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PROJECT: Letpadaung - EMP & ESIA Preparation and Site Monitoring

NUMBER: PE701-22/4-A

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Please find enclosed the following documents:

Quantity	Document Ref.	Revision No.	Particulars
1	PE701-00022/14	A	Construction Environmental & Social Management System

These have been sent for: ☐ Approval ☐ Construction ☐ Comment ☐ Other ☐ Preliminary☐ Q/A ☐ As requested ☐ Tender ☐ Use ☐ InformationCOMMENTS: [Click here to enter text.](#)

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**MYANMAR WANBAO MINING COPPER LTD
LETPADAUNG COPPER PROJECT**



**CONSTRUCTION ENVIRONMENTAL & SOCIAL
MANAGEMENT SYSTEM**

PREPARED FOR:

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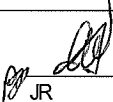
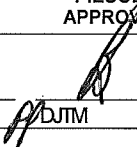
LETPADAUNG COPPER PROJECT

CONSTRUCTION ENVIRONMENTAL & SOCIAL
MANAGEMENT SYSTEM

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ABBREVIATIONS

ARD	Acid Rock Drainage
CBD	Convention on Biological Diversity
CERR	Construction Environmental Risk Register
CESMS	Construction Environmental and Social Management System
CFI	Community Forest Instructions
CHP	Cultural Heritage Plan
CHSSP	Community Health Safety and Security Plan
CPR	Cardio Pulmonary Respiration
CSD	Community and Social Development
EBRD	European Bank for Reconstruction and Development
ECC	Environmental Conservation Council
ECL	Environmental Conservation Law
ECP	Environmental Control Protection
EID	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
ERT	Emergency Response Team
ESIA	Environmental & Social Impact Assessment
FIL	Foreign Investment Law
GHG	Greenhouse Gas
HAZID	Hazard Identification Study
HAZOB	Hazard Observation Technique
HR	Human Resources
HSE	Health, Safety and Environment
IFC	International Finance Corporation
IMS	Integrated Management System
JHA	Job Hazard Analysis
JR	Job Requisition
KP	Knight Piésold Pty Ltd

KPI	Key Performance Indicator
kV	Kilovolt
MEHL	Union of Myanmar Economic Holdings Limited
MIC	Myanmar Investment Commission
MML	Myanmar Mining Law
MMR	Myanmar Mines Rules
MOECAF	Ministry of Environmental Conservation and Forestry
MoF	Ministry of Forestry
MSDS	Material Safety Data Sheet
MWMCL	Myanmar Wanbao Mining Copper Ltd
NAF	Not Acid Forming
NCEA	National Commission for Environmental Affairs
PAF	Potentially Acid Forming
SIA	Social Impact Assessment
SMP	Social Management Plan
SOP	Standard Operating Procedure
STD	Sexually Transmitted Disease
SWP	Standard Work Practice
TB	Tuberculosis
VHF	Very High Frequency
WHMIS	Workplace Hazardous Materials Infrastructure System
WRD	Waste Rock Dump

1. INTRODUCTION

1.1 PURPOSE

This Construction Environmental and Social Management System (CESMS) addresses the potential environmental & social impacts and associated management procedures relevant to the continuation of the early works construction activities for the Letpadaung Copper Project (hereafter referred to as “the Project”).

The CESMS has been developed to describe how approval requirements and environmental & social impacts associated with the construction stages of the Letpadaung Project will be managed and how compliance with Project approvals and environmental legal requirements will be achieved. The CESMS provides the environmental and compliance objectives for the Project and outlines the method of implementation and accountabilities of personnel involved. This CESMS Early Works Update supersedes the previously issued CESMS Early Works report (KP Ref. PE701-00022/12).

Myanmar Wanbao Mining Copper Ltd (MWMCL) is committed to managing its activities in an environmentally and socially responsible manner and in compliance with relevant environmental legislation, approvals, licences and permits as a minimum for all construction and commissioning activities.

All personnel engaged on the Project have accountabilities with regard to the environment and compliance with approval and other legal obligations. Contractors are accountable to manage their own environment and compliance programs in accordance with this CESMS. The Project team has an accountability to monitor and audit Contractors on site to ensure adherence to the Project environmental requirements and standards outlined in this plan. Successful environmental management on the Project depends on the total dedication and effort of every individual.

The CESMS should be read in conjunction with the Project Health and Safety Management Plan.

1.2 STRUCTURE OF AN ENVIRONMENTAL MANAGEMENT SYSTEM

The requirements for an environmental management system consistent with IS14001 include:

- An environmental policy;
- Planning:

- Environmental aspects – those elements of an organisations activities, products and services that can interact with the environment and identification of those which have a significant impact on the environment.
- Legal and other requirements – the laws, regulations, guidelines and standards applicable to the environmental aspects of the organisation's operations.
- Objectives and targets – established and documented at each relevant function and level within the organisation, consistent with the environmental policy including the commitment to prevention of pollution.
- Environmental management programmes – directed to achieving objectives and targets, including designation of responsibility for achieving objectives and targets and the means and timeframe by which they can be achieved.
- Implementation and Operation:
 - Structure and responsibility – defines roles and responsibilities, resources essential to implementation and control of the system and appointment of a specific representative(s) to define roles, responsibilities and authority for establishment and maintenance of the system and reporting of performance to top management as well as recommendation for system improvement.
 - Training, awareness and competence – shall identify training needs to address the need for awareness and knowledge of the impact of individual actions on the environment, the need for conformance, individual roles and responsibilities and consequences of departure from standard operating procedures.
 - Communication – procedures for internal communication between various levels and functions within the organisation as well as receiving, documenting and responding to communications from external parties. The company will also establish processes for communications with external parties on its significant environmental aspects and record its decision.
 - EMS documentation – develop and maintain information on the core elements of its management system and their interaction as well as provide direction to related documentation.
 - Document control – develop and maintain procedures for controlling all documents required by ISO 14001 to ensure that they can be located,

periodically reviewed, revised and approved, all current versions are available at points where they are needed for performance of the function at that point, obsolete documents are removed from the system but retained for legal and knowledge preservation purposes.

- Operational control – operations with significant environmental aspects shall be planned to ensure they are carried out according documented procedures consistent with the environmental policy, objectives and targets, stipulated operating criteria and established and maintained procedures shall be communicated to suppliers and contractors.
- Emergency preparedness and response – establish and maintain procedures to identify potential for and respond to accidents and emergency situations with the aim of preventing and mitigating any environmental impact associated with them. The procedures shall be reviewed and revised after every event and periodically tested where practicable.
- Checking and corrective action:
 - Monitoring and measurement – establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of its operation and activities to track performance, relevant operational controls and conformance with the organisations objectives and targets. Monitoring equipment shall be calibrated and maintained with records of this process being retained. A procedure shall be established to periodically evaluate compliance with relevant environmental legislation and regulations.
 - Non-conformance, corrective and preventative actions – procedures are established and maintained for identifying responsibility and authority for handling and investigating non-conformance, taking action to mitigate any impacts and initiating and completing preventative action. Any changes to documented procedures should be recorded and implemented which result from corrective actions.
 - Records – procedures for identifying, maintaining and disposing of environmental records shall be prepared and maintained, including training records and results of audits and reviews. Records should be legible, identifiable and traceable to the function involved as well as being

retrievable, protected and retained in a prescribed manner. They should be able to demonstrate conformance with ISO 14001.

- Audit – audits of the EMS shall be completed to ensure it is properly implemented and maintained, is consistent with the requirements of ISO 14001 and the results are provided to management.

Management review is undertaken periodically to address the need for change and review of the EMS in light of incident that have occurred and corrected, audit results, changes in operating circumstance and the commitment to continual improvement.

For the purposes of preparation of this CESMS, the definition of environment includes socio-economic and health issues as well as the surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interaction' as described in ISO 14001.

The sequence of elements within the CESMS is shown at Figure 1.2.1 below.

