

Appendix D

Environmental and Social Management System (ESMS)

NORTHCLIFF RESOURCES LTD.

SISSON PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM



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LIST OF ACRONYMS AND ABBREVIATIONS

ESMS	Environmental and Social Management System
TSF	tailings storage facility
EIA	Environmental Impact Assessment
GM	General Manager
EH&S	Environment, Health and Safety
ETP	Employment and Training Plan
<i>e.g.,</i>	for example
EPRP	Emergency Preparedness and Response Plan
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ML/ARD	metal leaching and acid rock drainage
PAG	potentially acid generating
NPAG	non-potentially acid generating
CHSP	Community Health and Safety Plan
TWGs	Technical Working Groups

1.0 INTRODUCTION

1.1 INTRODUCTION

This document provides a description of the framework for the development of an Environmental and Social Management System (ESMS) for the Sisson Project (the “Project”) for Northcliff Resources Ltd. (“Northcliff”; “the Company”). It also provides an outline of the various environmental and social management plans, policies and procedures comprising the ESMS and describes their implementation schedule and responsibilities.

1.2 PROJECT OVERVIEW

The Project consists of an open pit tungsten and molybdenum mine, ore processing plant, and associated facilities located on provincial Crown land approximately 10 km southwest of the community of Napadogan, New Brunswick, and approximately 60 km directly northwest of the city of Fredericton.

The Project is owned by Northcliff, a publicly traded Canadian company that is listed on the Toronto Stock Exchange.

Development in the Project involves the Construction and Operation of the following principal facilities:

- open pit mine;
- mill to produce tungsten and molybdenum concentrates, and processing plant to produce ammonium paratungstate (from tungsten concentrate);
- a tailings storage facility (TSF) for storing all tailings and waste rock;
- surface water diversions and other seepage, run-off and sediment control structures;
- a plant for treating surplus water before discharge to receiving waters; and
- ancillary developments such as an administrative building, warehouse, truck maintenance facility, internal haul roads and explosives storage.

In addition to the site facilities, the Project will use the existing access roads in the region as well as railway facilities at Napadogan to receive equipment and supplies and to transport product to market. The Project will connect to the provincial electrical grid by a new 42 km-long 138 kV transmission line to the NB Power terminal station in Keswick to the southwest.

1.3 PURPOSE AND OBJECTIVES OF ESMS

This document describes the system and associated plans that Northcliff will put in place for the life of the Project for implementation of the commitments and mitigation strategies identified in the Environmental Impact Assessment (EIA) Report, and otherwise needed to meet Northcliff’s *Principles of Responsible Mineral Development*.

The EIA Report identifies Project-related environmental effects and mitigation that serves as the initial basis for social and environmental management planning. The ESMS takes over where the EIA Report leaves off and focuses on the processes and plans necessary to ensure social and environmental commitments and mitigation measures are implemented and re-evaluated throughout the life of the Project, from Construction through to Closure and Post-Closure. The ESMS ensures issues continue to be identified and managed throughout the life of the Project regardless of whether or not there are changes in physical or regulatory conditions. The ESMS commits Northcliff to meet provincial and federal regulatory requirements and other best practices identified for the management of the Project.

Environmental and social management plans describe the specific actions that Northcliff will undertake to implement the mitigation measures and meet the commitments identified in the EIA Report, subsequently in permitting, and ultimately through adaptive management in response to monitoring and follow-up. The objective of these plans will be to avoid, eliminate, off-set, or reduce to acceptable levels, any adverse environmental and social environmental effects, and to achieve environmental and social benefits wherever possible.

As an adaptive management strategy, the ESMS and its attendant plans are living documents that will be reviewed and updated regularly during all phases of the Project as engineering and work progresses, permits are obtained, and as the results of monitoring and follow-up are considered. As a system, the ESMS will be a dynamic, life-of-Project approach that ensures the environmental and social aspects identified within it are managed with a view to continuous improvement.

2.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

Northcliff is committed to implementing the ESMS to ensure the Sisson Project is implemented according to the company's *Principles of Responsible Mineral Development* (Figure 2.1). The ESMS will be consistent with ISO 14001:2004(E). The ESMS will enable Northcliff to develop and implement a policy and objectives which take into account its commitments made in the EIA Report and other requirements including those prescribed by applicable law and regulation. Northcliff will identify in the development of the ESMS, the "significant environmental and social aspects" which it can control and influence. "Environmental and social aspects" are Northcliff's activities, products and services that can interact with society and the environment. Significant aspects are those which could, without mitigation, result in a significant adverse environmental effect, including those of a socio-cultural or economic nature as initially evaluated in the EIA Report.

In implementing its ESMS, Northcliff will:

- establish, implement, maintain and improve its system through the life of the Project;
- assure itself of conformity with its stated environmental and social policy; and
- demonstrate it is consistent with ISO 14001:2004(E) by:
 - making a self-determination and self-declaration, or
 - seeking confirmation of its conformance by parties having an interest in the company such as local community and stakeholder groups and First Nations; or
 - seeking confirmation of its self-declaration by a party external to the company; or
 - seeking certification/registration of its ESMS by an external organization.


The EIA Report identifies potential Project environmental effects, risks and opportunities through comparison of Project plans with baseline conditions, regulatory standards, and scientific evaluations, as informed by public consultation and Aboriginal engagement undertaken by Northcliff. These social and environmental effects and opportunities were identified for each Project phase and will form the basis for the plans outlined in this ESMS. A table summarizing mitigation measures and programs identified in the EIA Report to be implemented during Project activities is provided in Chapter 10 of the EIA Report; it will be appended to this ESMS when the EIA Report is approved by the governments of New Brunswick and Canada. The ESMS will be kept current through the life of the Project, and comply with the requirements of the applicable provincial and federal laws and regulations.

On an ongoing basis and throughout the life of the Project, Northcliff will maintain a system to review, identify and assess environmental effects, risks and opportunities of Construction, Operation, and Decommissioning, Reclamation and Closure. These risks will be prioritized and plans will be developed with specific objectives and targets. Operational controls intended to avoid or reduce environmental effects of the Project will be regularly reviewed and maintained. Public and stakeholder consultation, and First Nations engagement activities, will be a key feature of ongoing issue identification and assessment.

2.1 ENVIRONMENTAL AND SOCIAL POLICY

Northcliff has initiated the basis for the development of its policy through its *Principles of Responsible Mineral Development* (Figure 2.1). Prior to the commencement of Construction, Northcliff Senior Management will define its Environmental and Social Policy and ensure that, within the defined scope of its ESMS, it is:

- appropriate to the nature, scale and environmental and social effects of its activities, products and services;
- includes a commitment to continual improvement and the prevention of pollution;
- includes a commitment to comply with applicable legal requirements and with other requirements to which it ascribes that relate to its environmental and social aspects;
- provides the framework for setting and reviewing environmental objectives and targets;
- is documented, implemented and maintained; and
- is communicated to all persons working for or on behalf of Northcliff, and is available to the public.



Responsible Mineral Development

Northcliff Resources Ltd. is committed to working shoulder to shoulder with stakeholders to achieve the responsible development of our projects and to contribute to the sustainable development of the communities in which we work.

All activities are guided by the following principles:

Health and Safety	We operate in a responsible manner so that our activities protect the health and safety of our employees and contractors, and of the communities in which we work.
Stakeholder Engagement	We engage with governments, communities, indigenous peoples, organizations, groups and individuals on the basis of respect, fairness, transparency, and meaningful consultation and participation.
Community Development	We establish productive local partnerships to contribute to achieving development goals identified by communities in which we work, to address local priorities and concerns, and to have communities derive substantive benefits from our activities.
Environment and Society	We apply environmental and social best management practices in the planning, design and implementation of our activities, from exploration through to closure of our mining operations. We meet or exceed regulatory requirements in the jurisdictions in which we work.
Resource Use	We use land, water and energy resources responsibly; strive to maintain the integrity and diversity of ecological systems; and apply integrated approaches to land use.
Human Rights	We respect human rights principles, as well as local cultures, customs and values, in our dealings with employees, communities and other stakeholders.
Labour Conditions	We provide fair treatment, non-discrimination and equal opportunity for our employees, and comply with labour and employment laws in the jurisdictions in which we work. We strive for excellence in relations between management and employees.

