CPP	Coal Processing Plant
CSA	Canadian Standards Association
Code	Health, Safety and Reclamation Code for Mines In British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021)
DMP	Discharge Management Plan (S13.0-C5)
EA	environmental assessment
EAC	Environmental Assessment Certificate
EHS	Environmental Health and Safety
EMP	Explosives Management Plan (including blast vibration control) (S13.0-C6)
EMS	Environmental Management System (S13.0-C1)
ERT	Emergency Response Team
ESGP	Environmental, Social, and Governance Policy
FMSCP	Fuel Management and Spill Control Plan (S13.0-C7)
FSR	Forest Service Road
GovBC (only used for citations)	Government of British Columbia
GovCan (only used for citations)	Government of Canada
HRMP	Heritage Resources Management Plan (S13.0-C8)
HSE	health, safety and environmental
ISO	International Standards Organization

Abbreviation or Acronym	Long form of Abbreviation or Acronym
JAIR	Joint Application Information Requirements for <i>Mines Act</i> and <i>Environmental Management Act</i> Permits (British Columbia Ministry of Energy, Mines and Petroleum Resources [BC MEMPR] and British Columbia Ministry of Environment and Climate Change Strategy [BC MECCS] 2019).
LOM	life-of-mine
MA/EMA	<i>Mines Act</i> , RSBC 1996, c 293 and <i>Environmental Management Act</i> , SBC 2003, c 53
MERP	Mine Emergency Response Plan (S13.0-C9)
ML/ARDMP	Metal Leaching (ML)/Acid Rock Drainage (ARD) Management Plan (S13.0-C12)
MMIWG	National Inquiry into Missing and Murdered Indigenous Women and Girls
MOC	Management of Change
MTCP	Minesite Traffic Control Plan (S13.0-C10)
MWMP	Minesite Water Management Plan (S13.0-C11)
OHS	Occupational Health and Safety
OHSC	Occupational Health and Safety Committee
OHSP	Occupational Health and Safety Program (S13.0-C13)
PAG	potentially acid generating
PAMP	Public Access Management Plan (S13.0-C14)
Project	Tenas Project
QA/QC	quality assurance and quality control
RCP	Reclamation and Closure Plan (S13.0-C15)
ROM	run-of-mine
ROW	right-of-way
S	Section
SARA	<i>Species at Risk Act</i> , SC 2002, c 29 (Government of Canada [GovCan] 2002)
SEMP	Socio-economic Management Plan (S13.0-C16)
SEPSCP	Surface Erosion Prevention and Sediment Control Plan (S13.0-C17)
SMART	specific, measurable, achievable, realistic, and time-bound
SPP	Standard Practices and Procedures
TAC	Tenas Access Corridor
TCL	Telkwa Coal Limited
TK	traditional knowledge
TRC	Truth and Reconciliation Commission
TSM	Towards Sustainable Mining
VC	Valued Component

Abbreviation or Acronym	Long form of Abbreviation or Acronym
VMP	Vegetation Management Plan (S13.0-C18)
VRMP	Visual Resources Management Plan (S13.0-C19)
WMP	Wildlife Management Plan (S13.0-C21)
WMPRE	Waste Management Plan for Refuse and Emissions (S13.0-C20)

UNITS OF MEASURE

Abbreviation or Acronym	Long form of Abbreviation or Acronym
km	kilometre
km ²	square kilometre
kV	kilovolt
V	volt

EXECUTIVE SUMMARY

The Environmental Management System (EMS) for the Tenas Project (Project) is an overarching management strategy comprising a set of processes, practices, and plans which enable Telkwa Coal Limited (TCL) to manage its environmental and safety performance in a holistic way, within an integrated framework. While the management plans are part of the EMS, the EMS is not just a collection of management plans. Key features of the EMS include identification and management of key aspects, document control, operational procedures, regulatory compliance, training, communication, and defining the roles and responsibilities for participants by using formal Plan-Do-Check-Act functions.

The management plans are designed to meet (or exceed) the requirements of the British Columbia Environmental Assessment Office (BC EAO) and other regulatory agencies. Each management plan includes mitigation measures designed to address potential adverse effects from Project components and activities. Individual plans may include monitoring programs and adaptive management processes.

A comprehensive description of the contents of each management plan, including the identification of any mitigation measures described in the Environmental Assessment Certificate (EAC) Application will be included within the management plans when they are updated prior to the start of the Construction Phase.

A list of management plans for all phases of the Project are found below:

- ▶ **Air Quality Management Plan (S13.0-C2) (AQMP);**
- ▶ **Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3) (CMSTHP);**
- ▶ **Construction Environmental Management Plan (S13.0-C4) (CEMP);**
- ▶ **Discharge Management Plans (S13.0-C5) (DMP);**
- ▶ **Explosives Management Plan (S13.0-C6) (EMP);**
- ▶ **Fuel Management and Spill Control Plan (S13.0-C7) (FMSCP);**
- ▶ **Heritage Resources Management Plan (S13.0-C8) (HRMP);**
- ▶ **Mine Emergency Response Plan (S13.0-C9) (MERP);**
- ▶ **Minesite Traffic Control Plan (S13.0-C10) (MTCP);**
- ▶ **Minesite Water Management Plan (S13.0-C11) (MWMP);**
- ▶ **Metal Leaching (ML)/Acid Rock Drainage (ARD) Management Plan (S13.0-C12) (ML/ARDMP);**
- ▶ **Occupational Health and Safety Program (S13.0-C13) (OHSP);**
- ▶ **Public Access Management Plan (S13.0-C14) (PAMP);**
- ▶ **Reclamation and Closure Plan (S13.0-C15) (RCP);**
- ▶ **Socio-economic Management Plan (S13.0-C16) (SEMP);**
- ▶ **Surface Erosion Prevention and Sediment Control Plan (S13.0-C17) (SEPSCP);**
- ▶ **Vegetation Management Plan (S13.0-C18) (VMP);**
- ▶ **Visual Resources Management Plan (S13.0-C19) (VRMP);**
- ▶ **Waste Management Plan for Refuse and Emissions (S13.0-C20) (WMPRE); and**
- ▶ **Wildlife Management Plan (S13.0-C21) (WMP).**

1. INTRODUCTION

The Environmental Management System (EMS) provides Telkwa Coal Limited (TCL) with direction to measure and manage environmental effects of the Tenas Project (Project) throughout all Project phases: Construction; Operation; Decommissioning and Reclamation; and Post-closure. It is a site-specific plan that describes the systematic means by which TCL will consistently manage and control potential effects on safety and the environment and enhance potential Project benefits identified through the Environmental Assessment Certificate (EAC) Application process and subsequent licensing and permitting of the Project.

The EMS defines the sequence of policy, planning, implementation, monitoring, and review processes that will ensure that the Project complies with commitments made throughout the EAC Application process, applicable regulated standards and TCL environmental standards using Plan-Do-Check-Act functions. The EMS also contemplates implementation of adaptive management activities for continuous improvement. It is TCL's intent to comply with and manage the conditions of the EAC and permit(s) for the Project. TCL will also develop standard operating and inspection procedures that will consider all requirements in the EAC, licenses, permits and legal obligations pertaining to the Project.

The EMS encompasses a suite of Project-specific management plans that set out the Project's standards and requirements for different areas of environmental and safety management. A list of management plans for all phases of the Project are listed below:

- ▶ **Air Quality Management Plan (S13.0-C2) (AQMP);**
- ▶ **Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3) (CMSTHP);**
- ▶ **Construction Environmental Management Plan (S13.0-C4) (CEMP);**
- ▶ **Discharge Management Plans (S13.0-C5) (DMP);**
- ▶ **Explosives Management Plan (S13.0-C6) (EMP);**
- ▶ **Fuel Management and Spill Control Plan (S13.0-C7) (FMSCP);**
- ▶ **Heritage Resources Management Plan (S13.0-C8) (HRMP);**
- ▶ **Mine Emergency Response Plan (S13.0-C9) (MERP);**
- ▶ **Minesite Traffic Control Plan (S13.0-C10) (MTCP);**
- ▶ **Minesite Water Management Plan (S13.0-C11) (MWMP);**
- ▶ **Metal Leaching (ML)/Acid Rock Drainage (ARD) Management Plan (S13.0-C12) (ML/ARDMP);**
- ▶ **Occupational Health and Safety Program (S13.0-C13) (OHSP);**
- ▶ **Public Access Management Plan (S13.0-C14) (PAMP);**
- ▶ **Reclamation and Closure Plan (S13.0-C15) (RCP);**
- ▶ **Socio-economic Management Plan (S13.0-C16) (SEMP);**
- ▶ **Surface Erosion Prevention and Sediment Control Plan (S13.0-C17) (SEPSCP);**
- ▶ **Vegetation Management Plan (S13.0-C18) (VMP);**
- ▶ **Visual Resources Management Plan (S13.0-C19) (VRMP);**
- ▶ **Waste Management Plan for Refuse and Emissions (S13.0-C20) (WMPRE); and**
- ▶ **Wildlife Management Plan (S13.0-C21) (WMP).**

2. PURPOSE AND OBJECTIVES

TCL has developed an EMS to guide the implementation of environmental and safety management plans and Standard Practices and Procedures (SPP) which are part of an integrated system for environmental and safety management at the Project. This system is structured based on International Standards Organization (ISO) 14001 (Plan-Do-Check-Act) and could be developed into a certified EMS (ISO 2015).