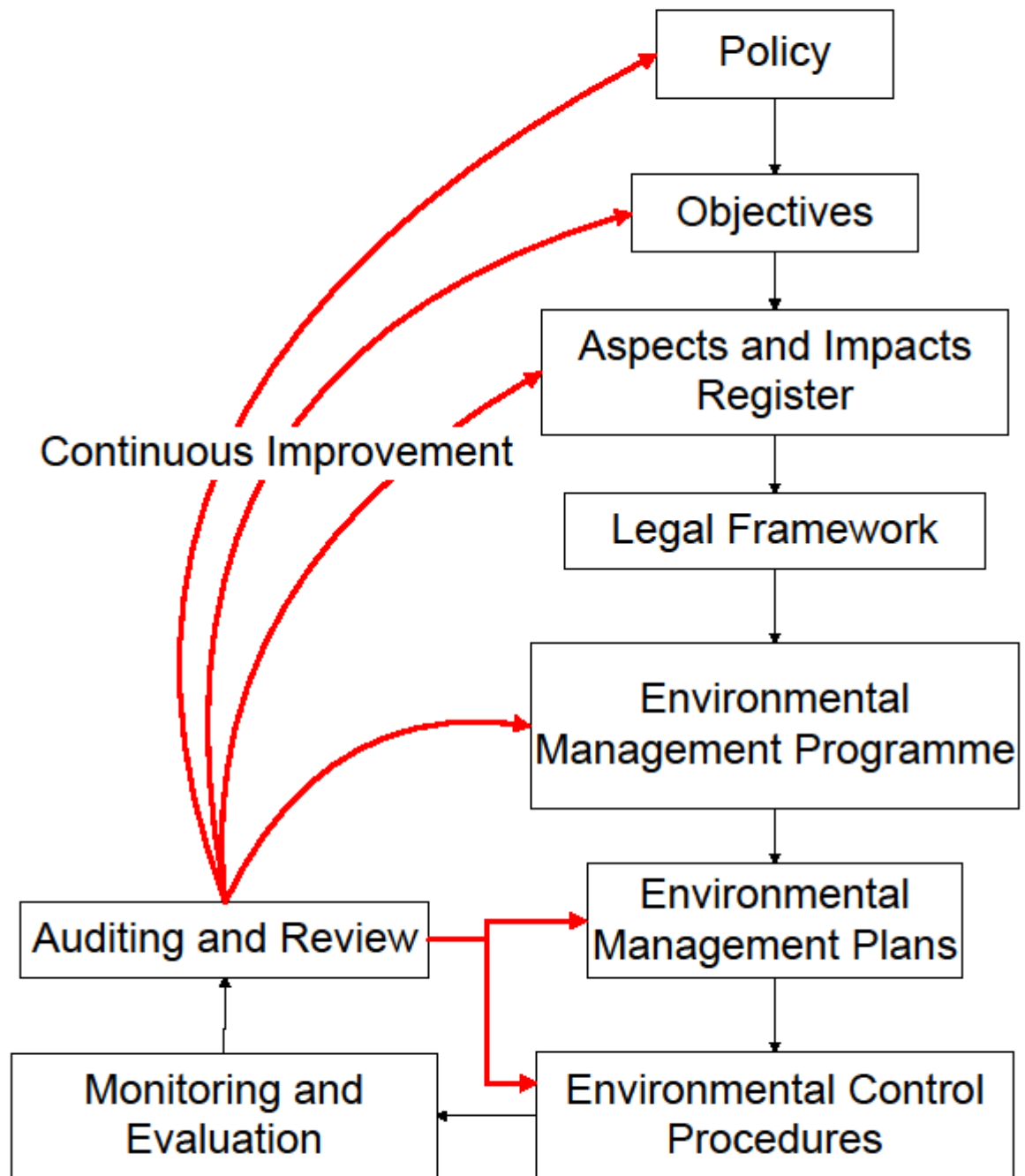


Figure 1.2.1: Flow Diagram of CESMS

1.3 OVERVIEW

1.3.1 Project Location

Letpadaung Copper Mine is located in the south of Sagaing Division, Myanmar. The project is approximately 5 km (26 km by road) from Monywa, the largest township of the division. Monywa is 110 km west of Mandalay which is the economic centre of central Myanmar and 722 km north of Yangon.

Travel to Monywa from the project site can be undertaken by road or by river transport. From Monywa, on-going travel and transport can be undertaken by road, rail and air. The Project location within Myanmar is shown in Figure 1.3.1 below.

The Project site is located around the geographic location 22°07' N, 95°02' E and occupies an area of 32.73 km².

The Project is one of four copper deposits in the Monywa area, namely Sabetaung, Sabetaung South, Kyisintaung and Letpadaung. The Letpadaung deposit is the largest of the 4 deposits in terms of resource, accounting for 75% of the resource from all 4 deposits (Ref. 1).



Figure 1.3.1: Letpadaung Project Location within Myanmar

1.3.2 General Layout

The Project will comprise a complex of mining, process and metallurgical functions to produce 100 kt/a of cathode copper. The Project will consist of an open pit, mining area, crushing area, SX-EW plant, heap leaching area, waste dump, waste dump flood pond, wastewater conditioning pond, ammonium nitrate and explosive initiator magazine, general warehouse, administration area, step-down sub-station, accommodation village, water source and other accessory facilities. A general layout for the site is shown on Figure 1.3.2.

1.3.3 Continuing Early Works Construction Activities

The following infrastructure will be built / developed as part of the continuation of early works:

- Mine Pit;
- Waste Dump;
- Topsoil Stockpiles;
- Low Grade Ore Stockpile;
- Heap Leach Pad No. 1 (3 Cells);
- Heap Leach Pad No. 2 (3 Cells);
- Water Purification Facility;
- 230 kV and 35 kV sub-stations;
- Powerlines; and
- Access roads.

Access Road

The proposed access road traverses cultivated farmland. No environmentally significant plant and animal species were observed along the proposed road.

Leach Pads

The proposed leach pad site is based on seasonal cultivated farmland. No environmentally significant plant and animal species were observed on the site.

Water Purification Facility

The proposed purification facility is situated on the slope of a hill which is partially cleared but otherwise vegetated with bushes and small trees. No environmentally significant plant and animal species were observed on the site.

The continuing early works infrastructure items are highlighted on Figure 1.3.3.

1.4 PLANNED EARLY WORKS

The project schedule and site layouts were reviewed to identify:

- Critical path activities;
- Areas of the site where baseline data collection is complete;
- Sites difficult to commence regarding nearby communities; and
- Activities where the required footprint is relatively small.

Based on this review three types of sites were identified:

Type 1 – Early Works Activities that can commence when this CESMS is approved;

Type 2 – Early Works Activities that can probably commence when environmental baseline data collection is complete; and

Type 3 – Early Works Activities that are likely to be difficult to commence regarding nearby communities.

A summary of the site classifications is presented in Table 1.4.1.

Table 1.4.1: Site Classifications

Type	Description	Comments
1	Fuel Station	-
1	Explosives Area	-
1	Offices/Warehouses/Maintenance Area	-
1	Mobile Crusher for Quarry	-
1	Access Roads	Required to access early works areas
1	Conveyor Foundations	Only in limited areas
2	Semi-mobile crusher	Blasting required
2	Intermediate ore stacker	Blasting required
2	Leach pad – construction 2 cells on east	Place ore for first 3 cells of each leach pad
2	33kV substations-- #1 leachpad north & one between 2 leachpads	-
3	Water purification area	Limited blasting required
3	SX-EW Plant	Close to village
3	230 kV Substation	Close to village
3	Accommodation at SX-EW plant	Villager protests
3	Powerline	Visibility

In addition to these activities there are mining activities will need to be commenced to provide, including placement of first ore on the leach pads.