Northcliff Resources Ltd. integrates these *Principles of Responsible Mineral Development* within corporate management and decision-making, and we work to continually improve our performance. From project acquisitions and exploration through to mine closure, we will assess the financial, social and environmental benefits and risks of our business decisions. Our goal is international best practice in all our operations, in Canada and around the world.

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Figure 2.1 Northcliff Resources – Principles of Responsible Mineral Development

2.2 PLANNING

Northcliff will undertake the necessary planning to implement and maintain its ESMS.

2.2.1 Environmental and Social Aspects

Northcliff will establish, implement and maintain a procedure:

- to identify the environmental and social aspects of its activities, products and services within the defined scope of the ESMS that it can control and influence taking into account the changing requirements of the various phases of the Project; and
- to determine those aspects that have or can have a significant environmental effect.

Northcliff will ensure that the significant environmental and social aspects will be taken into account in establishing and maintaining the ESMS.

2.2.2 Legal and Other Requirements

Northcliff will establish, implement and maintain procedures to identify and have access to the applicable legal requirements and other requirements to which it subscribes related to its environmental and social aspects. It will also determine how these apply to its environmental and social aspects. These will be reflected in the ESMS.

2.2.3 Objectives, Targets and Programs

Northcliff will establish, implement and maintain a record of applicable environmental objectives and targets, at relevant functions and levels within its organization. The objectives and targets will be measurable, where practicable, and consistent with the environmental and social policy, including the commitments to prevent pollution, and to comply with applicable legal requirements and to all other requirements to which Northcliff subscribes, and to continual improvement.

Northcliff will establish, implement and maintain a program for achieving its objectives and targets. Northcliff will designate responsibility for achieving its objectives and targets at relevant functions and levels of the organization, and the means and time-frame by which they are achieved.

2.3 IMPLEMENTATION AND OPERATION

2.3.1 Resources, Roles, Responsibility and Authority

Northcliff management will ensure the availability of resources essential to establish, implement, maintain and improve the ESMS. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources. Roles and responsibilities will be defined, documented and communicated in order to facilitate effective environmental and social management.

Northcliff's Senior Management will appoint specific management staff who, irrespective of other responsibilities, will have defined roles, responsibilities and authority for:

- ensuring that the ESMS is established, implemented and maintained; and
- reporting to Senior Management on the performance of the ESMS for review including recommendations for improvement.

The success of the ESMS will depend on clear definition of respective roles and responsibilities for environmental and social performance. Throughout the corporate organization and Project activities, many individuals will have an influence on the environmental and social performance of the Project. Northcliff will establish, communicate and reinforce lines of authority, responsibility and accountability throughout the organization. Lines of authority, responsibility and accountability will be established by specifying and documenting the scope of area or activity under the control of each functional area or individual. These responsibilities will be identified in functional area descriptions (e.g., mine, process plant, warehouse, and administrative areas), job descriptions, operating procedures, and contracts. Where responsibilities overlap, the ESMS will facilitate the identification of shared roles and responsibilities. ESMS roles and responsibilities for key personnel are identified below.

2.3.1.1 Northcliff CEO and Senior Managers

The CEO and Senior Managers will have overall responsibility for the implementation and effectiveness of the ESMS in managing environmental social effects and opportunities. They will be responsible for ensuring that adequate resources, both personnel and financial, are available to implement the ESMS and related social and environmental plans and programs. Senior Managers, consisting of the General Manager and Operational Line Managers, will also be responsible for ensuring site personnel are carrying out their responsibilities with respect to the Company's policies, expectations and commitments.

2.3.1.2 General Manager

The **General Manager** (GM) will have overall responsibility for ensuring personnel and financial resources are appropriately deployed to achieve compliance with legal and policy requirements, obligations and company commitments for environmental and social performance. He/she will allocate resources, communicate responsibilities and expectations, and ensure that the ESMS is fully integrated into Project plans and activities. The General Manager will track and report performance to Northcliff's senior management.

2.3.1.3 Operational Line Managers

Operational line managers will be directly responsible for ensuring the implementation of the ESMS and related commitments, plans and programs within their respective functional areas and associated activities. Key ESMS responsibilities will be:

- **Mine Manager** will be responsible for waste rock, road dust, and noise and vibration management;

- **Process Manager** will be responsible for TSF and water management, and for meeting discharge water quality standards and air quality emission standards, and the on-site laboratory; and
- **Environment, Health and Safety Manager** will be responsible for implementing all on-site security, health, safety plans and the ESMS overall, as described below.

2.3.1.4 Environment, Health and Safety Manager

The Environment, Health and Safety (EH&S) Manager will be responsible for implementing Northcliff's environmental and social policy, and for ensuring Northcliff meets its regulatory obligations and environmental and social performance commitments to governments, the public and First Nations. He/she will provide regulatory information and technical assistance to the GM and other operational line managers on environmental protection and management programs. He/she will have overall responsibility for ensuring effective implementation of the ESMS and attendant plans for the Project in conjunction with the Mine Manager and Process Manager, under the direction of the General Manager. The EH&S Manager will have overall responsibility to develop, implement and maintain the ESMS.

2.3.1.5 Community and First Nations Relations Officer

The Community and First Nations Relations Officer will be responsible for developing and managing Northcliff's public, stakeholder and First Nations engagement activities.

2.3.1.6 Local Government

Northcliff has established positive relationships with local and provincial government authorities that will be continued during implementation of the ESMS. Effective local government relationships will help assure legal compliance as well as facilitate integration of local experience and knowledge of existing civil society systems into the ESMS.

2.3.1.7 Civil Society

Northcliff has collaborated with First Nations communities (e.g., Woodstock FN, Assembly of First Nations of New Brunswick) and local stakeholder groups (e.g., Nashwaak Watershed Association, Atlantic Salmon Federation) in planning the Sisson Project. Northcliff will continue these collaborations, seek similar working relationships with other institutions and groups, and work with local town councils and government to implement the ESMS.

2.3.1.8 Contractors

All contractors working for Northcliff will adhere to pertinent obligations presented in any of the plans included in the ESMS. Relevant obligations and performance expectations will be incorporated into contracts and monitored in the same manner as all other functional areas and activities. Each primary contractor will appoint a designated person to oversee environmental and social performance, and to liaise and report to the EH&S Manager. Specifically, where relevant, each contractor will be required to develop an environmental, social, health and safety plan prior to contract finalization, addressing at least the following topic areas:

- environmental protection procedures and spill mitigation plans;

- management of hazardous materials procedures;
- procedures for handling and disposing of non-hazardous waste;
- environmental monitoring procedures;
- health and safety plan;
- detailed worker accommodation arrangements and code of conduct for employees, if not provided by the Company;
- transportation arrangements, if not provided by the Company;
- enforcement of traffic safety rules, including speed limits; and
- control of sub-contractors.

2.3.2 Competence, Training and Awareness

Northcliff will ensure that any persons performing tasks that have the potential to cause a significant environmental effect have appropriate education, training or experience, and retain associated records of such. Northcliff will identify training needs associated with its environmental and social aspects and the ESMS, and will provide training or take other action to meet these needs, and retain associated records.

Northcliff will establish, implement, and maintain procedures to make persons working for it or on its behalf aware of:

- the importance of conformity with the environmental and social policy and procedures and with the requirements of the ESMS;
- the significant environmental and social aspects and related potential environmental and social effects associated with their work, and the benefits of improved personal performance;
- their roles and responsibilities in achieving conformity with the requirements of the ESMS; and
- the potential consequences of departure from specified procedures.