The EMS will be used to guide all activities to ensure safe, compliant, and environmentally and socially responsible operations at the Project Minesite. The EMS identifies environmental and safety risks and ensures sufficient control of these risks through all phases of the Project. The purpose of the activities related to the EMS is to ensure that TCL complies with laws, regulations, and authorizations, and to enable the achievement of goals set out in TCL's **Environmental, Social, and Governance Policy (ESGP) (Appendix 13.1-A)**. This EMS applies to the Construction, Operation, Decommissioning and Reclamation, and Post-closure phases of the Project.

2.1 Corporate Policies

TCL is guided by the following corporate policies:

- ▶ **Health and Safety:** Safety is a core value of our company. We believe that all activities can be completed with zero harm to personnel, and that all incidents and injuries are preventable. We will provide resources to manage health and safety and expect all employees and contractors to share in the responsibility;
- ▶ **Indigenous Groups:** We acknowledge and respect the unceded rights, title, interests, culture, and aspirations of the Wet'suwet'en to 22,000 square kilometres (km²) of traditional territory. In April 2017, TCL signed a Community and Engagement Agreement as an initial, formal step in our commitment to the Wet'suwet'en;
- ▶ **Environment:** We will ensure that our activities are responsible and protective of the environment. Our design and operational activities will adhere to the mitigation hierarchy to avoid and minimize effects, and rehabilitate onsite and offsite effects from our activities, where necessary; and
- ▶ **Community:** Integrity is fundamental to how we operate. We will engage with the community and stakeholders with the aim of understanding and addressing their socio-economic priorities and goals.

2.1.1 Environmental, Social, and Governance Policy (ESGP)

The **ESGP** supports the EMS and associated management plans for the Project.

The corporate policies described in **2.1** have been in place during public discussions with the region and the Wet'suwet'en and are the basis for the TCL **ESGP**. This is TCL's commitment to operate in a safe social and environmentally responsible manner. In keeping with these policies, the **ESGP** forms the foundation of the EMS and defines the framework within which TCL operates. Some of the commitments from the **ESGP** (see **Appendix 13.1-A**) are listed below.

TCL will strive continually to minimize effects of our operations on the environment, maintain its viability and biodiversity, and sustain social and governance components through measures such as:

- ▶ minimize the generation of waste and ensure its proper disposal;

- ▶ manage Coal Processing Plant (CPP) produced materials, mine rock and overburden to ensure environmental protection;
- ▶ implement measures to conserve natural resources such as energy and water;
- ▶ implement measures to reduce emissions to air, water and land, and to minimize our footprint;
- ▶ implement measures to reduce our greenhouse gas emissions (GHGs) and address climate change;
- ▶ implement and maintain effective management plans that include planning, communication, reporting, and filing to monitor environmental performance;
- ▶ promote safety and environmental awareness among our personnel and contractors through training and education to increase understanding of their roles and responsibilities in environmental management;
- ▶ integrate biodiversity conservation and land use planning considerations through all stages of business and production activities;
- ▶ maintain communications with the community and the Wet'suwet'en through implementation of the **SEMP**, considering the National Inquiry into Missing and Murdered Indigenous Women and Girls (MMIWG), Truth and Reconciliation Commission (TRC), and United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP); and
- ▶ progressively rehabilitate sites to ensure physical and chemical stability and in consultation with the communities in a timely manner.

3. SCOPE AND SCALE

The scope of this EMS is defined within the Project Area, and includes all activities, as well as any operation and/or construction activities that are directly associated with the Project and exist outside of the Project Area. The EMS is in effect during all Project phases and ceases to be in force at the final closure of the Minesite as approved by the regulatory authorities.

The Project will include the following major components:

- ▶ open pit;
- ▶ CPP;
- ▶ coal handling systems for run-of-mine (ROM) coal, processed rock, and processed coal (including plant conveyors, storage bins, and stockpiles);
- ▶ storage piles for rock, processed rock, and overburden and stockpiles for growth media, processed coal and processed rock;
- ▶ administration, first aid, maintenance/warehouse, mine dry, laboratory, light vehicle, mine rescue, and warehouse buildings;
- ▶ surface water management infrastructure (including ditches, sedimentation, control, management, and storage ponds);
- ▶ water supply wells, storage, and distribution network;
- ▶ fuel and lubricant storage facilities and distribution network;
- ▶ Explosives Facility and Magazine, storage silos, and vehicle wash and maintenance facilities;
- ▶ propane storage facilities and distribution network;
- ▶ solid waste management systems including landfill, recycling, and composting facilities;
- ▶ haul roads and access roads within the Minesite;
- ▶ Tenas Access Corridor (TAC) which encompasses the 11 kilometre (km) newly constructed Bypass Road and improvements to approximately 5.0 km of an existing Forest Service Road (FSR);
- ▶ a 3.5-km long 25 kilovolt (kV) powerline and a 25 kV to 600 volt (V) substation adjacent to the CPP;
- ▶ Rail Infrastructure consisting of processed coal stockpiles, scales, dust control facilities and a 2.5 km Rail Loop connected to the Canadian National Railway (CNR) track, and
- ▶ a permanent bridge over Goathorn Creek.

The scope of the EMS covers all aspects of mining and processing activity and administrative aspects such as safety, security, finance, procurement, warehouse, information technology, human resources, environmental monitoring, and worker and community health and safety.

The entire scope of the EMS will provide direction for these Project components and their potential effects on the environment and mitigations associated with the management plans and for the socio-economic aspects in the region as per the **SEMP**.

4. COMPLIANCE OBLIGATIONS

4.1 Regulatory Requirements

The Joint Application Information Requirements for *Mines Act* and *Environmental Management Act* Permits (British Columbia Ministry of Energy, Mines and Petroleum Resources [BC MEMPR] and British Columbia Ministry of Environment and Climate Change Strategy [BC MECCS] 2019) (JAIR) provides direction for an EMS.

Per the JAIR, this EMS provides a summary of an overall management system that will be applicable during all phases of mine life (Construction, Operation, Closure, and Post-closure). The detailed environmental management plans that comprise the EMS are living documents and will be updated as appropriate during mine life.

Furthermore, per the JAIR requirements, this EMS provides:

- ▶ an environmental policy statement (**Appendix 13.1-A Environmental, Social, and Governance Policy [ESGP]**);
- ▶ context on environmental management roles and responsibilities;
- ▶ information on statutory requirements, including applicable local, provincial, or federal environmental standards and guidelines, permit requirements, regulations, and orders;
- ▶ information on environmental standards and procedures, including all applicable sector specific standards, guidelines, best management practices (BMPs), and codes of practice such as the Health, Safety and Reclamation Code for Mines In British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021) (Code), Canadian Standards Association (CSA), Environmental Mitigation Policy for British Columbia (Government of British Columbia [GovBC] 2014);
- ▶ a description of the mine's organizational structure; and
- ▶ a description of proposed training programs.

Compliance reporting will be subject to the EAC and *Mines Act*, RSBC 1996, c 293, and *Environmental Management Act*, SBC 2003, c 53 (*MA/EMA*) permit conditions. See **9. Reporting** for more information.

Several legislative requirements are also applicable to the EMS. A short list of these requirements and their major applicable components are provided in **Table 4.1-1** below.

Table 4.1-1: Legislation and Guidelines Relevant to Environmental Management System (EMS)

Legislation and Regulations	Applicable Information
<i>Mines Act</i> , RSBC 1996, c 293 (Government of British Columbia [GovBC] 1996b)	Regulates permitting of mines and project components on tenure registered to the proponent
Health, Safety and Reclamation Code for Mining in British Columbia (British Columbia Ministry of Energy, Mines and Low Carbon Innovation [BC MEMLI] 2021) (Code)	The Code requires the proponent to provide details of the Mine Plan and reclamation program and environmental and occupational health and safety management plans.

Legislation and Regulations	Applicable Information
Provincial Forest Use Regulation, BC Reg. 176/95 (GovBC 1995) <i>Forest Practices Code of British Columbia Act</i> , RSBC 1996, c 159 (GovBC 1996a)	Regulates the issuance of special use permits for roads on land not registered under a mineral claim to the proponent
<i>Mining Right of Way Act</i> , RSBC 1996, c 294 (GovBC 1996c)	Describes the necessary approvals for constructing a right-of-way (ROW) across private and public land
<i>Fisheries Act</i> , 1985, c F-14 (Government of Canada [GovCan] 1985)	Prohibits serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, including the permanent destruction of habitat
<i>Water Sustainability Act</i> , SBC 2014, c 15 (GovBC 2014)	Provides guidelines for the issuance of approvals to make changes in or about a stream
<i>Wildlife Act</i> , RSBC 1996, c 488 (GovBC 1996d)	Regulates road and traffic effects on wildlife and requires mitigation of potential effects on specific wildlife species
<i>Species at Risk Act</i> , SC 2002, c 29 (GovCan 2002) (SARA)	Regulates mining and traffic effects on wildlife and requires mitigation of potential effects on specific wildlife species
<i>Environmental Management Act</i> , SBC 2003, c 53 (GovBC 2003)	Rules regarding effluent and emissions permit applications and spills and spill reporting
<i>Transportation of Dangerous Goods Act</i> , 1992, SC 1992, c 34 (GovCan 1992)	Regulates the transportation of dangerous goods

4.1.1 Water Effluent Permit Requirement

These compliance aspects will be developed for the EMS in cooperation with BC MECCS when the effluent permit is granted.