1.5 ENVIRONMENTAL AND SOCIAL IMPACTS

The key environmental and social aspects relevant to the Letpadaung Project are:

- Vegetation clearing, flora and fauna management and ground disturbance;
- Management of weeds and hygiene;
- Management of contaminated soil (hydrocarbon contamination), including remediation/removal, handling, transport and disposal;

- Management of hydrocarbon and other spills and leaks;
- Waste management and disposal, including construction waste and contaminated waste such as fuel tanks and associated equipment, lead-containing products, and asbestos containing material;
- Water management, including groundwater management, drainage/stormwater runoff, water supply;
- Erosion and sediment control;
- Management of acid rock drainage and metal enriched leachate;
- Air quality, including dust management and greenhouse gas emissions;
- Social licence to construct (informed consent, land compensation, resettlement and alternative sources of income);
- Nuisance to community (dust & noise);
- Road safety between the port of Pakokku and mine;
- Blasting and explosives;
- In-migration; and
- Management of heritage sites.

The above environmental aspects have been identified in the Construction Environmental Risk Register (CERR) included in Appendix A, which has also identified management controls, including behavioural, procedural and physical controls. For management plans and controls relating to specific elements of the above issues, refer to the Environmental Management Plans (EMPs) in Section 3 and the Social Management Plans (SMPs) in Section 4.

1.6 KEY ASPECTS

1.6.1 Vegetation and Ground Disturbance

In order to mine and construct necessary infrastructure, some clearing of vegetation will be required. MWMCL are strongly committed to minimising the clearing of natural vegetation, a clearing permit system is in place and unnecessary clearing is not accepted.

Although there is currently no evidence to suggest that the hills surrounding the Letpadaung Project provide refuge habitat for fauna species, or that the vegetation is regionally significant, the hills do have some conservation value in that all other natural vegetation in the immediate vicinity has been removed. It is therefore important that the impacts of mining on these hills be minimized. The establishment of vegetation

monitoring and photo monitoring points are essential to quantitatively and qualitatively assess whether spray drift or other mining operations are impacting on the vegetation.

The remnant areas of vegetation are proposed to be established as 'conservation' reserves. There are also proposals to enhance the quality of the vegetation in these and other areas around the project area such that a total of 320 ha of vegetation will be retained in the 'reserved' areas and a further 160 ha of border plantings will be established around the site.

With the fragmentation of the vegetation, it is unlikely that the 'reserves' or the border plantings will provide a suitable habitat for fauna such as the Myanmar hare or Eld's deer. The likelihood of interaction between the fauna and the mining/processing operations could also lead to fauna deaths, which is a further reason to discourage the establishment of these fauna in the remnant vegetation areas.

With regard to revegetation of disturbed areas, such as waste dumps, photo monitoring can also provide a powerful tool to assess the success of revegetation techniques. However, standard monitoring techniques to assess revegetation success will also be required. Vegetation clearing and impacts on flora and fauna will be managed as per the *Clearing and Ground Disturbance EMP*.

1.6.2 Hazardous Materials

Hydrocarbon contamination is a significant aspect and contaminated soil is expected to be encountered during the construction works. Diesel fuel, process reagents, lubricants, solvents, and other chemicals are all used and stored at the Letpadaung project site. Primary risk concerns at the site relate to the health and safety of local village people and mine employees, and the protection of the surface water and groundwater. Places where potential spills may occur in mining area include

- Diesel fuel tank farm;
- Ammonium Nitrate/Fuel Oil storage;
- Hazardous materials storage and handling areas;
- Leach pads;
- Leach solution holding ponds; and
- Plant process and material usage areas.

There is also the potential for off-site impacts as a result of inappropriate transport methods for hazardous materials, with both hydrocarbons and sulphuric acid transported in bulk to the site. It is MWMCL's responsibility to remind the contractors that they are responsible for transporting such materials are aware of the associated

environmental hazards, and should have the appropriate equipment and knowledge to deal with a major or a minor spill.

To prevent soil and any possible groundwater contamination, only non-hazardous and non-recyclable wastes are to send to the landfill site which utilizes the slit trench method. There is a large local market for many operational wastes such as tires, scrap metal, and wood, and wherever possible these waste should be recycled or sold to the local market. Hydrocarbon wastes in particular have the potential to cause significant environmental impacts if they are not stored and dispose/recycled correctly. Appropriate storage and disposal methods for possibly hazardous materials, that cannot be recycled, such as disused chemicals is required, and consideration should also be given to the possible development of a disposal area for potentiality hazardous waste on site.

Appropriate controls for Hydrocarbon management and spill response are documented in the *Hydrocarbons and Hazardous Materials EMP*.

1.6.3 Waste Rock Management

The design and construction of waste rock dumps (WRDs) is a major issue for the Letpadaung project. Not only is it important that WRDs are appropriately designed to limit the impacts of acid rock drainage, but it is also important that they have minimal impact on the visual landscape of the area, and also that they are structurally safe and stable.

The surrounding landscape consists largely of plains used for agricultural purposes, which are interspersed with the occasional hill. Consequently, the shape and location of WRDs have the potential to significantly impact on the surrounding landscape. The issues of erosion and revegetation on the WRDs are also significant with regard to WRDs construction. If the WRDs are not structurally stable, intense rainfall events experienced in the area may have the potential to severely damage the dumps. Progressive rehabilitation of the WRDs will not only minimize the visual impact of the waste dumps, but it will also help to stabilize the battered faces and prevent erosion. Controls are documented in the *Waste Rock EMP*.

1.6.4 Water Management

Water management, including water quality, is a significant risk to the Letpadaung Project. The Letpadaung Project currently incorporates a detailed water management system, including large storm water ponds, and it is not intended to discharge water to the environment except in severe storm events. A large drainage ditch diverts rainwater away from the leach heaps and processing area to prevent it becoming contaminated.

With the potential for mobilization of heavy metals by acid rock drainage due to natural oxidation, the potential for contamination of local surface waters has been closely investigated. The Chindwin River is not currently significantly affected, although regulations should also be formulated to prevent future risk. The Project has the potential to affect the quantity, quality and flow patterns of groundwater in the aquifers around the project site. There is also the potential to alter vertical flows of groundwater by modifying the connections between surface and sub-surface strata. In particular, Acid Rock Drainage generated by waste rock and exposed surfaces in the open pits has the potential to reach the groundwater aquifer. Accidental release of process solutions from the leaching pad, solution ponds, pipelines, and work areas is also a possibility.

Protection of the aquifer from contamination is a key issue for the operation. A large degree of faith has been placed in the local "black cotton" soils to protect the aquifer from infiltration of poor quality surface water. The probability, however, that mine sources may eventually impact upon groundwater quality in the area of the mine is minimized with appropriate design criteria such as leak collection sumps, secondary containment systems, and monitoring at potential leakage points in the system all in place. Good management practice and process monitoring may also be applied to minimize leakage and potential groundwater contamination from failure in the process pipeline systems. Any spillage that does occur in the process plant can be collected by sumps and reintroduced to the process.

Water will be managed in accordance with controls outlined in the *Surface Water, Water Storage and Groundwater EMP*.

1.6.5 Acid Rock Drainage

Acid Rock Drainage (ARD) occurs when mine waste containing pyrite and other sulphides oxidise when exposed to air and water. This is a natural process, which is greatly accelerated when the rock is broken by blasting and crushing. The resulting acidic conditions can mobilize heavy metals and be a serious source of pollution, often persisting after mining has ceased. This significant potential for long-term environmental degradation makes it one of the biggest environmental issues facing the mining industry. Factors contributing to ARD can be classed as primary, secondary and tertiary. Primary factors are those directly involved in sulphides oxidation; secondary factors include issues such as the presence of other minerals able to neutralize acidity, and tertiary factors are the physical conditions (materials, mine site topography, climate, etc.) that influence the rate of sulphide oxidation as well as the migration of sulphide oxidation products.

Preliminary studies at the Letpadaung Project site have indicated that some of the potential waste rock types have the capacity to generate acid drainage, under favourable site conditions. The main areas of the Project which could contribute to the presence of ARD are the pits and waste dumps.