Site inductions for all new employees and contractors will address environmental and community relations issues and responsibilities. The site inductions will address:

- obligations under Northcliff's environmental and social policy;
- site safety, environmental and community relations guidelines;
- specific procedures concerning key environmental and social aspects;
- workforce management and social code of conduct requirements; and

- procedures for engaging environmental and community relations personnel in support roles.

Additional specific training and standard operating procedures will be provided to personnel involved in, among other things:

- operating equipment and conducting activities that may have an effect on the environment or local communities;
- maintaining and operating pollution control equipment;
- storing and handling hazardous materials; and
- responding to environmental incidents (e.g., fuel spills).

Records will be retained of all persons being inducted, with all employees being required to undertake a re-induction periodically, as needed. Regular staff meetings will be held to provide personnel with updates of the information received at induction. These meetings will:

- emphasize the importance of conforming with Project environmental and social policy and its associated procedures;
- focus on topical environmental management issues and significant environmental and/or community relations issues, either actual or potential;
- include reporting on regular components of the ESMS environmental management and community relations program (such as water quality results or particular issues of concern to local residents), other relevant issues, or updating of particular changes to site environmental requirements; and
- maximize face-to-face contact on a frequent basis between senior management and employees and promote internal communication.

Efforts will be made to encourage employees to introduce environmental initiatives, with senior staff briefed to evaluate and respond to suggestions.

2.3.3 Communication

Northcliff will establish, implement and maintain a procedure for internal communication among the various levels and function of the organization regarding the environmental and social aspects of the ESMS. Northcliff will also have procedures for receiving, documenting and responding to relevant communication from external interested parties. Protocols for external communication will be documented and communicated to the regulatory authorities, public, stakeholders and the Aboriginal community.

2.3.4 Documentation

In its ESMS, Northcliff will include the following documentation:

- environmental and social policy, objectives and targets;
- description of the scope of the ESMS;
- description of the main elements of the ESMS and their interaction, and reference to related documents;
- documents including records consistent with the requirements of ISO 14001:2004(E); and
- documents, including records, determined by Northcliff to be necessary to ensure the effective planning, operation and control of processes that relate to its significant environmental and social aspects.

The various attendant plans that will comprise a major part of the ESMS operational procedures are described in Section 3 (ESMS Plans, Policies and Procedures) below.

2.3.5 Control of Documents

Documents required by the ESMS will be controlled by Northcliff. Records are a special type of document, the requirements of which are described in Section 2.4.4. Northcliff will establish, implement and maintain procedures to:

- approve documents for adequacy prior to issue;
- review and update as necessary and re-approve documents;
- ensure that changes and the current revision status of documents are identified;
- ensure that relevant versions of applicable documents are available at points of use;
- ensure that documents remain legible and readily identifiable;
- ensure that documents of external origin determined by the organization to be necessary for the planning and operation of the ESMS are identified and their distribution controlled (e.g., government guidance, permits); and
- prevent the unintended use of obsolete documents and apply suitable identification to them if they are retained for any purpose.

2.3.6 Operational Control

Northcliff will identify and plan those operations that are associated with the identified significant environmental and social aspects consistent with its environmental policy, objectives and targets, in order to ensure that they are carried out under specified conditions, by:

- establishing, implementing and maintaining documented procedures to control situations where their absence could lead to deviation from the environmental policy, objectives and targets; and
- stipulating the operating criteria in the procedures; and
- establishing, implementing and maintaining procedures related to the identified significant environmental and social aspect of goods and services used by Northcliff and communicating applicable procedures and requirements to suppliers and contractors.

Operating controls refer to equipment, standard operating procedures and other risk mitigation procedures designed to prevent or minimize environmental effects on the physical, biophysical and human environments. Examples of operational controls include dust control procedures and maintenance of dust suppression systems, maintenance procedures for water diversion infrastructure and standard operating procedures for tailings and waste rock storage within the TSF. Northcliff will develop these controls as part of engineering and Project planning; they are identified in this EIA Report for feasibility level design. Operational controls will be maintained throughout Construction, Operation and Decommissioning, Reclamation, and Closure. Operational controls and their effectiveness will be reviewed when there are changes to planned Operation, and at least annually, to ensure effectiveness. These will be identified within the attendant plans of the ESMS and will be developed, implemented and maintained through the life of the Project, as appropriate.

2.3.7 Emergency Preparedness and Response

Northcliff will establish, implement and maintain procedures to identify potential emergency situations and potential accidents that can have an environmental or social effect and how it will respond to them. Northcliff will respond to actual emergency situations and accidents and prevent or mitigate associated environmental effects. Northcliff will periodically review and, where necessary, revise its emergency preparedness and response procedures, including after the occurrence of accidents or emergency situations. Northcliff will test emergency response procedures periodically where practical to do so.

2.4 CHECKING

2.4.1 Monitoring and Measurement

Northcliff will establish, implement and maintain procedures to monitor and measure, on a regular basis, the key characteristics of its Operation that can result in an adverse environmental effect. The process will include documenting information to monitor performance, applicable controls and conformity with Northcliff's environmental and social objectives and targets. Northcliff will ensure that equipment used for measuring will be maintained and calibrated and the records are maintained. Section 3.5.10 describes the Follow-up and Monitoring Plan.

2.4.2 Evaluation of Compliance

Northcliff will, in a manner consistent with its commitment to compliance, establish, implement and maintain procedures for periodically evaluating compliance with applicable legal and other requirements to which it subscribes. Northcliff will keep records of the result of the periodic evaluations. These are particularly described in the Follow-up and Monitoring Plan.

2.4.3 Non-conformity, Corrective Action and Preventive Action

Northcliff will establish, implement and maintain procedures for dealing with actual and potential non-conformities and for taking corrective action and preventive action. The procedures will define requirements for:

- identifying and correcting non-conformities and taking actions to mitigate their environmental effects;
- investigating non-conformities, determining their cause and taking actions in order to avoid their recurrence;
- evaluating the need for actions to prevent non-conformities and implementing appropriate actions designed to avoid their occurrence;
- recording the results of corrective actions and preventive actions taken; and
- reviewing the effectiveness of corrective and preventive actions taken.

Actions taken will be appropriate to the magnitude of the problems and environmental and social effects encountered. The ESMS documentation will be changed as necessary.

2.4.4 Control of Records

Northcliff will establish and maintain records as necessary to demonstrate conformity to the requirements of the ESMS and will establish, implement and maintain procedures for the identification, storage, protection, retrieval, retention and disposal of records.

2.4.5 Internal Audit

Northcliff will ensure that internal audits of the ESMS are conducted on regular pre-determined basis. The audits will determine whether the ESMS conforms to planned arrangements for environmental and social management and that it has been properly implemented and maintained. The results of audits will be provided to Senior Management. Audit procedures will be established, implemented and maintained to address the responsibilities and requirements for planning and conducting the audits, to report results and retain records, and also to determine audit criteria, scope, frequency and methods. The selection of auditors and conduct of audits will ensure objectivity and the impartiality of the audit process.

Northcliff will engage an appropriately qualified third party to conduct audits of the ESMS, Project facilities, Operation, programs and plans in accordance with the procedures for audit outlined in the ESMS. The audit will be timed to coincide where possible with regular monitoring activities to facilitate the observation and review of the related methods and procedures. The scope of the audit, at minimum, will include:

- reviewing all monitoring data and, if deemed warranted by the independent third party auditor, undertaking an independent round of monitoring;
- reviewing all environmental reports compiled since the previous audit;
- reviewing Operation, inspecting facilities and observing monitoring activities to assess the effectiveness of the Project's ESMS and its implementation and, if appropriate, identify potential improvements; and
- preparing an audit report, complete with a photographic record and recommendations.