4.1.2 Air Emission Permit Requirements

These compliance aspects will be developed for the EMS in cooperation with the BC MECCS when the air emission permit is granted.

4.2 Standard Practices and Procedures (SPPs)

All TCL SPPs will conform to the Code. In addition to regulatory requirements, the Project will implement SPPs that meet or exceed the required laws and regulations.

This EMS will identify and develop a monitoring and adaptive management strategy, which will include activities, objectives, and reporting requirements to reduce any uncertainty and guide continuous improvement of the management strategies. SPP will be followed throughout the implementation of the EMS.

5. RELATIONSHIP TO OTHER MANAGEMENT PLANS

The Project is governed by this EMS, an overarching management plan strategy comprising a set of processes and practices which enable TCL to manage its environmental and safety performance in a holistic way, within an integrated framework. While the management plans are part of the EMS, the EMS is not just a collection of management plans.

In addition to the overall guidance of the EMS, this EMS has a relationship with all management plans. Those management plans and their relationship to this EMS are listed in **Table 4.2-1**.

Table 4.2-1: Management Plans with Relationship to the Environmental Management System (EMS)

Management Plans	Nature of Relationship
Air Quality Management Plan n (S13.0-C2) (AQMP)	Mitigations for dust, noise, and vibration control from all phases
Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3) (CMSTHP)	Management of chemical materials when transferring, storing, and managing these materials
Construction Environmental Management Plan (S13.0-C4) (CEMP)	Environmental, health, and safety management during the Construction Phase
Discharge Management Plan (S13.0-C5) (DMP)	Managing discharges of effluent and general water management
Explosives Management Plan (S13.0-C6) (EMP)	Managing explosives transfer, storage and handling including blasting
Fuel Management and Spill Control Plan (S13.0-C7) (FMSCP)	Managing transfer, storage, and handling of fuels and spills response and reporting
Heritage Resources Management Plan (S13.0-C8) (HRMP)	Manages chance find procedures and protection of heritage resources
Mine Emergency Response Plan (S13.0-C9) (MERP)	Emergency response management
Minesite Traffic Control Plan (S13.0-C10) (MTCP)	Manage Minesite traffic
Minesite Water Management Plan (S13.0-C11) (MWMP)	Manage discharges and water management onsite and offsite
Metal Leaching (ML)/Acid Rock Drainage (ARD) Management Plan (S13.0-C12) (ML/ARDMP)	Manage handling and treatment of potentially acid generating (PAG) and metal leaching (ML) materials onsite
Occupational Health and Safety Program (S13.0-C13) (OHSP)	Management of occupational health and safety for the Project, including reporting
Public Access Management Plan (S13.0-C14) (PAMP)	Manages public access with the Project
Reclamation and Closure Plan(S13.0-C15) (RCP)	Handling of soil management and progressive reclamation programs along with closure planning
Socio-economic Management Plan (S13.0-C16) (SEMP)	Handling of socio-economic aspects in the community, region and the Wet'suwet'en relations
Surface Erosion Prevention and Sediment Control Plan (S13.0-C17) (SEPSCP)	Mitigates surface erosion from activities in all phases and provides sediment control plans

Management Plans	Nature of Relationship
Vegetation Management Plan (VMP) (S13.0-C18)	Describes procedures to eliminate or reduce potential adverse effects on vegetation during all Project phases including invasive plant management
Visual Resources Management Plan (S13.0-C19) (VRMP)	Manage visual resources of the Project from key viewpoints
Waste Management Plan for Refuse and Emissions (S13.0-C20) (WMPRE)	Management of waste from refuse to emissions
Wildlife Management Plan (S13.0-C21) (WMP)	Manage interactions with wildlife for the Project for all phases, including reclamation and closure regarding biodiversity

6. DETAILS OF ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

6.1 Environmental Management System (EMS) Structure

The EMS will be based around TCL's Corporate Policies, including the **ESGP (Appendix 13.1-A)**, Towards Sustainable Mining (TSM) frameworks, BMPs, ISO 14001 requirements, and the *Mines Act*, RSBC 1996, c 293 (GovBC 1996b) for the Occupational Health and Safety (OHS) component. The EMS will be structured in a way that encourages continual improvement and adaptability throughout the separate phases of Construction, Operations, Reclamation and Decommissioning, and Post-closure. The EMS would be developed before commencing construction with relevant permitting agencies, Indigenous groups, including the Wet'suwet'en, and other stakeholder involvement as needed. The EMS provides a structured approach to achieving health, safety and environmental (HSE) standards for the Project through a consistent system of planning, implementation, corrective action, and continual improvement, otherwise known as a cyclical process of Plan-Do-Check-Act as illustrated by **Figure 6.1-1**, and further described below:

1. **Planning:** Defining the scope of the EMS, establishing an **ESGP** for the Project, identifying applicable legal and other (non-regulatory) requirements, setting environmental performance objectives, and developing the environmental management plans;
2. **Implementation:** Resource allocation and the assignment of roles and responsibilities, environmental management training, internal and external communications, EMS documentation, record and document control, and operating controls, including emergency response activities;
3. **Checking and corrective action:** Ongoing monitoring of environmental performance; inspection and evaluation of environmental management practices, including environmental compliance, and internal EMS audits; and
4. **Continual improvement:** Senior operational management review of the EMS and identification of improvements in environmental performance of the Project on an annual basis.



Figure 6.1-1: Environmental Management System (EMS) Cycle

Objectives and targets for environmental and social performance would be established and reviewed annually. Objectives are typically broader environmental goals, quantifiable where practical, whereas targets are detailed performance requirements that arise from the objectives. Where possible, the targets for environmental and social performance would be specific, measurable, achievable, realistic, and time-bound (SMART). This enables a quantitative evaluation of the effectiveness of the management plans and the need for performance improvement.

6.2 Risk Assessment Methodology

TCL has adopted a risk-based approach for dealing with hazards associated with all Project activities. The following subsection summarizes the methodology that will be used for all risk assessments for this Project and form the risk registry under this EMS.

6.2.1 Definition of Likelihood

The following **Figure 6.2-1** summarizes the definitions used by the Project for likelihood for subsequent risk assessment analysis.

Likelihood	Almost Certain	The unwanted event has occurred frequently: occurs in order of one (1) or more times per year and is likely to reoccur within one (1) year
	Likely	The unwanted event has occurred infrequently: occurs in order of less than once per year and is likely to reoccur within three (3) years
	May	The unwanted event has happened in the business at some time or could happen within five (5) years
	Unlikely	The unwanted event has happened in the business at some time or could happen within 15 years
	Rare	The unwanted event has never been known to occur in the business or it is highly unlikely that it will occur within 25 years

Figure 6.2-1: Summary of Likelihood Definitions

6.2.2 Definition of Consequence

The following **Figure 6.2-2** summarizes the definitions used by the Project for consequence for subsequent risk assessment analysis.

Consequence Rating	Harm to people	Environmental Impact	Business Interruption/ Material Damage	Legal & Regulatory	Impact on Reputation/ Social/ Community	Effects on Environment
Negligible	First aid case/ exposure to minor health risk	Minimal environmental harm	No disruption to operation, 5 percent (%) loss of budgeted operating profit	Low level legal issue	Slight impact - public awareness may exist but no public concern	Biophysical Environment: Resulting effects are barely to not detectable, of very limited extent, and can be reversed in two (2) days or less. Human Environment: Resulting effects are not detectable, or are in the normal range of variability in the human environment.
Minor	Medical treatment case/ exposure to major health risk	Material environmental harm - incident remediable short term	Brief disruption to operation, 10% loss of budgeted operating profit/ listed assets	Minor legal issue, noncompliance and breaches of the law	Limited impact - local public concern	Biophysical Environment: Resulting effects are barely detectable, and can be reversed in one (1) month or less, or are low extent. Human Environment: Resulting effects are detectable, but are not likely to be experienced at the community level.
Moderate	Lost time injury/ Reversible impact on health	Serious environmental harm - incident remediable within life-of-mine (LOM)	Partial shutdown, 15% loss of budgeted operating profit/ listed assets	Serious breach of law/investigation/ report to authority prosecution and/or moderate penalty	Considerable impact - regional public concern	Biophysical Environment: Resulting in lethal and/or sub-lethal effects at the individual level indistinguishable from natural variation, or resulting effects are detectable and can be reversed in one (1) year or less. Human Environment: Effects would result in demonstrable change and are possible at the community-wide level, but remain within historic norms and present no or a minor management challenge.
Major	Single fatality of loss of quality of life/ irreversible impact on health	Major environmental harm - incident remediable post LOM	Partial loss of operation, 20% loss of budgeted operating profits/ listed assets	Major breach of the law, considerable prosecution and penalties	National impact - national public concern	Biophysical Environment: Resulting in some structural and functional changes at the population level above natural variation, or resulting effects occur regionally and can be reversed in 10 years or less. Human Environment: Effects would result in changes beyond historical norms, and present a moderate management challenge.
Severe	Multiple fatalities/ impact on health ultimately fatal	Extreme environmental harm - incident irreversible	Substantial or total loss of operation, 25% loss of budgeted operating profit/ listed assets	Very considerable penalties and prosecutions. Multiple law suits and jail terms	International impact - International public concern	Biophysical Environment: Resulting in structural and functional changes at the population level to an extent which could potentially result in severe changes at the community and ecosystem levels, or resulting effects occur regionally and will take more than 10 years to reverse. Human Environment: Effects would result in changes beyond historical norms, and present a major management challenge. One (1) or more fatalities may occur.