- Pits - As the pits are developed and dewatering is implemented, oxygen will diffuse into the pit wall initiating the oxidation of any sulphides present. Although the walls are dewatered, there is still sufficient moisture present to allow the oxidation reactions. Some of the ARD products inevitably enter the mine drainage system and are pumped to the overflow basin and make up water for heap leaching. However, while dewatering persists, a significant proportion of ARD reaction products remain in-situ in the pit wall. On the cessation of dewatering, groundwater levels will rise and halt the ARD reactions.
- WRDs - The oxidation of sulphides in the WRDs will inevitable occur. The infiltration of water will lead to acidic leach from the dumps and will need to be managed both during their operational life and after decommissioning. If discharged to the broader environment, drainage from the WRDs could potentially impact on surface and groundwater quality in the area. Methods such as encapsulation of potentially acid generating waste and back filling of pits are some of the strategies that may be employed to minimize the impacts.
- Heap Leach Pads – During operations ore is stacked onto an impermeable base and ‘irrigated’ with sulphuric acid to liberate the copper from the ore and mobilise it into solution. The ‘pregnant’ copper solution is then intercepted at the base of the heap leach pad via a series of underdrains and transferred via solution channels to process solution ponds. The pregnant solution is treated to extract the copper, and the ‘barren’ solution is circulated back for reuse in the circuit. Thus, the process reagents are maintained within a closed process water circuit during operations. At the end of the operational phase, after the copper has been leached from the ore, the heap is rinsed with clean water and the copper solution continues to be processed. This continues until such time that copper concentration levels in the solution fall to a level where it is not practicable to continue processing it. At this stage the heap is capped and covered as part of the closure phase. After capping the heap will continue to seep small quantities of acidic leachate that will need to be managed after decommissioning. If discharged to the broader environment, drainage from the heaps could potentially impact on surface and groundwater quality in the area. Methods such as covering and revegetating potentially acid generating leached ore heaps and

installing a treatment system or directing seepage water to the pit are some of the strategies that may be employed to minimize the impacts.

The main areas where ARD issues are of concern for the Letpadaung Project are in the management of aquifer infiltration and surface water run-off. Consequently, ARD can be considered an operational issue, an environmental issue, or a social issue, depending upon perspective. It is an operational issue as it must be managed; however, its real significance lies in socio-environmental impacts. ARD can affect local people directly by reducing water potability, creating the risk of acid burns if it is concentrated, and reducing the value of agricultural land if it seeps onto adjacent areas. It may also affect people indirect by harming fish and other fauna and flora upon which they depend for food and resources.

The basic principles of ARD, management are usually based on:

- Characterising various rock types to evaluate individual risk;
- Inhabiting oxidation;
- Preventing leaching and migration of ARD products; and
- Treating ARD leachate.

It is essential that appropriate management strategies are adopted early in the project to reduce the risk of liabilities occurring later in the operation or after closure due to uncontrolled ARD generation. Experience from other mining operations suggest that acid production must be prevented rather than treated, as it is significantly more cost effective to prevent the problem rather than trying to remedy it. One of MWMCL's main environmental management objectives is to prevent environmental impacts associated with ARD.

In this phase of early works, ARD will only be an issue where hard rock is required for construction works, such as in concrete aggregate or masonry rock, which needs to be imported to the site.

1.6.6 Metals Leaching and Generation

The non-acid forming (NAF) waste produced by the project has a high likelihood of liberating metals when in contact with water, which results in unacceptably high levels of elements such as arsenic, iron, cadmium and lead into the surface, and potentially ground, water.

Given these pollutants are likely to be generated from the waste rock stream of the mining process it is essential that their mitigation is accommodated in waste rock dump

design, through encapsulation of the leaching materials in the same manner as potentially acid forming (PAF) materials.

Water will be the environmental aspect most affected by metal leaching and, whilst its consequences are not so immediate and visible as ARD, the effect of metal leaching is to render the water unsuitable for human use and a significant potential cause for environmental harm in both plants and animals, particularly those aquatic fauna that come into contact with the contaminated waters.

1.6.7 Air Quality

The Letpadaung project currently generates air contaminants in the form of dust and gaseous pollutants from several sources including:

- Material Moving: dust emissions from drilling and blasting operations, loading of ore and waste onto haulage trucks, and dumping from trucks;
- Haul Road Travel: dust emissions from transport of ore and waste to stockpiles, dumps and ore processing facilities;
- Dumping: dust emissions from dumping ore and waste at stockpiles, dumps and ore processing facilities;
- Soils, material delivery and use; and
- Mobile equipment: gaseous emissions from the exhaust of haulage trucks, loaders, dozers, graders, service vehicles and other construction plant and machinery.

The main atmospheric emission on site is dust. Several control techniques for dust suppression will be in place, including the installation of sprinklers in areas near the crusher and the regular watering of roads. The World Health Organisation specifies maximum acceptable levels for particulate matter of less than 10 microns in diameter and 2.5 microns in diameter to delineate nuisance and health risks, respectively.

Impacts on air quality from vehicle emissions will be minimal at the Letpadaung Project site. All mining equipment will be fitted with modern emission control devices wherever practical and all vehicles are to be regularly serviced to prevent or reduce exhaust emissions. Air Quality will be managed in accordance with controls outlined in the *Dust Management* and *Greenhouse Gas Emissions* EMP.

1.6.8 Social Licence to Construct

In order to construct the Project it will be necessary to gain general community acceptance for all Project activities and they have given their prior consent to the project.

This will involve a transparent stakeholder engagement process in which company activities are clearly explained and community opinions are taken into account in project decision making. It will also be necessary for the company to ensure that adverse social impacts are avoided to the maximum extent possible, or failing that are adequately compensated for the inconvenience experienced, as well as enhancing potential beneficial outcomes. Stakeholder engagement will be managed in accordance with controls outlined in the *Stakeholder Engagement SMP*.

Potential issues which may impede social acceptance include nuisance to the local community associated with mining and construction, resettlement of affected parties in the mine development footprint area, and satisfying health concerns associated with operation of the heap leach pads.

Given that most of the prime agricultural land in the region is already claimed and under cultivation, the possibility of finding a nearby host community within the local area in which suitable replacement land for the affected persons could be purchased is likely to be constrained. While it might theoretically be possible to find alternate agricultural lands outside of the municipality, this could imply relocation of affected persons at a significant distance from their original homes. Such a solution may not readily find community acceptance.

The lack of available agricultural land in the Letpadaung area could significantly compromise the development and implementation of an appropriate resettlement action plan (RAP), thereby severely constraining mitigation of the social impacts of subsidence caused by the construction of the mine. Thus local labour must be given priority when arranging employment requirements for the mining construction and operation.

Community resettlement and land compensation will be managed in accordance with controls outlined in the *Land Use and Resettlement SMP*.

On the positive side, the project will an important employer in the area, and has the potential to create considerable local economic benefit via direct and indirect employment, provision of supplies, increased workforce purchasing power and social development programs that will be implemented by MWMCL.

1.6.9 Nuisance to Community

Dust and noise during construction and operation of the mine, if not managed properly have the potential to cause distress and discomfort to local communities. Fugitive dust and excessive noise associated with blasting and heavy machinery operation on the project are likely to be a source of community dissatisfaction and could potentially lead

to protests and picket lines, which as well as being disruptive to construction activity, would attract negative media attention. Provided that sound management procedures and controls are implemented during construction there is no reason why these issues cannot be controlled and maintained at acceptable levels. Dust and noise will be managed in accordance with controls outlined in the *Dust EMP* and *Noise and Vibration EMP*.

1.6.10 Road Safety along Transport Routes to the Mine

The Pakokku-Letpadaung road could require intensive use to transport equipment and materials to site during mine construction.

The route is narrow with no passing lanes. Widening of the road would require significant earthworks at a significant cost. There are schools in most communities traversed by the road and many of the drivers along the road were observed to display poor road and traffic sense. In many cases a bypass around villages would not be practical.

It will therefore be necessary to develop a traffic management plan based on a survey of the proposed transport route. A security and safety assessment should form part of the social and environmental impact assessment. Given the population density along the route and the road use patterns, there is no guarantee that implementation of a traffic management plan would prevent accidents and potential fatalities. Accidents involving trucks transporting equipment and materials for the project are likely to be a source of community dissatisfaction and may potentially lead to road blockades, which can be highly disruptive to construction activity.