2.4.6 Management Review

Senior management will review the ESMS at planned intervals to ensure its continuing suitability, adequacy and effectiveness. Reviews will include assessing opportunities for improvement and the need for changes in the system. Records of the management review will be maintained. Input to management reviews will include:

- results of internal audits and evaluation of compliance;
- communications from external parties, including complaints;
- the environmental and social performance of Northcliff;
- the extent to which objectives and targets have been met;
- the status of corrective and preventive actions;
- follow-up actions from previous management reviews;
- changing circumstances; and
- recommendations for improvement.

The output of management reviews will include decisions and actions to any ESMS actions including those pertaining to continual improvement.

2.5 REPORTING

Northcliff will employ the following environmental and community relations reporting systems:

- results from environmental monitoring and community relations programs will be presented at regular management meetings;
- environmental and community relations activities will be communicated to Northcliff's Board at every board meeting; and
- an annual Environmental Performance and Community Relations Report will be prepared for, and distributed to, government authorities, local communities and interested stakeholders.

3.0 ESMS PLANS, POLICIES AND PROCEDURES

As a part of the ESMS, Northcliff will establish a number of associated plans, policies and procedures. These are described as currently conceived, and will develop as the Project proceeds through the various phases of development, as applicable.

3.1 LABOUR AND WORKING CONDITIONS POLICIES AND PROCEDURES

Northcliff will establish labour and employment policies and procedures that address issues related to non-discrimination, personal rights, respectful workplace, sexual harassment and equal opportunity for employees. Conditions relating to these issues will be imposed on contractors and major suppliers in the contract terms. For recruitment and hiring, applicants and candidates will be selected on the merit of their qualifications, experience and skills. The company will develop additional recruitment, procurement, and training strategies to ensure local hire opportunities are maximized (outlined in the Employment and Training Plan in Section 3.3). Northcliff will develop communication programs to ensure that employees are aware of their rights according to labour, health and safety laws and membership rights to labour associations. The Human Resources Department will ensure that a grievance mechanism is established, communicated and maintained to address employee and/or contractor concerns.

A corporate policy will be developed for termination of employees as a result of closure or temporary shut-downs.

3.2 OCCUPATIONAL HEALTH AND SAFETY PLAN

An Occupational Health and Safety Management Plan will be developed for all phases of the Project, as applicable. It will be integrated with those of contractors and service providers, as applicable. The Plan will include the following elements:

- documentation and communication of policies and legal requirements;
- identification of potential hazards and risk prevention strategies and measures;
- management resources and clear communication of respective roles and responsibilities of all management and employees;
- provision of training and awareness programs;
- establishment of specific operational controls such as personnel protective equipment, shut-off values, lock out procedures etc.;
- development of emergency response planning, procedures and training; and
- monitoring, auditing and standard incident analysis, management documentation, reporting and follow-up.

With respect to employee health, a first aid office will be provided on-site to treat incidents, minor injuries and emergency situations. In the Occupational Health and Safety Plan particular attention will be paid to issues such as awareness and management of food safety, drug and alcohol use, and awareness and prevention of communicable diseases.

3.3 EMPLOYMENT AND TRAINING PLAN

Approximately 500 jobs, either with Northcliff or its contractors, will be created at the peak of Construction, and approximately 300 long-term direct employees will be required to operate the Project. Northcliff introduced a proactive local recruitment policy early in the exploration phase and intends to continue this strategy into the Construction, Operation, and Decommissioning, Reclamation and Closure phases. This policy also applies to Northcliff's contractors.

Northcliff will develop an Employment and Training Plan (ETP) that addresses the local workforce realities and challenges. The ETP will:

- address priority consideration for employment of local people, based on qualifications, merit and the feasibility of training individuals for the position;
- outline requirements and expectations for local companies (contractors, suppliers and consultants) to receive priority consideration based on qualifications and merit;
- outline measures and opportunities to work with local colleges, training institutions and private companies to ensure that local residents have access to the training and education programs they need to gain the qualifications necessary for future employment at the Sisson Project; and
- identify other business opportunities for local communities and individuals made available by the Sisson Project.

The ETP will identify all positions at the Sisson Project according to:

- core competencies required;
- educational requirements; and
- experience level expectations.

An appropriate training budget will be developed and implemented as needed for different phases of the Project. All employment opportunities will be advertised within the Company and externally.

3.4 EMERGENCY PREPAREDNESS AND RESPONSE PLAN

Northcliff will prepare and Emergency Preparedness and Response Plan (EPRP) for all phases of the Project, as applicable. During Construction, elements of the EPRP will be included directly in the Environmental Protection Plan (Section 3.5.1). In general, the EPRP will be designed to ensure:

- a safe environment for all employees, contractors, visitors and neighbours;

- that all activities are conducted in an environmentally responsible manner consistent with Northcliff commitments, environmental regulations, federal and provincial guidelines, and international best practice;
- the identification and management of all significant environmental risks;
- the existence of a high degree of emergency preparedness and a comprehensive system for managing emergencies;
- that the response to emergencies is predicated primarily on the preservation of human life and the safety of emergency response personnel;
- the containment of emergencies and their environmental and social effects within Project boundaries;
- co-operation with external emergency response organizations; and
- a safe return to normal Operation.

The General Manager will have overall responsibility for the implementation and maintenance of the EPRP.

Implementation of the EPRP will involve:

- distributing copies to individuals designated by the General Manager and placing other copies at strategic locations, and ensuring that all copies are maintained as the current version;
- training all individuals with responsibility for its implementation;
- training all employees in general emergency notification and evacuation procedures at the time of their employment and annually thereafter;
- awareness training for all contractors and visitors as part of the site induction;
- organizing and training an emergency response team in accordance with Northcliff's policies and procedures;
- conducting on-site and off-site emergency response training drills for potential emergencies and providing proper personal protective equipment; and
- maintaining all emergency equipment, materials and supplies in good working order.

Personnel will be designated as part of an Emergency Response Team, and will be trained to activate and implement the Project EPRP in reaction to on-site and off-site accidental releases or other environmental emergencies that may occur. In addition to Emergency Response Team members, other key staff involved in the implementation of the EPRP includes the operational, environmental, mill, safety and supervisory personnel who will be trained according to their responsibilities. Additionally, contractors performing work for the Project will be required to be appropriately trained and have ready

access to equipment and supplies that would allow them to contain and control any accidental release until the arrival of the Emergency Response Team.

An incident investigation, document control, reporting and follow-up system will be developed as part of the EPRP.

3.4.1 Incident Classifications

The EPRP will address both human-caused emergencies and natural disasters that threaten life, the environment and/or property. As a minimum, the EPRP will address the following, which are discussed in detail below:

- off-site chemical and/or fuel spill;
- on-site chemical and/or fuel spill;
- tailings pipeline rupture;
- emergencies resulting from failure of tailings storage and water management equipment;
- failure of seepage or run-off collection systems from the TSF and temporary storage areas for topsoil and overburden;
- extreme precipitation;
- earthquakes; and
- fire.

3.4.2 Off-site Chemical and/or Fuel Spill

The Project will use potentially hazardous chemicals and reagents to extract the tungsten and molybdenum concentrates, and to produce APT. All of these substances will be delivered to the mine site by truck, and the products will be trucked from the site to the railhead or port. The transport of these substances and product to and from the site poses a hazard along the transportation route due to the possibility of traffic accidents and the associated potential for a spill. The procedures for transporting hazardous materials to and from the site will comply with applicable provincial and federal regulations.