Figure 6.2-2: Summary of Consequence Definitions

6.2.3 Risk Assessment Summary

The following **Figure 6.2-3** summarizes the definitions used by the Project for subsequent risk assessment analysis.

		Hazard Effect/Consequence				
		SEVERE	MAJOR	MODERATE	MINOR	NEGLIGIBLE
Likelihood	ALMOST CERTAIN	CRITICAL	VERY HIGH	HIGH	MEDIUM	LOW
	LIKELY	VERY HIGH	HIGH	MEDIUM	MEDIUM	LOW
	MAY	HIGH	MEDIUM	MEDIUM	MEDIUM	VERY LOW
	UNLIKELY	MEDIUM	MEDIUM	MEDIUM	LOW	VERY LOW
	RARE	MEDIUM	LOW	LOW	VERY LOW	NEGLIGIBLE

Figure 6.2-3: Summary of Risk Assessment Ratings

As part of the pre-planning exercise, a risk assessment has been conducted for the total Project that will be reviewed annually and updated as the regulatory process continues. See **Appendix 13.1-B Preconstruction Risk Register for the Tenas Project**. Once final approvals are obtained for the Project, and key personnel hired, an intensive risk assessment review will be conducted to ensure all risks are identified and mitigated.

6.3 Environmental Management Documentation

The structure of the Project's underlying environmental management plan documentation is shown in **Table 6.1-1** below. Environmental, socio-economic, and health and safety plans are also included. For specific details, please consult the individual plans.

The overarching EMS is not a static document; and it will be updated periodically as site and external conditions change and as knowledge is gained. Requirements to refine the EMS with respect to continual improvement may result from changes in operations, technologies employed, mining innovations, the phase of the Project, the result of research findings commissioned by TCL, improvements in safety procedures, and/or greater understanding of traditional knowledge. Changes to laws and regulations, environmental conditions, and other external factors can also have a bearing on the EMS. The annual review of the EMS will assess this need and update the **ESGP** and EMS, as required.

Table 6.1-1: Applicable Tenas Project Phases for Environmental, Health and Safety, and Socio-economic Management Plans

Management Plan	Purpose	Construction	Operation	Reclamation and Decommissioning	Post closure
Air Quality Management Plan (S13.0-C2) (AQMP)	Manage dust, noise, and vibration through all phases with focus on sensitive receptors	X	X	X	X
Chemicals and Materials, Storage, Transfer, and Handling Plan (S13.0-C3) (CMSTHP)	Management of chemical materials when transferring, storing, and handling	X	X	X	
Construction Environmental Management Plan (S13.0-C4) (CEMP)	Environmental, health and safety management during the Construction Phase	X			
Discharge Management Plan (S13.0-C5) (DMP)	Managing discharges of effluent and general water management	X	X	X	X
Explosives Management Plan (S13.0-C6) (EMP)	Managing explosives transfer, storage and handling including blasting		X		
Fuel Management and Spill Control Plan (S13.0-C7) (FMSCP)	Managing transfer, storage, and handling of fuels and spills response and reporting	X	X	X	X
Heritage Resources Management Plan (S13.0-C8) (HRMP)	Manages chance find procedures and protection of heritage resources	X	X		
Mine Emergency Response Plan (S13.0-C9) (MERP)	Emergency response management onsite and effects offsite	X	X	X	X
Minesite Traffic Control Plan (S13.0-C10) (MTCP)	Manage Minesite traffic through five (5)-year mine plan		X	X	
Minesite Water Management Plan (S13.0-C11) (MWMP)	Manage effluent discharges and water management on and offsite	X	X	X	X
Metal Leaching (ML)/Acid Rock Drainage (ARD) Management Plan (S13.0-C12) (ML/ARDMP)	Manage handling and treatment of potentially acid generating (PAG) materials onsite		X	X	
Occupational Health and Safety Program (S13.0-C13) (OHSP)	Manage occupational health and safety for the Project, including reporting of incidents	X	X	X	X

Management Plan	Purpose	Construction	Operation	Reclamation and Decommissioning	Post closure
Public Access Management Plan (S13.0-C14) (PAMP)	Manages public interactions with the Project	X	X	X	X
Reclamation and Closure Plan (S13.0-C15) (RCP)	Handling of soil management and progressive reclamation programs along with closure planning including biodiversity	X	X	X	
Socio-economic Management Plan (S13.0-C16) (SEMP)	Handling of socio-economic aspects in the community, region and Wet'suwet'en relations, considering community well-being and the National Inquiry into Missing and Murdered Indigenous Women and Girls (MMIWG) and compliance reporting	X	X	X	X
Surface Erosion Prevention and Sediment Control Plan (S13.0-C17) (SEPSCP)	Mitigates surface erosion from activity in all phases and provides sediment control plans	X	X	X	
Vegetation Management Plan (S13.0-C18) (VMP)	Describes procedures to eliminate or reduce potential effects on vegetation during all Phases, including invasive plant management	X	X	X	X
Visual Resources Management Plan (S13.0-C19) (VRMP)	Manage visual resources of the Project from key viewpoints		X	X	
Waste Management Plan for Refuse and Emissions (S13.0-C20) (WMPRE)	Management of waste from refuse to emissions	X	X	X	X
Wildlife Management Plan (S13.0-C21) (WMP)	Manage interactions with wildlife for the Project in all phases, and with respect to biodiversity in Decommissioning and Reclamation and Post-closure phases	X	X	X	X

6.4 Environmental Management System (EMS) Effectiveness

It is TCL's intent to ensure the effectiveness of the EMS by:

- ▶ employing the goals of the **ESGP**;
- ▶ applying BMPs and using best available information throughout the life of the Project;
- ▶ employing adaptive management to address any concerns that may be raised through monitoring;
- ▶ seeking continual improvements in environmental and socio-economic management;
- ▶ implementing procedures to comply with the conditions imposed by the EAC and all regulatory permits;
- ▶ consulting with the Wet'suwet'en to understand and address their concerns and to develop guidance for environmental and socio-economic management;
- ▶ consideration for incorporating Wet'suwet'en traditional knowledge (TK) into management decisions;
- ▶ complying with laws, regulations, and authorizations,
- ▶ managing environmental risks associated with the Project using the Plan-Do-Check-Act principle to prevent risks of serious or irreversible harm to the environment;
- ▶ assigning roles and responsibilities in making decisions and responding to environmental and impacts that may occur; and
- ▶ reducing or eliminating potentially adverse effects while maximizing beneficial effects.

6.5 Flexibility in the Environmental Management System (EMS)

Adaptive management can improve long-term management outcomes. This is possible due to flexibility of this EMS and all other management plans developed by TCL. Decision-making will meet management objectives and accrue information needed to improve future environmental management outcomes. Flexibility allows for adjustments to operating procedures and refinement of mitigation measures based on what has been learned through experience, monitoring, and research.

6.6 Design of Management Plans

Underlying the overarching EMS, the many environmental, health and safety and socio-economic management plans (see **Table 6.1-1**) outline specific procedures and actions considered essential in accomplishing defined tasks required by the Project. These plans (e.g., **MWMP**, **RCP**, etc.), include various responses, mitigation measures and strategies designed to be corresponding to the potential adverse effects. The management plans also include monitoring provisions and programs designed with the objective of assessing effectiveness of the planned mitigation measures after such measures have been implemented. These management plans will assist TCL in modifying its work activities and in making improvements to its mitigation measures during all phases of the Project. The EMS adopts the previously described Plan-Do-Check-Act cycle that is applicable to all activities under the EMS.

In this way, TCL can continue to monitor the effectiveness of its plans and mitigation measures, both against regulatory requirements and against the outcomes predicted through the environmental assessment (EA) and permitting processes, and then to adaptively adjust its mitigation measures through further planning until the effectiveness of such mitigation measures meet the expected or required outcomes.

In the instance of economic hardship, TCL will adjust its operational plans to the prevailing economic condition, but it will not sacrifice its commitment to operate in accordance with statutory requirements or compromise its internal mandate to operate in a safe, responsible, and sustainable manner. It is understood that TCL will consult with the BC MECCS and the BC MEMLI to determine whether any potential change to the Project would result in a change to the scope of the Project and potentially require an additional environmental review.