Road and river transport will be managed in accordance with controls outlined in the *Transport SMP*.

1.6.11 In-migration

Project activities could affect or be affected by relations between the workforce and the neighbouring communities; particularly if a high proportion of the workforce comes from outside the community. Although the local population can benefit from economic opportunities related to the growth of the population, there is also the potential for negative impacts including misunderstandings due to cultural differences; after-hours behaviour of the workforce; lack of respect for local cultural and social norms; prostitution; spread of sexually transmitted and other communicable diseases including HIV/AIDS; consumption of illegal substances and/or excessive quantities of alcohol; and illegal acts or acts of violence perpetrated by members of the workforce on members of the community.

Management of the above issues will be done in accordance with controls outlined in the *In-migration* SMP.

1.6.12 Management of Heritage Sites

Heritage sites, including archaeological deposits, historical buildings, and culturally-significant landscapes, monasteries, temples, graves and cemeteries have been identified within the project footprint (and will continue to be discovered as development progresses). There is likely to be strong resistance to any activity that desecrates these types of places or treats them with disrespect. In most instances, if the sites are properly identified and surveyed, in consultation with archaeologists, and members of the local community, then it should be possible to arrange their movement and relocation.

Management of the above issues will be done in accordance with controls outlined in the *Heritage* SMP and the *Cultural Heritage* SMP.

1.7 PRELIMINARY BASE LINE DATA

1.7.1 General

Preliminary baseline data has been collected for:

- Flora and fauna;
- Noise;
- Air quality;
- Road traffic; and
- River barge traffic.

The environmental baseline study is currently in progress and the results from this will not be available until late 2013. The data collected to date is incomplete in terms of parameters measured, and their geographic and temporal extent but are included here to provide a preliminary indication of current environmental baseline noise, air, and traffic values.

A summary of the data collected to date (for the dry season) is provided in the sections that follow.

1.7.2 Flora and Fauna

Baseline studies in the Project area did not identify the presence of any flora listed as 'significant' in the IUCN Red List of Endangered Flora. The condition of the flora is significantly different from reports provided in 1997 and 2003/4, most likely due to the increase pressure on the ecological resources resulting from the local increase in

population. It is also worthy to note that timber plantations observed in 1997 are no longer present in and around the Project area.

The Myanmar hare was identified on the Letpadaung hills within the Project area and anecdotal evidence indicated that Eld's deer were known to graze in the area. Proposals for selection of an area of forest as a protective reservation for these species are being considered in parallel with this Project.

1.7.3 Noise

The existing noise level was measured continuously (24 hours per day) over weekends and weekdays at the following five stations around the Letpadaung project area:

- Station 1 - Near the junction of Nyaungbingyi-Gangaw Road and the Phaungar village (South) entrance road.
- Station 2 - Kyawywa village.
- Station 3 - Wethmae village (new village),
- Station 4 - Seide village (new village).
- Station 5 - Aungchansi village.

The noise varied different between weekends and weekdays and between stations, as shown in Table 1.7.1

Table 1.7.1: Mean noise level within 1 hr period collected over 24 hrs

Station	Mean dB(A)/hr (range)	
	Weekend	Weekday
Phaunger village (South)	39.8 - 51.8	44.7 - 62.9
Kyawywar village	41.6 - 54.9	42.2 - 54.5
Wethmae village (New village)	47.4 - 60.6	42.0 - 55.0
Seide village (New village)	42.7 - 57.1	47.8 - 62.7
Aungchansi village	47.8 - 61.3	39.7 - 55.6
Standard of USA EPA		115

The values tabulated above indicate that noise levels generally comply with USA EPA standards.

1.7.4 Air Quality

During construction and operation the most likely sources of particulate matter (PM) are considered to be: wind-borne dust, combustion from blasting, vehicle usage, and crushing. Mining equipment and vehicles, power generators and combustion processes will emit exhaust emissions such as gaseous SO₂ and NO₂.

The air quality was measured using Environmental Perimeter Air Monitoring Stations (EPAs) around the Letpadaung project site. Ambient PM₁₀, PM_{2.5}, SO₂, NO₂, and CO were measured to assess air quality. Mean air quality was measured over 24 hrs, and was continuously sampled at a height of 3m above ground, so as to best represent potential human exposure.

Two stations were selected to measure the air quality around the proposed leach pad area, one of which was close to Seide-Zidaw (new) village.

A summary of measured air quality parameters is shown in Table 1.7.2.

Table 1.7.2: Mean ambient air pollutant concentration

Air Pollutants	Station 1 Values (µg/m ³)	Station 2 Values (µg/m ³)	WHO guidelines
	Station 1	Station 2	
PM 10	82	82	50
PM 2.5	58	78	25
SO ₂	0.3	0.3	20
NO ₂	42	41	40
CO	0.4	0.3	NA

The results showed that mean particulate concentration was higher than that of WHO guideline and the concentration levels of gases were below the WHO standards.

1.7.5 Traffic (Dry Season)

Field survey on traffic volume was conducted at four main roads around the project area. Vehicles, defined as a machine with an engine used for carrying materials and / or people, include: heavy trucks (> 5 tons), light trucks (1-5 tons), passenger buses (in excess of 10 passengers), passenger cars (less than 10 passenger capacity), and motorcycles. Traffic volume and navigation volume here are represented by the number of vehicles or boats. Traffic volumes for weekends and weekdays were recorded over a 24 hr period and compared.

Four main roads were observed around the project area, as follows:

- Monywa-Kalaywa Road,
- Monywa-Nyaungbingyi-Gangaw Road,
- Monywa-NyaungBinGyi-Salingyi, and
- Monywa-Pathein Road.

Materials and fuel tanks were transported across the Chindwin River using Barges. Nyaungbingyi port is an important site for transportation in the area.

Dry season traffic volumes are summarised in Table 1.7.3.

Table 1.7.3: Traffic volume recorded within 24 hr period (Dry Season)

Road	Traffic Volume	
	Weekend	Weekday
Monywa-Kalaywa Road	2808	2116
Monywa-Nyaungbingyi-Gangaw Road	541	651
Monywa-Nyaungbingyi-Salingyi Road	5478	5613
Monywa-Pathein Road	1758	1587
Nyaungbingyi Port (Chindwin River)	1133	1053

Over the dry season, highest traffic volume was observed on the Monywa-Nyaungbingyi-Salingyi Road and the lowest volume on the Monywa-Nyaungbingyi-Gangaw Road, which passes by the Letpadaung copper mining project site. Moderate traffic volume was found on the Monywa-Pathein Road, which also passes by the Letpadaung project site.

As shown in Table 1.7.4, heavy truck numbers were high on the Monywa-Nyaungbingyi-Gangaw road, followed by the Monywa-Kalaywa and Monywa-Nyaungbingyi-Salingyi roads. Light truck numbers were highest on the Monywa-Pathein road followed the Monywa-Nyaungbingyi-Gangaw and Monywa-Nyaungbingyi-Salingyi roads. The highest numbers of passenger buses were observed on the Monywa-Nyaungbingyi-Gangaw road, followed by the Monywa-Pathein road. The number of motorcycles was highest on the Monywa-Nyaungbingyi-Salingyi road, followed by the Monywa-Pathein and Monywa-Kalaywa roads.

The mean values of the bicycle and pedestrian numbers (over 24 hrs) also varied from road to road. Bicycle numbers were as follows: 501 on Monywa Kalaywa road, 1002 on Monywa-Nyaungbingyi-Gangaw road, 1100 on Monywa-Nyaungbingyi-Salingyi road, 45 on Monywa-Pathein road; and 412 on the road to Nyaungbingyi Port. The mean pedestrian numbers were as follows: 302 on Monywa-Kalaywa road, 531 on Monywa-Nyaungbingyi-Gangaw road, 490 on Monywa-Nyaungbingyi-Salingyi road, 102 on Monywa-Pathein road; and 310 on the road to Nyaungbingyi Port.