To ensure preparedness for, and response to, an off-site chemical and/or fuel spill, Northcliff will:

- purchase reagents from reliable suppliers who use well qualified and experienced transport contractors;
- engage only reputable shipping contractors and shipping companies that have sound emergency procedures in place throughout the handling chain and regularly audit their performance;

- require that all drivers be trained in emergency response and that the transport vehicles carry appropriate spill containment and neutralizing agents;
- clearly define all shipping routes, and identify all critical areas such as sources of community drinking water;
- consult with regional officials along the transportation route to ensure that they are aware of the associated risks;
- assist community leaders within the local site area in the development of local EPRP and training local people;
- have a designated coordinator to ensure that the public and local authorities are notified in a timely fashion with appropriate and accurate information should a spill occur; and
- address off-site chemical and/or fuel spills in the EPRP.

3.4.3 On-site Chemical and/or Fuel Spill

To ensure preparedness for and response to an on-site chemical and/or fuel spill, Northcliff will:

- ensure that all chemicals in liquid and solid form are stored in appropriate storage containers that meet applicable standards;
- ensure that all storage containers are placed within appropriately secured areas that provide containment in the event of a spill or rupture, with the containment volumes as specified in applicable regulations; and
- address on-site chemical and/or fuel spill response and notification procedures in the EPRP.

3.4.4 Tailings Pipeline Rupture

To ensure preparedness for and response to a tailings pipeline rupture, Northcliff will:

- ensure that the tailings pipeline system is designed to provide adequate shut-off mechanisms and spill collection points along the pipeline route; and
- address a response to a tailings pipeline rupture in the EPRP.

3.4.5 Seepage of Run-off Collection Systems

Northcliff will ensure that, as a minimum, it constructs, operates, monitors and maintains seepage and run-off collection systems as set out in the design.

To ensure preparedness for and response to failures in these systems, Northcliff will:

- address response to any adverse water quality effects, such as capture and treatment, in the EPRP.

3.4.6 Extreme Precipitation

To ensure appropriate sizing of water conveyance and water management ponds, Northcliff will:

- ensure that all ponds for the collection of run-off and seepage are designed, constructed, operated and maintained such that they safely discharge to the environment via spillways and only when their designed containment volumes are exceeded; and
- address response to extreme precipitation events that exceed the Inflow Design Flood in the EPRP.

3.4.7 Earthquake

To ensure preparedness for and response to earthquakes, Northcliff will:

- ensure the ongoing TSF is constructed as designed to withstand both the Operating Basis Earthquake and, for extreme conditions, the Maximum Design Earthquake;
- provide earthquake emergency response training to emergency response managers and teams; and
- address responses to earthquakes in the EPRP.

3.4.8 Fire

To ensure preparedness for and response to fires, Northcliff will:

- maintain available and in good working order, pumps to be used for fire-related emergencies; additionally, maintain fire-fighting equipment and water supplies available and in good working order;
- develop and implement procedures for ensuring that the potential for fires is minimized on an ongoing basis; and
- address response to a site fire in the EPRP.

3.4.9 Training

The implementation of the EPRP training programs for the Project will be the primary responsibility of the EH&S Manager.

In implementing its environmental emergency response training program, Northcliff will:

- describe its EPRP training program in a specific Training Manual, which will be available to all employees, contractors and visitors;
- develop a site environmental awareness program for its employees, contractors and visitors to address hazard recognition, general emergency notification and evacuation procedures, and their general obligations and responsibilities;

- provide site environmental awareness training to its employees and contractors at the commencement of their work and on an ongoing basis annually throughout the life of the Project; and to its visitors at the time of their first visit and on an annual basis thereafter;
- develop specific training for its employees and contractors, where relevant, on the following subject areas:
 - emergency preparedness and response;
 - air quality management;
 - noise and vibration management;
 - water management;
 - hazardous and non-hazardous waste management;
 - flora and fauna resources management;
 - land and soils resources management;
 - health and safety management; and
 - closure and post-closure management.
- ensure that key environmental considerations are included in procedures to be developed by the Project operating departments;
- evaluate, on an ongoing basis, the effectiveness of its environmental training programs by means of audits, general inquiries and observations;
- establish annual environmental training goals and report on these to the General Manager; and
- annually review the Project EPRP training program and materials to ensure that operational and other changes have not occurred that require their revision.

3.4.10 Incident Reporting

All incidents that occur as a result of an emergency, accident or malfunction, including those which cause or threaten serious adverse environmental effects or are likely to adversely impinge on relations with local communities, will be reported to Northcliff Senior Management in addition to regulatory reporting requirements. Other incidents in breach of legislation or site permit conditions will be reported within an agreed period or as legislated to the relevant authorities. In addition, Northcliff Senior Management will be made aware of any such incident within 24 hours of its occurrence.

Incident reporting forms will be filled out by involved personnel within 24 hours of an incident or near-miss occurring, and appropriate measures will be taken to ensure that similar events will not occur in the future. In most instances, an investigation will be held within 72 hours after an incident on site. This de-briefing will involve all personnel and management involved in, or directly connected with, the

incident. The focus of the de-briefing will be to openly discuss the events that led to the incident and how to prevent a similar incident occurring in the future, and to assign responsibilities to site personnel to achieve specific performance targets.

3.5 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) will address key environmental management concerns arising from the feasibility study and the EIA. It is described below, and outlines how commitments, mitigation and management strategies will be implemented. The EMP does not specifically address all the potential environmental effects, mitigation, closure and post-closure issues of the Project. Prior to the beginning of construction, the EMP will be further developed to address specific issues that were identified in the EIA Report or during the EIA approval process, or may arise during the detailed design and construction planning for the Sisson Project. Once developed, the EMP will be implemented and regularly reviewed and updated as part of the ESMS review and throughout the Construction, Operation, and Decommissioning, Reclamation and Closure phases of the Project.

The main objectives of the EMP are to:

- ensure that the Project will be implemented in full conformance with Northcliff's corporate *Principles of Responsible Mineral Development* and the Environmental and Social Policy;
- identify the general management strategies and plans required to implement key environmental commitments, and mitigation and management measures, for issues and risks identified during the EIA for the Project; and
- ensure the Project complies with the applicable laws and regulations of New Brunswick and Canada.

The balance of this section describes the principal components of the EMP that will be developed for the Project.

In addition to the elements described herein, the following plans have also been developed for the Project and will comprise a part of the EMP:

- Fish Habitat Compensation Plan (Appendix E of the EIA Report);
- Wetland Compensation Plan (to be developed); and
- Conceptual Decommissioning, Reclamation and Closure Plan (EvEco 2013).

3.5.1 Environmental Protection Plan for Construction

An Environmental Protection Plan (EPP) for Construction will be developed to guide the Construction of the Project in accordance with applicable federal and provincial environmental protection legislation and regulations. The EPP will be developed prior to the commencement of Construction, and will be submitted to the appropriate regulatory agencies for review and approval. In addition to referencing key aspects of design mitigation, the EPP will outline all environmental protection, mitigation, and response measures to be employed during Construction. The EPP will be the key EMP document for Construction.

The EPP will be designed to be a site-specific, field-usable document that will contain the following information:

- responsibilities of Northcliff, contractors, and all site personnel;
- purpose, organization and maintenance of the EPP including contractors and subcontractors;
- specific mitigation measures to be implemented during routine and non-routine (e.g., fires) Construction activities;
- contingency plans to be followed in the case of an accidental event during Construction (e.g., spill response, erosion and sedimentation control failure); and
- a list of permits, approvals, authorizations, and key personnel to be contacted in the case of an emergency.

The EPP will contain the applicable elements of the EPRP for Construction.

Northcliff will require its contractors, and their major subcontractors, to adhere to good construction performance standards by including such standards in their contracts.

Environmental awareness training for employees will be required and documented in the EPP for Construction. All employees, site personnel, contractors, and subcontractors will receive appropriate training reflective of their duties and responsibilities. Awareness training will occur prior to the commencement of work and will be evaluated and updated as required through various work performance evaluations and activity procedures.

3.5.2 Environmental Training and Induction Manual

Every employee, contractor and visitor to the Project site will be provided with a site induction and relevant environmental training. The training will include:

- environmental, social and safety policies;
- code of conduct;
- roles, responsibilities and expectations;
- review of key environmental protection, emergency and spill prevention and response, and materials/waste management procedures such as those identified in the EMP; and
- monitoring and reporting requirements and procedures.