In the event of a transfer of ownership, TCL expects that, as a precedent condition to such a sale or transfer, the new owner would be obligated to continue to meet all the same requirements under the EAC, all BC regulatory permits or other authorizations, and to continue to operate in a safe, responsible, and socially responsible manner under the Project's regulatory approvals.

In developing the EMS and management plans for the Project, TCL has included the following elements, where applicable:

- ▶ objectives of the air and water monitoring programs, applicable laws, and regulations;
- ▶ discussion of corrective actions to be taken in case of non-compliance with the law or regulations;
- ▶ the Valued Component (VC) to be monitored, and applicable criteria/thresholds and regulations, including, if relevant, the obligations imposed on contractors by the environmental provisions of their contracts;
- ▶ description of how the efficiency of mitigation measures will be evaluated in the EMS cycle;
- ▶ description of the frequency, duration, and geographic extent of monitoring with justification for each, and identification of personnel who will conduct the collection, analysis, and interpretation of data;
- ▶ proposed actions if observed results or impacts differ from those predicted;
- ▶ proposed reporting scheme for monitoring results, including methods, format, and reporting intervals, as required by the responsible provincial and federal authorities;
- ▶ identification of organizations to which to communicate results of monitoring efforts such as Indigenous groups, etc.;
- ▶ plans for integration of monitoring results with other aspects of the Project, including adjustments of procedures and refinement of mitigation measures;
- ▶ procedures/mechanisms to assess the effectiveness of monitoring and continuous improvement management programs; and
- ▶ quality assurance and quality control (QA/QC) measures to be applied to monitoring and management programs.

The initial design of monitoring and management plans, data analysis, reporting, and integration of results into operational procedures will be conducted by TCL. Consultation on the same may lead to changes to meet the needs and concerns of other organizations.

Monitoring will use a hierarchical sequence of responses when criteria levels or compliance limits are exceeded, thereby triggering corrective actions.

Mitigation measures as well as corrective and preventative actions will be implemented by applicable Minesite departments or contractors with support from TCL's Environment Department. This could include the evaluation of mitigation measures in place and updates to operational procedures. Communication will

be maintained with Indigenous groups, authorizing agencies, and the public in describing any adverse effect observed and what corrective action is being used to mitigate it.

6.7 Mitigation of Adverse Environmental Effects

TCL's approach for mitigation measures for the Project closely follows the hierarchical approach provided in the Environmental Mitigation Policy for British Columbia (GovBC 2014), which is to avoid; minimize; restore; and offset. TCL's approach is to avoid, minimize, rehabilitate onsite, and offset.

Mitigation measures are designed for all Project phases and will be implemented to avoid or minimize the potential for, duration of, and magnitude of, Project effects on VCs. If avoidance is not feasible, the next step in the mitigation hierarchy is to design mitigation measures to minimize potential adverse Project effects. Then, if required, rehabilitation of onsite values will be applied to mitigate Project effects, and finally if needed, offsetting measures will be designed and applied. Mitigation measures may include standard mitigation measures such as BMPs and/or changes to the means in which the Project will be designed, constructed, or operated. Mitigation will consider TK, where applicable and available.

Environmental effects monitoring programs will monitor the effectiveness of mitigation measures. These programs will include a reporting and response system; and adaptive management strategies (**10. Monitoring**).

6.8 Inspections

TCL is responsible for inspection and maintenance of all Project components, and the inspection and monitoring of Minesite activities. A regular Inspection Program will lead to the early identification of areas where improvements are needed. The early resolution of any deficiencies will result in less ongoing maintenance and repair of Minesite components, and a reduction in the risk of adverse environmental effects.

Inspections ensure that Project components are constructed, operated, maintained, managed, and closed in an environmentally sound, safe, and efficient manner. Furthermore, inspections assist in obtaining better environmental outcomes for all activities and more timely maintenance of Project components throughout the mine life.

TCL's environmental personnel have knowledge and experience with the Project components and activities to conduct the inspections. TCL provides training to effectively and efficiently complete inspections and result in month-end summary reports that are distributed to Minesite management and regulators, as required by permit, and TCL standards. This allows action to be taken to address any deficiencies in components or activities. Inspection reports are retained onsite by the respective inspecting departments.

6.8.1 Scope of Inspection Program

The EMS Inspection Program is relevant to all Project phases and any periods of care and maintenance (C&M). Inspections are conducted throughout the entire Minesite and associated components. This includes, but is not limited to, Minesite and processing components such as: open pits, quarries, roads, storage pads, rock storage facilities, diversion channels, dikes, sumps, berms, processed rock storage facility, landfill, Soil Treatment Facility, tank farms, Explosives Facility, and water distribution systems. It includes such activities as the discharge of water and rock to the receiving environment, spill cleanup, and fuel transport on TCL's roads.

6.8.2 Inspection Priority and Risk Analysis

Inspection priorities are based on analyzing all Minesite components and activities and their respective risks. Installations and activities are qualitatively ranked as “high risk”, “medium risk” and “low risk” with those posing a “high risk” receiving inspections that are more frequent. If needed, the inspection schedule will be adjusted to accommodate an increased inspection frequency of Project components and/or activities requiring more attention such as during freshet and/or high precipitation events.

The criteria used in determining risk arising from the use of water or discharging to water include the following:

- ▶ potential effect on the environment (e.g., due to the location of Minesite components and sensitivity of the nearby receiving environment);
- ▶ potential effect on public health (e.g., potable water treatment or sewage treatment);
- ▶ safety risks (e.g., the integrity of roads throughout freshet or following a major rain event);
- ▶ potential social impacts (e.g., dust from TCL’s roads); and,
- ▶ potential financial or economic impact resulting from an accident, malfunction, or spill (e.g., fuel spills on offsite roads).

6.8.3 Routine Inspections

Routine inspections are planned and scheduled on a reoccurring basis and cover the following:

- ▶ inspections required under permit or authorizations;
- ▶ inspections of Project components where the management of water and processed rock takes place; and,
- ▶ activities that could affect water and material management.

6.8.4 Non-routine Inspections

Non-routine, event, or unplanned inspections cover the following:

- ▶ environmental complaints or concerns raised by the public;
- ▶ accidents, malfunctions, and spills;
- ▶ after major rain events;
- ▶ instances when the quality or quantity of water on the Minesite is not meeting expectations; and
- ▶ instances where discharge criteria to the receiving environment approach, but do not exceed, permit limits.

6.8.5 Timing of Inspections

Inspections will have a strong seasonal component with some inspections suspended over the winter and others reduced. TCL foresees a high frequency of inspections of engineered structures occurring just before and during freshet, followed by less frequent inspections over the remainder of the open water season. For example, inspections of culverts, bridges, diversion channels, and ponds will be suspended over the winter, and would resume before freshet and continue over the summer until freeze-up. Increased inspections

during freshet will ensure mitigation measures employed to manage the higher spring flows prove effective, and that the integrity of bridges and culverts are not compromised.

Year-round inspections at a set frequency will occur for Minesite components such as the Potable Water Treatment Plant, the Sewage Treatment Plant, and the landfill. These are not directly influenced by the changing weather experienced at the Minesite over the year.

6.8.6 Summary of Proposed Inspections

Table 6.8-1 below provides a summary of proposed inspections of Project components and Minesite activities; this includes some unrelated to the use of water or the discharge of rock to water. Specific details are included in the respective management plans and/or procedures and indicate inspection methods or procedures, and frequency. It also identifies the department responsible for the inspection. The Mine Operations Department at TCL will be responsible for ensuring that all monitoring and inspections are completed, with the assistance of the Environment, and Engineering departments.