Table 1.7.4: Traffic volumes of the vehicles (over 24 hr period)

Road	Heavy truck		Light truck		Passenger bus		Passenger car		Motorcycle	
	WE	WD	WE	WD	WE	WD	WE	WD	WE	WD
Monywa-Kalaywa	111	56	207	200	7	11	117	96	2366	1753
Monywa-Nyaungbingyi-Gangaw	103	131	334	385	59	72	13	11	32	52
Monywa-Nyaungbibgyi-Salingyi	49	39	340	405	23	16	24	11	5042	5142
Monywa-Pathein	26	35	562	242	19	31	143	791	1008	488
Nyaungbingyi Port	12	12	12	15	0	0	0	0	1109	1026

Legend: WE = Weekend; WD = Weekday

Boat numbers (over 24 hrs) at the Nyaungbingyi port were 222 on weekend and 230 on weekday. The main river vessels observed were ferry boats and barges. Frequency of the activity of the ferry boats was higher than that of barges, as shown in Table 1.7.5.

Table 1.7.5: Navigation volumes (24 hr period) of Nyaungbingyi port

Port	Navigation Volume	
	Weekend	Weekday
Nyaungbingyi Port (Chindwin River)	222	230

2. ENVIRONMENTAL MANAGEMENT SYSTEM

2.1 ENVIRONMENTAL MANAGEMENT OVERVIEW

To ensure that MWMCL minimises its impact on the environment and maintains high standards, a Construction Environmental and Social Management System (CESMS), based on the ISO 14001:2004 standard has been developed. As well as managing the Letpadaung Project environment responsibilities, the CESMS demonstrates sound environmental performance through operational control of impacts on the environment, consistent with the business Environmental Policy and objectives. As a minimum, compliance with the EMS is required, however all contractors are encouraged to establish and maintain their own Environmental Management Systems. It is the aim of MWMCL to become ISO 14001 certified.

2.2 MWMCL POLICIES

MWMCL is committed to ensuring customers' satisfaction with its products and maintaining a safe, healthy and pollution free work environment.

All MWMCL employees and contractors must accept, as their shared responsibility, that health, safety and environment are the priority in all their activities associated with MWMCL.

MWMCL policies have been developed for the following:

- Environmental.
- Health and Safety.
- Social Responsibility.
- Employment.
- Code of Conduct.

The above policies are reproduced below.

ENVIRONMENTAL POLICY



Myanmar Wanbao Mining Copper Limited is committed to protecting the environment by applying sound environmental management practices that minimise environmental impacts from exploration through to decommissioning and closure.

MWMCL pledges to:

- Comply with all host country environmental laws and regulations together with good industry practice or whichever is the more stringent of the two;
- Commit the necessary resources to support and implement the company's environmental policy;
- Commit to the prevention of pollution and environmental harm as a primary environmental objective;
- Establish and maintain an Environmental Management System in line with ISO 14001:2004;
- Be committed to continual improvement in environmental performance by developing environmental indicators, monitoring and auditing performance, and by implementing corrective actions where needed;
- Report externally on environmental performance and encourage dialogue with employees, local communities and other stakeholders to promote environmental awareness;
- Include environmental performance criteria in decision on promotions, salary increases and awarding contracts;
- Apply the principles of using the better available technology to environment management. Once operational, it will be difficult for an already running plant to apply new technology;
- Reduce, re-use and recycle resources and implement proper waste management practices;
- Train, motivate and ensure that all employees adhere to environmental protection and pollution prevention policies;
- Incorporate an emergency preparedness and response system into standard operating practices; and
- Monitor and report on performance through periodic audits.

HEALTH & SAFETY POLICY



Myanmar Wanbao Mining Copper Limited recognises that the safety and security of its employees and the communities in which it operates is an integral part of its business. We seek to create a mind-set where people believe it is possible to work injury free, regardless of what role they perform.

Our guiding principles are:

- All injuries are preventable;
- Our most important objective is safety and health;
- Working safely is a condition of employment; and
- Any task that can't be done safely shouldn't be done.

To ensure that these principles are adopted, MWMCL will:

- Train and motivate all our people to work in a safe and responsible manner;
- Carry out risk assessment for all construction and operational activities;
- Ensure that health and safety performances comply with relevant legislation;
- Assist the local community in health awareness activities;
- Establish and maintain a health and safety management system;
- Adhere to local laws as well as international standards on law enforcement in securing its operations, particularly those that relate to the use of force;
- Carry out risk assessments in relation to security issues at each of its project sites; and
- Ensure that security is managed in a way that avoids creating conflict and addresses security threats in as peaceful a way as possible.

SOCIAL RESPONSIBILITY POLICY



Myanmar Wanbao Mining Copper Limited recognises that corporate success is founded on communities sharing the benefits of project development.

MWMCL management will conduct the company's business activities to:

- Conduct business within a framework that promotes worker and community health and safety, environmental protection, human rights, community involvement, community benefits and the quality of life for employees and their families;
- Actively promote understanding by all MWMCL employees, of culture, language and history of the communities, regions and countries in which we work;
- Work to protect cultural heritage resources potentially affected by our activities;
- Conduct activities in a manner that respects traditional-use rights, cultures, customs and social values;
- Promote job equity and equal access to employment opportunities for women;
- Build capacity by sharing environmental and social experiences and solutions with local communities and regional and national governments;
- Actively consult with local communities to identify and resolve environmental and social issues;
- Procure materials, goods and services in a manner that enhances local benefits and protects against unethical practices such as child labour and forced labour;
- Establish social responsibility performance criteria; and
- Monitor and report externally on performance through periodic audits.

EMPLOYEE POLICY



Myanmar Wanbao Mining Copper Limited holds its employees in the highest esteem and understands that their goodwill, loyalty and dedicated work effort is the key to the success of the Company.

The Company is committed to the creation of a work environment which helps and encourages employee to reach their personal and professional goals, as well as ensuring the timely achievement of Company business objectives. In achieving the above objectives, MWMCL will:

- Establish a sound human resources policy framework which meets all aspects of the national and international labour standards and conventions;
- Ensure that conditions of employment adhere to the standards of freedom, security, equity and dignity;
- Ensure that involuntary labour is not used by MWMCL or its contractors;
- Abide by minimum age laws and conventions and prohibit all forms of child labour;
- Not discriminate against potential or existing employees on the basis of religion, ethnicity, gender or other factors;
- Adopt recruitment procedures which facilitate the employment of people from the immediate Project area and local communities;
- Ensure fair entitlements, benefits and remuneration, of a level which is in keeping with national norms and laws and enables MWMCL to attract and retain employees;
- Ensure effective employee administration and records management systems;
- Implement mechanisms for the fair and consistent measurement of employee performance;
- Provide avenues for the timely, confidential and appropriate resolution of employee grievances and complaints;
- Foster a culture of teamwork and cooperation within MWMCL and the development of strong relationships between employees across all departments;
- Actively provide Company information to employees and consult with workers on issues that affect them;
- Provide appropriate training to ensure that each employee has the required skills and knowledge to perform their allocated duties in a safe and competent manner; and
- Continuously develop and improve human resources management systems, policies and practices.

CODE OF CONDUCT



Myanmar Wanbao Mining Copper Limited is committed to maintaining good relations with its employees, neighbours and other communities potentially affected by the Project. All employees, contractors and subcontractors will be required to uphold the highest Code of Conduct at all times. The scope of the Code of Conduct will be reviewed by MWMCL management on a regular basis.

- **Health & Safety of Project Personnel and the Community**

- The Project has a zero tolerance to crimes and violence.
- Use of force will not be tolerated and all disagreements must be resolved through appropriate legal channels.
- Vehicles must be operated safely and in accordance with established speed limits in local communities.
- No job should be undertaken if it is not safe to do so.

- **Private Property**

- Respect the private property of others.
- Private property must not be removed, damaged or altered unless with the prior approval of the community and/or owner and as part of the agreed Project plan.