The training will be documented and every employee will receive refresher training as needed. Specific training and manuals will be included in other manuals and plans as relevant, particularly with respect to emergency preparedness and response (EPRP).

3.5.3 Land, Soil Resources, and Biodiversity Management Plan

To minimize the potential for land and soil disturbance and environmental effects on sensitive areas, and to maximize the success of future rehabilitation programs, Northcliff will develop a Land, Soil Resources and Biodiversity Management Plan for the Project to:

- minimize land disturbance within the Mineral Lease area to that which is absolutely necessary and conducive with a successful Operation;
- identify and mark the perimeters of sensitive areas by flagging and/or stakes;
- educate Project employees, contractors and visitors about the importance of avoiding sensitive areas;
- ensure that, as part of the process of authorized land disturbance, native soil and overburden is salvaged, stockpiled and protected in a manner that facilitates future rehabilitation efforts;
- ensure that areas disturbed as a consequence of the Project that can be rehabilitated are rehabilitated as soon as possible to minimize erosion by water and wind, and are appropriately signed to prevent re-disturbance;
- control erosion and sediment throughout Construction, Operation and Decommissioning, Reclamation and Closure; and
- implement the Fish Habitat Compensation Plan and Wetland Compensation Plan.

3.5.4 Hazardous Materials and Waste Management Plan

Northcliff will develop and implement separate Hazardous Materials and Waste Management Plan for all phases of the Project as applicable. The Plan will be closely linked to the EPP (Construction) and the overall EPRP.

The objectives for the plans are to ensure:

- the safe handling, transport, storage and use of all potentially hazardous materials;
- that the potential for accidental releases is minimized;
- those accidental releases which do occur are mitigated as soon as practicable;
- that waste generation is minimized and the recycling of materials and waste is maximized to the extent that commercial prudence allows; and
- the long-term physical and geochemical stability of the onsite wastes.

The plans will be organized according to the types of materials and waste that are being generated and managed. Below is a summary of key issues for the different types of materials.

3.5.4.1 Materials

The Plan will include:

- identification of potentially hazardous materials, including but not limited to chemicals and process reagents, fuels, lubricants, solvents, degreasers and other hydrocarbons, and explosives;
- materials management systems consistent with provincial and federal regulations;
- a Workplace Hazardous Materials Information System in accordance with applicable occupational health and safety regulations;
- chemical and hazardous substance spill prevention, control, detection and countermeasure procedures:
- procedures for vehicle refuelling;
- procedures for refilling of hazardous material storage tanks; and
- procedures for hazardous materials record keeping including purchasing and warehousing, departmental use and disposal procedures and departmental source reduction and waste minimization performance measurement.

The Plan will include:

- categorization and definitions of hazardous and non-hazardous materials and wastes; and
- management procedures for storage, transport, handling and disposal of each category of material and waste.

3.5.4.2 Waste Water

Sewage treatment will be by leach-bed system. Leach fields will be sized based on the personnel requirements at the ancillary facilities. In a failure event, the leach system will flow into the TSF.

Starting at about Year 9, water stored in the TSF will be in surplus, thus requiring treatment and release to the receiving environment. The Plan will outline the testing, monitoring, and effluent limits and requirements for any waste water to be released to the environment, contingency measures and procedures if waste water does not meet release requirements, and corrective actions to be taken in the event of an accidental release of off-specification effluent.

3.5.4.3 Waste Rock

All waste rock from the Operation will be stored in the TSF for the first 21 years of the mine life in layers which will become sequentially inundated. Thereafter, it will back-filled into mined-out parts of the open pit where it will be flooded along with the pit during Closure. This conservative practice is being implemented to avoid the potential generation of low-pH runoff conditions that could result from waste rock being stored on the land surface. It will also effectively inhibit the potential for acid generation and metal leaching from the waste rock within the TSF.

3.5.4.4 Tailings Storage Facility

Northcliff will ensure the safe containment of tailings by developing and following, maintenance and surveillance procedures for the TSF and water management ponds. These procedures will be detailed in operational manuals, and will be consistent with best practices such as those described in the Mining Association of Canada's tailings management protocol, which consists of five performance indicators: management policy and commitment; management system development; assigned accountability and responsibility; annual management review; and an operation, maintenance and surveillance (OMS) manual. The manuals will include procedures for monitoring the tailings pipelines and identifying spill response procedures.

3.5.4.5 ML/ARD Management

To manage potential metal leaching and acid rock drainage (ML/ARD), Northcliff will:

- segregate potentially acid generating (PAG) and non-potentially acid generating (NPAG) tailings;
- deposit and store PAG tailings sub-aqueously in the TSF so they are encapsulated in NPAG tailings under water to effectively inhibit potential generation of acid and metal leaching;

- deposit and store all waste rock sub-aqueously in the TSF or, in the last phase of mining, back-fill the rock into mined-out portions of the open pit to be flooded with the pit during Closure, to effectively inhibit potential generation of acid and metal leaching;
- discharge water from the TSF when it becomes surplus to Project requirements, treated as required to meet discharge permit conditions;
- limit surface water from coming into contact with the TSF by diversions, and capture and recycle TSF seepage for use in the ore processing plant; and
- cover the TSF embankments, and maintain adequate water levels within the TSF, at Closure to effectively inhibit erosion and tailings oxidation.

ML/ARD prevention and management for the open pit involves, during Operation, the collection and storage of pit water in the TSF. At Closure, ML/ARD prevention and management for the open pit will involve:

- discharge of water from the TSF to the open pit to facilitate a rapid filling of the pit and flooding of the pit walls. Pit walls that are inundated will not exhibit significant oxidation;
- monitor the pit lake during filling to confirm the results of the modelling conducted for the EIA, and otherwise inform the potential need for water treatment before discharge; and
- as required once the pit has filled, treat the discharge water as long as is necessary to ensure downstream water quality meets permit conditions.

3.5.4.6 Monitoring

Tailings Monitoring

Regular, confirmatory geochemical testing according to established methods and procedures will be performed on both the NPAG and PAG tailings streams to ensure they are being produced within specifications and can be safely stored as planned.

Water Quality Monitoring

Geochemical characterization of the tailings indicated several possible trace metals that will need to be monitored. Contact water in the TSF will be monitored regularly. Run-off from the TSF embankments, and seepage through the embankments, will be collected in water management ponds at low points around the embankments and pumped back into the TSF. Groundwater wells will be installed downstream of the water management ponds, and the water quality will be monitored to determine if the collection systems are working as planned and to initiate corrective actions if they are not. The frequency and scope of water quality monitoring will be as specified by permit.

3.5.5 Water Management Plan

A Water Management Plan for Construction and then Operation will be prepared. The main goal of the plan is to develop and implement practical water handling systems and facilities to facilitate mine development and to avoid adverse environmental effects. The specific objectives include:

- controlling surface and ground water to facilitate Project Construction and Operation;
- avoiding or minimizing environmental effects; and
- complying with regulatory requirements.

Operational water management will include the following.

- Water from undisturbed areas will be diverted, where practical and cost effective, to the receiving environment to minimize flow reductions in nearby streams and to reduce the need to handle water within Project facilities.
- Water that will be in contact with disturbed areas (e.g., open pit, plant site, TSF) will be collected to provide process water and to avoid potential environmental effects on the quality of receiving waters.
- Water surplus to Project needs will be discharged to the receiving environment, treated as necessary to meet permit conditions.

At Closure, the water management objectives are to:

- ensure that the closure landscape and drainage system are sustainable in the long term and have similar characteristics as the pre-development natural drainage systems in terms of dynamic stability, robustness, and longevity; and
- minimize environmental effects and comply with regulatory requirements on water releases to the receiving streams.