Table 6.8-1: Summary of Proposed Inspections

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsible	Frequency
Bridges	- Visual inspection for snow dams prior to freshet - Structural inspection of deck, abutments, and bridge structure	High: - Snow dams could lead to the bridge being overwhelmed at freshet with resultant damage. - Snow dams may also result in flooding upstream from the bridge, potentially impacting existing heritage resources.	- Environment - Engineering	- Prior to freshet to allow time for any snow dams to be removed - Weekly during freshet to confirm that snow dams were breeched - Every three (3) to five (5) years
Chemical and Hazardous Waste Storage and Transfer Facility	Visual inspection for proper storage of chemicals and hazardous wastes	Low: Chemicals and hazardous waste will be stored in areas having containment or in sea containers.	- Environment - Engineering - Mine Operations	Weekly
Culverts	Visual inspection for snow and/or debris blockage of culvert	Medium: - Snow and debris can be removed from the front and back of the channels before freshet. - Ice build-up can be cleared with steam truck.	- Mine Operations - Environment - Engineering	- Just prior to freshet - Daily during the first days of freshet - Following major rain events - Biweekly during period of flow - Monthly after freshet is over in the summer season
Diversion and Collection Channels	- Visual inspection of the channel for permafrost degradation and excess snow and ice accumulation leading to potential blockages - Visual inspection of erosion control features to ensure they are in good working order	Medium: Erosion may result in bank slumping and channel instability. Diversion channels need to be clear of snow prior to freshet to allow for water flow.	- Engineering - Environment - Mine Operations	- Prior to and at freshet - Immediately after a major rain event - Weekly for the remainder of the ice-free season
Embankments	Visual inspection for erosion of or seepage through or under the embankments, including movement of crests and slopes	High: Failure of an embankment could have significant effects on the downstream environment.	- Environment - Engineering	- Weekly prior to freshet when the embankments are clear of snow - Weekly over the open water season. - Monthly during the winter to check for seepage

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsible	Frequency
Explosive Facility and Explosive Magazine	Visual inspection for spillage of blasting products outside the Explosives Facility, blasting areas in open pit and at storage locations. All plant components inspected as per regulations	High: - If blasting products get into water, they can affect water quality and fish habitat. - If blasting products are misplaced or stolen, they can cause damage to structures through improper use.	- Orica Canada - Environment - Mine Operations	Weekly, year-round, or at a frequency required by regulation
Fuel and Lubricant Storage Infrastructure on the Mine Infrastructure Complex	Visual inspection of water level within the secondary containment structures if they are present, and evidence of any spills or leaks from tanks, and hoses	Low: - Due to snow accumulation, melting and precipitation, contact water will unavoidably collect inside the secondary containment areas if present. This water will be sampled and tested before discharge to Coal Processing Plant (CPP) Sedimentation Pond. - Water from the tank farm will be used by the CPP. - Spills and leaks will be cleaned up.	- Environment - Engineering	Biweekly manual or electronic dip tests are conducted for inventory reconciliation of fuel and lubricants in the tanks by sites services.
Landfill	Visual inspection for orderly use of the landfill, absence of blowing debris, and leachate at the base of the landfill during the summer	Low: The landfill has an embankment to reduce blowing debris, and a diversion channel will intercept any leachate coming from the landfill.	- Environment - Engineering - Mine Operations	- Weekly over the entire year for the orderly use of the landfill and for evidence of blowing debris - Inspections for leachate following freshet - Weekly thereafter over the open water season
Open Pits	- Visual inspection for seepage from open pit walls and collection of samples if safe to do so - Visual inspections of wall stability and prism monitoring	Low: Water seeping into open pits will be controlled and directed to Tenas Control Pond.	- Mine Operations - Environment - Engineering	- Weekly at freshet - Monthly thereafter over the summer season

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsible	Frequency
		Wall instability can cause water release from diversion and collection channels.		
Ponds	Visual inspection and measurement of freeboard in all ponds	Medium: The storage capacity of the pond needs to be increased before freeze-up to accommodate next year's freshet.	- Engineering - Environment	- One (1) inspection before freeze-up to ensure the water level in the ponds is low to allow for inflow during freshet - Weekly during freshet - Immediately after a major rain event - Weekly otherwise over the open water season - Monthly after freshet is over in the open water season
Potable Water Treatment Plant	Visual inspection for cleanliness and that the plant is operating as required. Water samples for testing will be collected.	High: Plant provides potable water to the Project and its proper operation is necessary for human health.	- Environment - Engineering	- Ongoing as prescribed by the Department of Health or Public Health Authorities. - Daily inspections are expected
Quarries	Visual inspection for slumping and seepage from the quarries.	Low: Loose rock will be pulled down from the quarry face. Seepage to be sampled.	- Environment - Engineering	- Weekly at freshet and monthly thereafter over the open water period - After major rain events.
Road Dust	Visual inspection of the TAC, haul and service roads for excessive dust generation and deposition.	High: Dust can impact on the environment along the roads and be a safety risk due to limited visibility.	- Mine Operations - Environment - Engineering	- Biweekly when roads are very dry and/or when road traffic is heavy. - Inspections will be suspended during rainy days and over the winter.
Roads	Visual inspection for evidence of seasonal freeze and thaw adjacent to the toe of Tenas Access Corridor (TAC), haul and service road embankments and cut slopes.	Low: Affected area will be repaired using granular material and/or crushed rock.	- Mine Operations - Environment - Engineering	Weekly over the summer (approximately mid-May, from the start of the freshet period to October, prior to the fall freeze-up)

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsible	Frequency
Run-of-mine (ROM), Processed Coal, and Processed Rock Stockpiles	Visual inspection for seepage and collection of samples if safe to do so.	Low: - Channels will intercept any seepage from the coal stockpiles and direct the water to the CPP Sedimentation Pond. - Channels will intercept any seepage from the processed coal stockpiles at Rail Infrastructure and will direct water to the Rail Infrastructure Sedimentation Pond.	- Engineering - Environment	Visual inspection, monthly over the open water season
Sewage Treatment Plant	Visual inspection for cleanliness and collection of samples for testing	Medium: The Sewage Treatment Plant discharges to the Wastewater Storage Pond which discharges to the environment.	- Environment - Engineering	Weekly
Snow Removal from Roads	Visual inspections to ensure skidoo trails are not being blocked by snow removed from the roads	Low: Pushing snow onto skidoos trails that adjacent to or cross Telkwa Coal Limited (TCL)'s roads will make it difficult for trail users to cross the roads.	- Mine Operations - Environment - Engineering	Following each major winter storm and clearing of snow off the roads
Soil Treatment Facility	Visual inspection for water ponding outside the perimeter berm and water accumulating within the facility.	Low: The facility will have an impermeable liner and an oil:water separator will be used to remove excess water from the Soil Treatment Facility.	- Environment - Engineering	At freshet and weekly for the remainder of the summer
Spill Kits	Inventory of spills response equipment and materials in each spill kit	Low: Spills kits will be restocked after use.	- All departments - Environment to follow-up	Quarterly

Mine Components / Activities Inspected	Inspection Methods/Procedures	Qualitative Risk Level - High, Medium, or Low	Department Responsible	Frequency
Spills	Document the recovery of spilled material and clean-up of any remaining residuals	Low-High: This could range from Low to High risk depending on what was spilled, where it occurred, and success of spill recovery efforts.	- All departments; - Environment to follow-up	- Inspections begin when a spill is reported and continues on a regular basis until the spill is cleaned up. - The frequency of inspections will be dependent on what was spilled, where it occurred, and success of spill recovery efforts.
Utility Distribution System	Visual inspection for leakage or damage to the Utility Distribution System	Low: If the freshwater Utility Distribution System were to fail, the pumps in Goathorn creek can be turned off remotely.	- Environment - Engineering	Weekly, year-round
Waste and Recycling Shipments	Inspect shipping manifests to ensure they meet regulatory requirements	Low: Employees or contractors preparing waste and recycling products for transport will be trained in the transportation of dangerous goods.	- Mine Operations - Environment	- Waste and recycling products will be shipped offsite when necessary. - The manifests will be inspected monthly year-round for sea containers that are full and have been sealed for shipment.
Water Ponding Against Roads	Visual inspection of TAC, haul and service roads after freshet and major rain events.	Low: Ponding can be dealt with by pumping the water or by installing a culvert in the road where water is ponding.	- Mine Operations - Environment - Engineering	- Biweekly over the open water season - Following freshet and major rain events
Wildlife and Livestock Near or on TAC, Haul Roads, and Service Roads.	Visual inspection of hunting activities nearby when large numbers of wildlife exist near the Project Area.	High: - Hunters should observe the "No Shooting/Hunting Zone" of the Minesite - Report a Poacher program	Environment	- Weekly, year round - More frequently during wildlife migration periods

6.8.7 Incident Investigations and Corrective Actions

One of the most important aspects in investigating incidents, accidents, and non-conformities is to analyse situations and try to find root cause(s). Through this process, actions taken to address those incidents, accidents, and non-conformity should result in permanent and positive changes to the EMS as well as onsite management plans and affirm continuous improvement. It is important that employees with responsibilities regarding a situation under investigation be part of the process in identifying and assessing causes. The following standard steps will be followed when investigating:

- ▶ Identify the cause(s);
- ▶ Prepare a report on the findings;
- ▶ Develop a plan for corrective, mitigation, and preventive action(s);
- ▶ Implement the plan;
- ▶ Evaluate the appropriateness and effectiveness of the corrective action(s);
- ▶ Incorporate changes for continuous improvement; and
- ▶ Record and communicate changes arising from the continuous improvement.

Please see **Appendix 13.1-C Incident Notification and Incident Investigation Report Forms**. Additional details about how to report incidents and implement corrective actions are provided in the **MERP** and **OHSP**.