- **Natural Resources**

- Hunting wildlife is prohibited.
- The carrying of firearms and explosives is prohibited.
- Workers are forbidden to collect natural resources (e.g. plants or animals, geological samples etc.) unless specifically authorised to do so as part of Project activities.
- Cutting trees within the mine property is forbidden unless specifically authorised to do so as part of Project activities.
- Workers shall dispose of waste in a responsible manner and in accordance with environmental procedures.

- **Religious and Sacred Structures / Areas**

- Respect the religious shrines and burial sites and practices of the local population.

- Do not disturb shrines and other religious monuments.
- Recognise that shrines and sacred sites may include trees, sheds, piles of pebbles, and piles of offerings.
- Follow MWMCL Project procedures if chance finds are encountered.
- **Alcohol and Illegal Substances**
 - An Alcohol and Substance Abuse Policy is in place for the Project.
 - Alcohol consumption is discouraged.
 - No illegal substances may be consumed at any time, and the use of medicines must be authorised by doctors or nurses.
 - Random drug testing will be done.
- **Avoid Micro-economic Distortion:** Avoid over-payment for goods and/or services by agreeing any payment in advance, keeping in mind that locally accepted prices for goods and services are likely to be considerably lower than in cities and other areas of Myanmar. Goods and services acquired by company personnel from community members must be paid for “on the spot” not on “credit”.
- **Community Goodwill vs. Opportunity Seekers:** Respect the goodwill of the community; however care should be taken to not take advantage of this goodwill. Employees and contractors are encouraged to return the gestures of goodwill, at their own discretion, however this needs to be balanced with the potential to create expectations that goodwill will be met by payment.
- **Religious / Traditional Days of Celebration:** Respect the religious and/or traditional days of celebration and their restrictions.
- **Respect Community Members and the Traditional Leadership:** Any contact with community members shall be conducted in a manner commensurate with the traditional culture of the area.
- **Respect Requests of Community Leaders:** Any request / issue raised by community leaders shall be directed to the Community Liaison Officers or other member of the community relations team. Any complaints shall be treated under the procedure defined by the MWMCL Stakeholder Engagement Programme.
- **Harassment:** Harassment of any kind will not be tolerated from personnel engaged with the Project. Harassment may take many forms including religious and ethnic slurs, jokes, statements, gestures, impeding another's movement, culturally offensive writing or pictures, and unwelcome sexual advances or conversations.
- **Security:** Workers must carry appropriate identification at all times and there will be no access to site by non-authorised personnel. Workers must be willing to produce identification upon request.

2.3 CONSTRUCTION ENVIRONMENTAL RISK REGISTER

A project specific Construction Environmental Risk Register (CERR) has been produced for the Letpadaung Project and its purpose is to identify the environmental risk aspects applicable to the Project, assess the significance of their impacts and identify suitable controls.

The CERR is maintained by the MWMCL Environmental Team and will be reviewed and updated annually or more frequently as required in response to scope changes, changes in legal requirements, findings of inspections, incidents, audits and management reviews. The CERR will be reviewed in consultation with the MWMCL Environmental Manager or representative. The CERR is attached in Appendix A.

Job Hazard Analyses (JHA) are required to be used to identify environmental aspects as well as safety hazards relating to specific activities. JHAs must be developed and used by all personnel to identify task specific potential risks and their appropriate control measures.

2.4 LEGAL AND OTHER REQUIREMENTS

2.4.1 Legal Requirements

Legal and approval requirements applicable to the Project related to the environment will be identified by MWMCL.

To meet environmental, legal and other requirements, MWMCL shall:

- Ensure that legal and other obligations are incorporated in the designs, procedures and project controls.
- Communicate legal and other requirements to personnel and contractors accountable for compliance.
- Ensure all relevant legal and other requirements and associated documentation (e.g. licenses, permits, approval applications) are readily available on site to MWMCL personnel, contractors, subcontractors and consultants.
- Conduct a compliance audit at least annually and ensure there is a process in place to monitor on-going compliance with all legal and other requirements. Where work or construction activities are less than 12-months in duration at least one compliance audit will occur.

2.5 NATIONAL LEGISLATION

2.5.1 General Listing Of Legislative, Regulatory And Guidance Documents

The following Myanmar Acts and Rules apply to the Letpadaung Copper Project:

- The Land Acquisition Mines Act (1885);

- The Water Power Act (1927);
- The Forest Law (1992);
- Protection of Wild Life and Wild Plants and Conservation of Natural Areas Law (1994);
- The Protection and Preservation of Cultural Heritage Regions Law (1998);
- The Explosives Act (1887);
- The Explosive Substance Act (1908);
- Myanmar Insurance Law (1993);
- The Factories Act (1951);
- Workmen's Compensation Act (1923);
- Union of Myanmar Public Health Law (1972);
- The Natural Drug Law (1992);
- The Traditional Drug Law (1996);
- The National Food Law (1997);
- Prevention and Control of Communicable Diseases Law (1995);
- Mines Law (1994) and accompanying Mining Rules;
- Environment Conservation Law (2012);
- Foreign Investment Law (2012);
- Foreign Investment Rules (2013) by the Ministry of National Planning and Economic Development;
- Notification No. 1/2013 by Myanmar Investment Commission;
- Environment Conservation Law (2012); and
- Guideline to Overview of Labour Laws in Myanmar published by the Ministry of Labour 2004.

2.5.2 Legal and Regulatory Framework for ESIA

This section reviews the administrative and legal structures set up to protect the environment, as well as ongoing activities by the government and civil society organisations based inside and outside Myanmar that are intended to promote sustainable development and environmental protection.

The Draft Environmental Impact Assessment Rules which are yet enforced states that every project proponent required to carry out an Environmental Impact Assessment in respect of proposed project shall prepare an Environmental Impact Assessment Report detailing every stage of the assessment and its conclusion in a format and timeframe

as may be prescribed by the Ministry of Environmental Conservation and Forestry. The project proponent shall prepare an Environmental Management and Monitoring Plan in a format prescribed by the Ministry of Environmental Conservation and Forestry and shall submit it with the Environmental Impact Assessment Report.

2.5.3 EXISTING ENVIRONMENTAL LEGISLATION

The information for the following sections describing the Myanmar legislation with reference to environmental assessment was provided by Myanmar Legal Services Limited (2013).

Though Myanmar does have some legislation related to protecting people and the environment, the country lacks the necessary adequate administrative and legal structures, standards, and safeguards to enforce such provisions. In addition, while Myanmar is party to several international treaties such as the Convention on Biological Diversity (CBD), in the past, Myanmar has not incorporated the provisions contained in these agreements into domestic law. For example, national laws did not require specific environmental and social impact assessments (ESIA) or public participation by local communities in the decision-making processes of large-scale development projects. However, to address the environmental expectations of the laws described below, an ESIA would be required to establish the mechanisms for preventing such actions from occurring. There are no specific laws that comprehensively regulate pollution, no standards to adequately protect biodiversity, develop resettlement plans, or provide compensation. There are, however, the 1995, Community Forest Instructions (CFI), the March 2012 Environmental Conservation Law, the November 2012 Foreign Investment Law, Rules and Notification by Myanmar Investment Commission (2013), Rules of the Conservation of Water Resources and Rivers Law (2013) and the Land Acquisition Act that, if systematically enforced, would improve environmental protection and the land-based rights of local populations. Myanmar became a party to the CBD in 1994. Article 14(1)(a) of the Convention requires an EIA and Article 8(j) mandates indigenous participation where there is a significant impact on biodiversity. Section 54 of the 2012 Foreign Investment Law provides that “If any provision of this Law is contrary with any matter of the International Treaty and Agreement adopted by the Republic of the Union of Myanmar, the matters contained in the International Treaty and Agreement shall be abided by.