Implementation of the Water Management Plan for Operation and Decommissioning, Reclamation and Closure will include the following.

- Conduct a detailed design of all the water management facilities (e.g., diversion channels, diversion tunnels, drainage ditches, and water management ponds) to ensure compliance with design criteria and to optimize the system design.
- Construct the water management systems based on the final detailed design drawings and specifications, including installation of specific engineering measures for erosion control.

- Prepare an operational maintenance manual for each water management system (e.g., a particular diversion or drainage system, potable water systems), documenting the operational inspection and maintenance requirements.

A system for monitoring the performance of the operational water management facilities will be designed and installed. This monitoring system will include the following.

- Water level monitoring for the TSF all the water management ponds.
- Flow and water quality monitoring stations located immediately downstream of all potential water release points. Any exceptional discharges from water management ponds will be recorded and reported to the responsible authorities as required by any permit conditions.
- Continued operation of the site meteorological station to support improved understanding of the site water balance and management requirements.

Regular inspections of the conditions of the water handling facilities (e.g., channels, ditches, and ponds) will be conducted to detect potential debris/sediment blockage and local erosion to ensure normal performance of the water management systems. Every water storage and water handling facility will be inspected immediately after each major storm event. Any problem or potential problem identified from each inspection will be addressed immediately as part of the operational maintenance of the systems.

The system monitoring and inspection activities, including the information and data collected, will be documented and reported as required by regulatory authorities and in annual environmental reports. Any mitigation to address system operational problems will also be documented and reported. The water quantity and quality monitoring results will be reported by the EH&S Manager to the GM and senior management on a monthly basis, or immediately if results deviate from expected/compliance levels.

3.5.6 Air Quality Management Plan

An Air Quality Management Plan will be developed to control machinery exhaust and dust generated from the Project, and to ensure that air quality outside of the Project area will be acceptable and meet provincially regulated standards. This will be achieved by the minimization of point and fugitive emissions. Vehicle and equipment emissions will be controlled through use of modern machinery and through an active vehicle and equipment maintenance program.

The air quality management program will be developed in accordance with the requirements of New Brunswick regulations, and detailed mitigation will be incorporated into the Project plan during the design stage. On-site inspection and monitoring will identify any additional control measures required to protect the air quality in the area that were not recognized during planning or design. Necessary correction measures will be implemented as soon as possible.

Fugitive dust will be generated during Construction and Operation, as open pit mining involves drilling, blasting, crushing, transport and handling of large amounts of material. Watering of the main haulage roads and dust collection systems at conveyor transfer points will be the main mitigation measures and

will be implemented during Construction and Operation, as appropriate. Additional measures for dust suppression include:

- Use of dust suppressants (*i.e.*, water with, perhaps, chemicals such as calcium chloride or other approved dust suppressants);
- Controlling traffic speed within sensitive areas (*i.e.*, areas where workers or the public could be directly exposed); and
- Monitoring visible sources of dust.

Combustion gases will be generated from the mine haulage fleet exhaust. These emissions will be controlled through regular maintenance and servicing of equipment, and with the use of good quality fuels.

Additional sources of emissions include exhausts from the APT plant which are expected to be regulated by permit.

3.5.7 Noise and Vibration Management Plan

The objective of the noise and vibration monitoring program is to validate the EIA predictions, monitor actual noise and vibration-related environmental effects, and ensure these are within acceptable levels. As necessary, the action plan can be modified based on the results from the monitoring program to provide a remedy should issues be identified.

Construction and Operation includes various design features, mitigation and best management practices to achieve the following environmental objectives.

- Control noise and vibration so that levels at nearby receptors meet provincial standards.
- Prevent damage from vibration to off-site structures.

A system for monitoring the performance of the Noise and Vibration Management Plan will be designed. This monitoring system will include:

- monitoring noise and vibration levels periodically during Construction and Operation; and
- consulting with local communities about noise and vibration issues.

3.5.8 Community Health and Safety Management Plan

Northcliff will develop a Community Health and Safety Plan (CHSP), in collaboration with local government and communities, to avoid, reduce and manage risks that may result during development of the Project. These risks include increases in traffic, potential accidents and exposure to hazardous materials. Some of the risks have been addressed through Project design, such as relocating Fire Road to a safe set-back from Project activities; however some will require ongoing management and monitoring. The risks and mitigation strategies identified during the EIA will be incorporated into the CHSP.

In general, the categories of Community Health and Safety concern include:

- Infrastructure, Equipment and Traffic Safety (e.g., tailing impoundments, pit operations, roads and increases in heavy traffic);
- Hazardous Materials Safety (e.g., handling of reagents; handling, transportation and disposal of wastes; and the handling of explosives);
- Environmental and Natural Resources Issues (e.g., floods, erosion, access to resources and water); and
- Emergency Conditions (e.g., fire, floods and spills).

The process for developing the CHSP will be as follows.

- A community health and safety risk identification and assessment will be undertaken at each stage of development.
- Action plans will be developed to deal with the risks in accordance with industry norms such as the Mining Association of Canada's crisis management protocol and planning guide.
- Action plans will be disclosed and discussed with affected communities and government authorities, and additional mitigation ideas will be identified through consultation.
- Risks and activities will be reviewed as part of the overall ESMS and action plans will be appropriately updated.

3.5.9 Cultural Heritage Management

3.5.9.1 Archaeological Test Pitting

Northcliff undertook substantial archaeological work leading up to completion of the EIA Report. It included desktop and mapping studies, research and field verifications to identify areas of elevated archaeological potential, and a test pitting program initiated in 2012 to assess some of those sites. In 2012, Northcliff also undertook archaeological reconnaissance studies over the corridor for the proposed transmission line and relocation of Fire Road.

There remain a number of identified sites of elevated archaeological potential on the Project site which remain to be assessed through test pitting. Northcliff intends to complete this test pitting well in advance of when areas within the Project footprint will be disturbed to allow sufficient time for the evaluation, delineation, and any required mitigation should any artifacts be found, in accordance with regulatory requirements. Specifically:

- Northcliff will carry out test pitting early in the field season in the year before an area is disturbed in order to allow sufficient time for evaluation and mitigation should any artifacts be found. If Pre-Contact archaeological materials are found, Northcliff will participate in the First Nations information and consultation process it anticipates will be required before any mitigation is implemented, and will not disturb such sites until mitigation is complete.

- Northcliff will complete the required test pitting before the end of Construction, even though some elevated potential areas will not be disturbed until later during Operation.

3.5.9.2 Chance Finds

In the event that Northcliff or its contractors encounter chance finds of any structures or archaeological artefacts, appropriate arrangements will be made to:

- cease work within an appropriate buffer zone;
- contact New Brunswick Archaeological Services to assess the significance of the find; and
- coordinate with governmental officers, local communities, and specialists in developing a suitable mitigation plan and inventory of the finds, if needed.

3.5.10 Follow-Up and Monitoring Plan

A comprehensive, integrated Follow-up and Environmental Monitoring Plan will be prepared and implemented by Northcliff for the Project, building on the elements outlined and recommended in Chapter 9 of the EIA Report, and as they are defined during regulatory review, approval and permitting processes. It will consolidate the monitoring requirements outlined in the various component environmental management plans and will include, as they are specified, monitoring to comply with various permit requirements. In general, the plan will include monitoring needed to meet the requirements of:

- regulatory permits;
- EIA follow-up programs under the *Canadian Environmental Assessment Act* as recommended in Chapter 9 of the EIA Report; and
- environmental effects monitoring under the federal *Metal Mining Effluent Regulations*.