7. MONITORING

Monitoring for the purposes of this EMS will consist of examining the effectiveness of the structured approach to achieving health, safety, and environmental standards for the Project through a consistent system of planning, implementation, corrective action, and continual improvement, further described below:

1. **Planning:** This includes defining the scope of the EMS, establishing an **ESGP** for the Project, identifying applicable legal and other non-regulatory requirements, setting environmental performance objectives, and developing the environmental, health and safety and socio-economic management plans:
 - a. TCL will continuously review the identified aspects and if changes occur, revise along with changing objectives and targets;
 - b. TCL will maintain a list of legal requirements, including compliance clauses within permits and revise the EMS when new legal requirements may arise; and
 - c. The management plans which underlie the EMS (**Table 6.1-1**) will be reviewed on a continual basis and revised as needed, along with any SPP that are applicable.
2. **Implementation:** This includes resource allocation and the assignment of roles and responsibilities, environmental management training, internal and external communications, EMS documentation, records, and document control, and operating controls, including emergency response activities:
 - a. TCL will continually review the roles and responsibilities of employees, their training in specific operational controls, SPP, the EMS and management plans;
 - b. Ensure EMS documents are controlled, and no obsolete versions are used; and
 - c. TCL's **MERP** implementation will be reviewed when a response is required and amendments made to the plan, if needed.
3. **Checking and Corrective Action:** This includes ongoing monitoring of environmental performance; inspection and evaluation of environmental management practices, including environmental compliance, and internal EMS audits:
 - a. Review corrective actions arising from inspections (**6.8**), compliance with permits (assess regulated discharge monitoring results and other permit requirements), Indigenous concerns raised through the **SEMP** and/or public complaints that may arise, and revise management plans to address issues; and
 - b. Conduct annual internal audits of the EMS.
4. **Continual Improvement:** This includes a senior operational management review of the EMS and identification of improvements in environmental performance of the Project on an annual basis:
5. **Review:** Assess objectives and targets for environmental and social performance annually to ensure continual improvement;
 - a. Assess performance objectives for compliance with targets (**7.2**);
 - b. A Management of Change (MOC) procedure will be used to amend any part of the EMS;
 - c. When necessary, return to the planning function of the EMS to resolve issues, and
 - d. Conduct annual management reviews of the EMS, assess the effectiveness of the **ESGP**, and revise, as necessary.

7.1 Audit, Review and Update

It is expected that regulatory agencies will inspect the Project over its life for compliance with permits, reclamation progress, regulations, and licenses. Audits will also be conducted internally; however, independent researchers or consultants may also be engaged to complete the audits. Management reviews will also be conducted to determine the continued suitability, adequacy, and effectiveness of the EMS. The internal inspection process described previously can also be considered as an audit procedure. Outputs of the audits and management reviews could include:

- ▶ recommendations to revise the environmental, health, safety and socio-economic policies and management plans;
- ▶ revision to established performance objectives and targets; and,
- ▶ specifications for corrective actions for individual management plans.

7.2 Performance Objectives

The performance objectives and targets TCL will use to ensure the proper implementation of this EMS are shown in **Table 7.2-1**:

Table 7.2-1: Performance Objectives

Objective	Target
Number of inspections performed	Complete all inspections
Number of deficiencies observed, and corrective actions resolved	Continual improvement
Number of non-compliance events	Zero

8. REPORTING

8.1 General Reporting

Reporting completed by TCL will confirm consistent implementation of the EMS. Summary reports of monitoring activities and results will be compiled and reviewed annually.

8.2 Compliance Reporting

Compliance reporting will be subject to the EAC, and *MA/EMA* permit conditions. The information gathered during monitoring practices will be summarized with information from other management plans into an Annual Environmental Management Summary Report and upon permitting completion, the Annual Environmental Reports as required by *MA/EMA* permits. Community engagement activities will be an aspect of the **SEMP**. The **SEMP** will have requirements related to reporting on community engagement programs.

8.3 Internal Reporting

Details of the monitoring programs regarding EMS effectiveness will be reported internally on an annual basis according to the adaptive management framework of the EMS. The report will provide results of monitoring, corrective actions and follow-up, assessment of performance objectives where applicable, and any other pertinent information.

TCL staff or contractors will be strongly encouraged to report any inefficiencies to management for evaluation consideration.

This internal reporting will be used during annual EMS management reviews and if necessary, based on the outcome, will undertake revision or updates to the system and/or underlying management plans.

9. ROLES AND RESPONSIBILITIES

Responsibility for decision-making and providing the resources for the implementation, maintenance, and improvements to the EMS rests with Minesite management with input from TCL's corporate office. Management responses to potential negative effects will be based on the analysis of monitoring results and an understanding of the cause and effect, the severity and duration of the effect, and the impact on traditional pursuits. Decisions made using an adaptive management process will improve the EMS's effectiveness in addressing environmental effects while maintaining the economic viability of the Project.

Primary responsibilities have been assigned to the following groups:

9.1 Mine Manager

The Mine Manager bears overall responsibility for the construction and operation of the Project, and responsibility for onsite environmental monitoring and compliance relating to Construction, Operation, Decommissioning and Reclamation and Post-Closure phase activities. The Mine Manager reports to the executive steering committee for TCL and will coordinate with this group to ensure that Project objectives are being met.

The Mine Manager will:

- ▶ implement the EMS; and
- ▶ facilitate the annual management review of the EMS along with the Environmental Coordinator and EMS Team.

9.2 Mine Superintendent

The Mine Superintendent reports to the Mine Manager and bears the responsibility to provide adequate resources to follow the **ESGP**, develop and sustain the EMS, and support the Environmental Coordinator as needed to implement the EMS and inspection and monitoring programs.

9.3 Environmental Coordinator

The Environmental Coordinator bears overall responsibility for ensuring the goals of the **ESGP** are followed, and that the detailed components of the EMS, including all environmental and social management plans are implemented. The Environmental Coordinator also supervises the Environment Department's environmental monitoring and inspection programs, directs, and documents corrective actions, and ensures they are addressed with the support of the Mine Superintendent. The Environmental Coordinator will also prepare for the annual EMS management review, attend with the EMS Team, and document the outcomes.

9.4 Health, Safety, and Human Resources Superintendent

The Health, Safety, and Human Resources Superintendent bears overall responsibility for the **OHSP**, and reporting any incidents to BC MEMLI, as well as

- ▶ maintain health and safety incident records and reporting;
- ▶ ensure corrective actions that arise from health and safety issues are resolved;
- ▶ provide training opportunities for employees about the **ESGP**;

- ▶ maintain health and safety training, safety meeting minutes and SPP training records for employees, and,
- ▶ manage the Emergency Response Team (ERT), implementation of the **MERP** and/or **FMSCP**, and function as MERP Coordinator.

9.5 Visitors and Contractors

- ▶ Ensure sign-in and sign-out upon arrival and departure from the Minesite;
- ▶ Undertake site induction prior to entering the Minesite; and
- ▶ Comply with SPPs, if relevant.

9.6 Supervisors

- ▶ Ensure employees are trained and understand the aspects of the EMS, its management plans and the applicable SPPs that relate to the work being conducted.

9.7 Employees

- ▶ Ensure a full understanding of the site induction and other training about the EMS, its management plans, and the applicable SPPs related to the work being done by the employee;
- ▶ Follow all compliance obligations under the Project legislative requirements; and
- ▶ Ensure compliance with TCL policies, the EMS, its management plans, and SPPs related to the activities conducted onsite by the employee.

9.8 All

- ▶ Confirm knowledge of the EMS, the **ESGP**, and compliance obligations under Project legislative requirements; and
- ▶ Ensure that all health, safety, environmental, and/or social incidents are reported.

9.9 Organizational Structure

The Project will require teams of employees beyond the core personnel outlined in **9.1** to **9.8**. The Minesite requires skilled personnel in departments responsible for mining and processing, environmental management and monitoring, health and safety, human resources, finance and administration, and maintenance. These teams of personnel operate work onsite at the Minesite or at the office in Telkwa. These personnel are supported by TCL's corporate office in Vancouver, BC, which provides executive management and oversight.

The organizational structure at the Project is shown on **Figure 9.9-1**.