3.6 PUBLIC, STAKEHOLDER AND FIRST NATIONS ENGAGEMENT PLAN

3.6.1 Introduction

This section of the ESMS provides an overview of Northcliff's plans and commitments to provide ongoing opportunities for public, stakeholder and First Nations engagement with the Sisson Project, as well as with plans to advance sustainability initiatives during Project Construction, Operation and through to mine Decommissioning, Reclamation, and Closure. These plans and commitments are consistent with Northcliff's *Principles of Responsible Mineral Development*, and with Northcliff's commitment to working shoulder to shoulder with the public, stakeholder groups and First Nations to achieve the responsible development of the Sisson Project and to contribute to the sustainable development of the communities around it.

Since beginning work on the Project in late 2010, Northcliff has actively engaged with the public, stakeholder groups and First Nations about the Project. The objectives of this engagement have been to:

- identify parties with an interest in the Project, understand their interests and concerns, and ensure opportunities for their participation;
- build long-term and mutually-beneficial relationships;
- establish effective communication processes;
- allow for meaningful input into the Project planning, design and development activities; and
- ensure effective tracking and documentation of engagement activities and issues.

Northcliff's engagement activities have taken many forms, as described in Chapter 4 of the EIA Report. These have included:

- a Project website;
- newsletters and emails;
- an information office in Stanley;
- open houses;
- working groups;
- presentations to and meetings with individual stakeholder groups;
- community barbeques;
- career information sessions;
- notices of key Project milestones; and
- workshops.

Northcliff intends to continue these engagement activities through the Project review, approval and permitting processes.

Following approval to implement the Project, Northcliff's engagement activities will continue with much the same scope and objectives, adjusted to respond more appropriately to the requirements of Project Construction and Operation. A comprehensive Public, Stakeholder and First Nations Engagement Plan will be developed before Construction begins, and will be adapted throughout the life of the Project to respond to evolving needs. The expected major elements of the plan are described below.

3.6.2 Engagement Program During Project Implementation

3.6.2.1 Objectives

Northcliff is committed to ongoing engagement of the public, stakeholder groups, communities and First Nations throughout Construction, Operation and into Decommissioning, Reclamation and Closure. Key objectives of the ongoing engagement program are:

- to ensure transparency and accountability about the company's environmental management and social responsibility performance;
- to ensure there are continuing opportunities to discuss interests and concerns, and to resolve issues, related to the Project; and
- to work in partnership with local communities and First Nations to have the Sisson Project contribute to the achievement of their own development goals based on their priorities and aspirations.

3.6.2.2 Engagement Dimensions

There will be a number of dimensions to Northcliff's engagement program as described below. Northcliff is willing to modify or expand on these as may be required to more effectively ensure that the engagement objectives are met.

3.6.2.2.1 Community Liaison Committee

A key component of Northcliff's engagement program will be a Community Liaison Committee. The terms of reference for the Committee will be collaboratively developed with representatives from nearby communities, local First Nations and perhaps other stakeholder groups. The purpose of the Committee is expected to be to:

- disseminate and discuss information about Project activities;
- provide community review of environmental monitoring and performance of the Project;
- provide a forum for exchange of information and discussion regarding issues they arise, and for developing effective means for addressing such issues; and
- generate community development ideas for consideration for funding by Northcliff.

3.6.2.2.2 Website

The Sisson Project website (www.sissonsproject.ca) was launched in August 2011 and will be maintained throughout Construction as a means to inform the public about important regulatory, permitting or other milestones, events and key environmental and social activities. Once into Operation, the website will be an important resource about environmental and sustainability programming, and important community engagement activities.

3.6.2.2.3 Project Employment and Information Offices

During Construction, there will be significant interest in the on-site activities as well as business, contracting and employment opportunities. Northcliff has established an information office at 80 Irishtown Road in Stanley, and Northcliff representatives are present at specified times to provide information on the Project, answer questions, and collect any comments or questions from members of the public.

Northcliff will maintain the Stanley office during Construction in order to provide the public with updated information about the Project. In addition to the Stanley office, Northcliff will also have a company office in Fredericton during Construction and Operation. This office will provide the public with information about employment, procurement and contracting opportunities.

3.6.2.2.4 Newsletters, Mail Drops and Newspaper Advertisements

Newsletters are distributed as information on the Project becomes available and when there is Project-related news to distribute. Periodic newsletters, mail drops and newspaper advertisements will be used to announce key events, milestones and community engagement activities and programs.

3.6.2.2.5 Site Tours and Open Houses

During Construction and Operation of the Project, Northcliff will provide guided tours (pre-arranged) and conduct open houses at key milestones to keep the public informed about the Project.

3.6.2.2.6 Presentations and Meetings

Northcliff has been active in meeting and presenting the Project and updates to a number of individuals, stakeholder groups, individuals representing stakeholder groups, business groups, and federal, provincial and municipal officials. As appropriate, Northcliff will meet with, and make presentations to, individual stakeholder groups, communities and First Nations on specific topics of interest to them.

3.6.2.3 Complaint Resolution

Through the General Manager's office, Northcliff will provide a formal mechanism for the public to submit complaints to Northcliff and have them resolved in a transparent, fair and equitable manner.

4.0 IMPLEMENTATION PLAN

The ESMS implementation plan for the Project includes further development of the ESMS and the various plans, policies and procedures described in Section 3. The majority of these operational documents will be developed prior to the commencement of the applicable Project phase. Table 4.1 lists the specific components of the ESMS and associated plans, the party responsible, and the current schedule for completion and implementation of each.

Table 4.1 Sisson Project ESMS Implementation Plan

Action	Responsible Party	Schedule for Initial Completion and Implementation (progressively updated)
ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM	Northcliff	Prior to start of Construction
PLANS, Policies and Programs		
Labour and Working Conditions Policies	Northcliff	EPCM contract bid stage
Labour and Working Conditions Procedures	Engineering, Procurement, and Construction Management (EPCM) /Contractors	EPCM contract award stage
Site Safety Plan	EPCM/Contractors	Prior to start of Construction
Traffic Safety Management Plan	EPCM/Contractors/ Northcliff in consultation with communities	Prior to start of Construction
Emergency Preparedness and Response Plan	EPCM/Contractors/Northcliff	Prior to start of Construction
Hazardous Materials and Waste Management Plan	EPCM/Contractors	Prior to start of Construction
Code of Conduct for site Operation	EPCM/Contractors	Prior to start of Construction
Environmental Training and Induction Manual	EPCM/Contractors/ Northcliff	Prior to start of Construction
Labour and Working Conditions Policies - Operation	Northcliff	Prior to start of Operation
Labour and Working Conditions Procedures - Operation	Northcliff	Prior to start of Operation
Occupational Health and Safety Plan - Operation	Northcliff	Prior to start of Operation
Employment and Training Plan	Northcliff	Prior to start of Construction
Emergency Preparedness and Response Plan	Northcliff	Prior to start of Operation
Environmental Protection Plan for Construction	Northcliff	Prior to the start of Construction
Environmental Training and Induction Manual	Northcliff	Prior to start of Operation
Land, Soil Resources, and Biodiversity Management Plan	Northcliff	Prior to start of Construction
Hazardous Materials and Waste Management Plan	Northcliff	Prior to start of Operation
Water Management Plan	Northcliff	Prior to start of Construction
Air Quality Management Plan	Northcliff	Prior to start of Operation
Noise and Vibration Management Plan	Northcliff	Prior to start of Operation
Community Health and Safety Management Plan	Northcliff in consultation with government and communities	Prior to start of Construction
Cultural Heritage Management Plan	Northcliff in consultation with government and communities	Prior to start of Construction
Follow-up and Monitoring Plan	Northcliff	Prior to start of Construction
Construction Environmental and Safety Management Plan	Northcliff	Prior to start of Construction
Public, Stakeholder and First Nations Engagement Plan	Northcliff	Prior to the start of Construction

5.0 REFERENCES

EvEco. 2013. Sisson Project: Conceptual Reclamation and Closure Plan. Prepared for Northcliff Resources Ltd. by EvEco Consultants Ltd., Vancouver, British Columbia. May 2013.