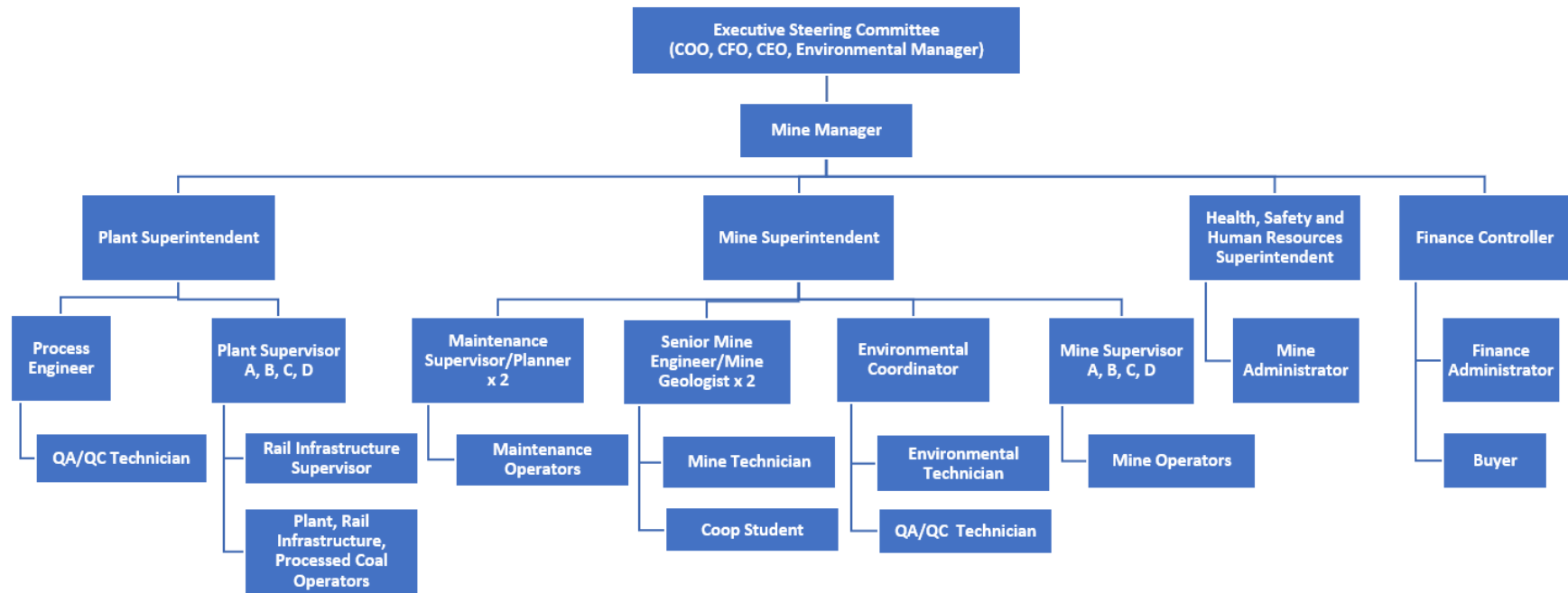


Figure 9.9-1: Tenas Project Organizational Structure

10. COMMUNICATION

The sharing and communication of information is an important part of the EMS. Internal communications, along with meetings, will be recorded and distributed to managers before being filed for future reference.

TCL will maintain and preserve internal and external records. Any significant change to the EMS will be communicated to Minesite employees and contractors through a site-wide email, announcements over all radio channels by Minesite supervision and bulletins posted around the Minesite. When effective to do so, maps will be marked with changes.

10.1 Training and Awareness

Working at the Project requires training, including an understanding of the EMS, and an awareness of the management plans that are a part of it.

10.1.1 Employee Training

Employees are required to review the EMS, **ESGP**, and other relevant TCL policies, SPPs and management plans and their associated training modules at the start of employment and on an annual basis. Employee orientation and training will include a site induction including environmental, occupational health and safety, and social and cultural training, the latter of which will include information on MMIWG and community aspects. Employee training is tracked and managed by a training software application.

10.1.2 Contractor and Visitor Training

Contractors and visitors will be given a site induction. Contractors will also review the relevant SPPs at the start of their contract and on an annual basis if contracts are longer than 13 months in duration to ensure their compliance with these requirements. Visitors will receive an overview of the relevant SPPs during their visitor induction session prior to accessing the site or from their Contract Manager. Visitors are restricted to being under the direction of TCL employees for use of TCL roads and will be escorted by TCL personnel onsite or accompany TCL personnel in their vehicles.

11. EVALUATION AND ADAPTIVE MANAGEMENT

11.1 Evaluation

A review of the EMS will be completed by the Mine Manager and the Environmental Coordinator on an annual basis to compare data, trends, and implementation of the management plans and their objectives. This process will include a review of the management plan deliverables and input received from Indigenous groups through community engagement plans and TCL's **SEMP**.

The EMS, developed by TCL, is expected to provide information related to two (2) questions:

1. Does the EMS effectively conserve and protect the environment in which the Project operates and allow existing and foreseeable future pursuits to continue unimpeded?
2. Does the EMS achieve the goals found in TCL's **ESGP**?

The EMS is designed to provide a framework to ensure acceptable protection of the environment, and the health and safety of employees and the public. It includes the flexibility for continual improvement over time. The EMS verifies that the assignment of environmental management responsibilities and resource allocation to environmental management, monitoring, and mitigation has been considered.

The response initiated and resources provided would be commensurate with the gravity and duration of the observed effect. The goal is to remove the cause of the adverse effect or reduce the observed effect to an acceptable level. This could include administrative actions, such as corrective actions and adjustments to SPPs, especially if negative effects persist.

11.2 Adaptive Management

A philosophy of adaptive management will be implemented through the EMS Plan-Do-Act-Check cycle to make sure that management plans and mitigation measures are consistently meeting or exceeding performance targets. This will be achieved through periodic reviews of the EMS and the results of monitoring programs.

TCL will work towards continual improvement at the Project. The Mine Manager or their delegate will investigate improvements in any trend and assess whether the practices responsible for the improvements can be applied to other areas of the Project.

Deteriorating trends will be studied to determine the root cause. When the cause is identified, the Mine Manager or their delegate will implement a suitable corrective action. Examples of corrective actions could include:

- ▶ finding alternate forms of materials to reduce waste or increase reusability;
- ▶ additional training of employees and contractors on procedures;
- ▶ enhancement of maintenance or monitoring measures; and/or
- ▶ additional supervisory oversight.

The use of adaptive environmental management allows environmental, health and/or safety risks to be identified and mitigation measures to be planned and developed beforehand. This allows for a rapid response to adverse effects through corrective actions and reduces the length of time that potential effects

to land and water could persist. In the event inadequacies are detected in the EMS, the flexibility afforded by adaptive management allows these to be addressed quickly and in a comprehensive manner.

11.3 Continual Improvement

TCL will amend the EMS as required based on a review of management plan implementation and annual evaluations of the EMS and feedback from the public, stakeholders, and Indigenous groups.

11.3.1 Periodic Revisions of the Inspection Program

The effectiveness of the Inspection Program will be evaluated annually to determine the extent to which it achieved the desired environmental and maintenance outcomes. Updates to the program may be prompted by changes in policies or legislation, changes in operations and/or technology at the Minesite, or as part of corrective action.

12. CHANGE MANAGEMENT

The effectiveness of the inspection and monitoring program, EMS implementation, and the use of SPPs will be evaluated annually to determine the extent to which they achieved the desired goals of the EMS and **ESGP**. Updates to the program may be prompted by changes in policies or legislation, changes in operations and/or technology at the Minesite, or as part of corrective action. Changing any part of this plan requires a formalized process to be used. If significant changes to objectives, plan structure, operational milestones, communication and/or information management are being planned, it is required that the MOC procedure described below be followed. All minor edits and/or updates to this EMS will be controlled through version control and content approval functions.

12.1 Management of Change (MOC) Procedure

Changes in environmental conditions, regulatory requirements, and/or key construction and operations personnel will be managed under a MOC procedure to ensure the continuity of the Project in a sustainable and environmentally sound manner. This procedure will be followed to ensure that changes to the management plans do not cause unforeseen issues, and that the changes are incorporated into the existing management plans and SPPs. This procedure will be fully formed and approved prior to the start of the Construction Phase of the Project.

The steps in the management of change procedure will include:

- ▶ Identify the change;
- ▶ Assess the risk associated with the change;
- ▶ Establish responsibility to manage the change; and
- ▶ Develop a plan of action.

The process to be used for managing changes related to environmental regulatory requirements, expectations, obligations, and commitments and/or personnel will follow the MOC procedure. This procedure will be implemented in consultation with the Mine Manager, the Health, Safety, Human Resources Superintendent, and the Environmental Coordinator, with support from the Mine Superintendent and Plant Superintendent. Once the EAC and MA/EMA permits are approved, a decision to depart from it in any material way will first require the initiation of the MOC procedure and requisite documentation, followed by approval at an appropriate level of authority depending on the nature of the variance.

When the MOC procedure is required, the following steps are envisioned:

1. Review changes with the following personnel for feedback and risk assessment:
 - a. Mine Superintendent;
 - b. Plant Superintendent;
 - c. Health, Safety, and Human Resources Superintendent; and
 - d. Environmental Coordinator.
2. Based on this review it would be determined if the change requested is a **major** or **minor** change.
3. If **minor** change, the management plan or SPP changes would be communicated to all employees affected and feedback would be solicited after describing:
 - a. the nature of change;

- b. why the change is being proposed;
 - c. when the change would become effective; and
 - d. who is impacted.
4. If **major** change:
- a. Review with the Occupational Health and Safety Committee (OHSC) for feedback;
 - b. Incorporate feedback;
 - c. Review with shift safety representatives for feedback;
 - d. Develop implementation plan;
 - e. Complete final review and risk assessment with core group again:
 - i. Mine Superintendent;
 - ii. Plant Superintendent;
 - iii. Health, Safety, and Human Resources Superintendent;
 - iv. Environmental Coordinator;
 - f. Proceed with implementation plan; and
 - g. Ensure previous versions of any management plan or SPP that are obsolete are removed from active circulation, and that dates/document numbers for the new management plan or SPP are changed.

This MOC procedure will be fully developed and approved prior to the start of the Construction Phase of the Project.

13. CONCLUSION

Management of the Project's interaction with the surroundings and ensuring the compliance of the Project with all regulatory approvals is of utmost importance to TCL. Through implementation of this EMS, **ESGP**, management plans, and relevant SPPs, TCL will ensure the Project's effect on the environment is minimized and compliant with its regulatory approvals.

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