2.6 THE ENVIRONMENTAL CONSERVATION LAW 2012 (ECL)

2.6.1 Objectives

The ECL, the landmark law specifically dedicated to address environmental conservation, was enacted:

- a) to implement the national environmental policy;
- b) to lay down basic principles and provide guidance to systematically integrate environmental conservation matters with the sustainable development works;
- c) to build a healthy and clean environment and to conserve natural and cultural heritage for the benefit of current and future generations;
- d) to restore the deteriorating and disappearing ecosystem to the fullest extent possible;
- e) to enable to manage and implement for the decrease and loss of natural resources and for enabling the benefits of sustainable use;
- f) to enable promotion of public awareness and cooperation in the matters of environmental conservation;
- g) to enable promotion of international, regional, and bilateral cooperation in the matters of environmental conservation; and
- h) to co-operate with the government departments and organisations, international organisations, non-governmental organisations and private individuals on environmental conservation matters.¹

2.6.2 Current Position

Though the ECL paves the way for the use of EIA and/or SIA in evaluation of issuing a prior permission for prescribed businesses, the prior permission scheme itself is discretionary and there is currently no basis in the law for the Ministry to determine whether or not to issue a permit, and whether to impose environmental compliance conditions on the user. Also, some of the Ministry of Environmental Conservation and Forestry's (MOECF) broad powers granted under the law require the approval of the Union Government and the Environmental Conservation Council (ECC) but without the clear power and basis of the approval.

There are no regulatory guidelines and rules specified to enable the ECL to be operable in practice: such as setting the environmental quality standards, emission standards, and classes of hazardous waste and substances. In addition, there is a need to cover the non-point sources of pollution that is not discussed in the ECL.

¹ ECL Section 3

The ECL provides for integration with sectoral policies and co-ordination amongst the Ministries and departments.² It is expected that the Environmental Conservation Rules (ECR) of the ECL which is underway would provide regulatory guidelines to implement the ECL.

The maximum monetary fine imposable under the law is only Kyats 2,000,000 or about USD 2,300.

2.6.3 Obligations of Business Owners and Occupiers

The polluter at source has obligations to clean, discharge, dispose, or keep pollutants in accordance with the prescribed standards³.

The owner or occupier of business activities, materials or places that are source of the pollution must install or use an on-site facility or controlling equipment in order to monitor, control, manage, reduce or eliminate environmental pollution. If this is not possible, it must be arranged to dispose the wastes in accordance with environmentally sound methods⁴.

The individuals or organisations carrying on the businesses in the industrial zones, or special economic zones or businesses set by the government ministries have responsibilities to contribute either in cash or in kind and carry out the management of pollutants and environmental conservations including the treatment of wastes collectively⁵; must give the fees for the usage and expenses incurred in connection with management of environmental conservation by the relevant industrial zones, special economic zones and business organisations⁶; and must comply with the environmental conservation directives published by the relevant industrial zone, special economic zone or the business organisations⁷.

2.6.4 Insurances

The person who has obtained the necessary prior permission to carry out the business concerned must obtain the environmental accident insurance in accordance with the existing laws⁸. Section 77 of the FIL states that “All economic organization formed under a permit shall effect insurance with any authorised local insurance enterprise in respect of the following types of insurance:

² ECL Section 18

³ ECL Section 14

⁴ ECL Section 15

⁵ ECL Section 16(a)

⁶ ECL Section 16(b)

⁷ ECL Section 16(c)

⁸ ECL Section 26

- a) machinery insurance.
- b) fire insurance.
- c) marine insurance.
- d) physical injury insurance.
- e) natural disaster insurance.
- f) life insurance.

Section 78 provides that In addition, an economic organization shall acquire other types of insurance prescribed by any existing law based on the category of economic activity.

2.6.5 Prohibitions, Offences and Penalties

No one is allowed to operate business, worksite, factory, or workshop which is required to obtain a prior permission without the prior permission from the Ministry⁹. The violation of this prohibition constitutes an offence punishable by imprisonment with a term not exceeding 3 years, fines with an amount not smaller than Kyats 100,000 and not greater than Kyats 1,000,000, or both¹⁰.

No one shall violate any prohibition contained in the rules, notifications, orders, directives and procedures issued under the ECL¹¹. The violation of this prohibition constitutes an offence punishable by imprisonment with a term not exceeding 1 year, a monetary fine, or both¹².

No one shall, without permission of the MOECAAF, import, export, produce, store, carry or trade any material which can have an adverse impact on the environment¹³. Any violation of this prohibition will attract a prison term of minimum 3 years and maximum 5 years, a monetary fine of minimum Kyats 100,000 and maximum Kyats 2,000,000, or both¹⁴.

2.7 FOREIGN INVESTMENT LAW 2012 (FIL)

The FIL, in its Basic Principles, states that the investment shall be allowed based upon principles including “protection and conservation of the environment”¹⁵.

⁹ ECL Section 28

¹⁰ ECL Section 31

¹¹ ECL Section 29

¹² ECL Section 32

¹³ ECL Section 30

¹⁴ ECL Section 34

The duties of the investor requires the carrying out of business in a manner not to cause environmental pollution or damage in accord with existing laws in respect of investment business¹⁶.

2.8 NOTIFICATION OF MIC 1/2013

2.8.1 Notification No 1 of 2013.

The list of Economic Activities under Prohibition includes:

- Installation of Factory in Myanmar utilizing of the imported wastes.
- Manufacturing of hazardous material which are not in compliance with the environmental and conservation Law, Rules and Procedures promulgated from time to time.
- Activities which may emit hazardous chemicals, minerals, rays, noise, particles etc., and may cause earth/water/air pollution which affect public health.
- Exploitation of minerals including gold in the revering and water way.

The list of Economic Activities Permitted with Specific Conditions includes at No (3) includes Economics activities which required Environmental Impact Assessment.

Exploration and production of minerals, manufacturing of iron, steel and minerals and operation in cultural heritage, archaeological and prominent geographical symbolical sites, etc., all require that it will be allowed subject to the need for Environmental Impact and Social Impact or Environmental Impact and less Social Impact carried out for initial study of environment.

Clause 37 of the Rules of the FIL states “In order to scrutinize accepted proposals sector by sector, a Proposal Review Group, composed of high ranking officers from the following departments, is to be formed to perform preliminary scrutiny:

- a) Environmental Conservation Department.

Section 47 states that the Commission shall scrutinize investment proposals in the following manners:

- b) Scrutinising remarks from the Ministry of Environmental Protection and Forestry on the protection measures of social and environmental impact.

Notification No 1/2013 of MIC dated 29th January, 2013 List of Economic Activities requiring environmental impact assessments:

¹⁵ Fill Clause 8(l)

¹⁶ Fill Clause 17(h)

Exploration and production of minerals – Depending upon the business activity, to avoid environmental and social impacts, or to minimise environmental and social impacts, it will be allowed only after conducting initial study and assessment upon environmental and social impacts.

2.9 MINES LAW (1994) (MML) AND ASSOCIATED MINES RULES

The Mines Law (1994) aims to protect the environment from mining operations that may be detrimental to conservation of environmental quality.

Section (3) of the Mine Law states the objectives as follows:

- To carry out for the development of conservation, utilisation and research works of mineral resources; and
- To protect the environmental conservation works that may have detrimental effects due to mining operations.

Under duties of the holder of Permit, it is stated that the holder of permit shall comply with the rules prescribed under this Law in respect of the following matters:

- Making provisions for safety and the prevention of accidents in a mine and their implementation;
- Making and implementation of plans relating to the welfare, health, sanitation and discipline of personnel and workers in a mine;
- Making provisions for the environmental conservation works that may have detrimental effects due to mining operation;
- Reporting of accidents, loss of life and bodily injury received due to such accidents in the mine; and
- Submission to the inspection of the Chief Inspector and inspectors¹⁷.

Rules 69 to 73 govern the rights of utilisation of land and water for mineral production which includes the provisions of the responsibility of the mineral permit holder so that there is no pollution of the environment due to the use of land and water.

The holder of a mineral exploration permit or a mineral production permit must backfill or otherwise make safe bore holes, excavations, surface of land damaged during the course of underground mining operations to the satisfaction of the Ministry or the Department. The holder must also establish forest plantations or pay compensation to

¹⁷ MML Section 13

the Ministry of Forestry, if trees were cut and cleared for mineral exploration or mineral production within a forest land or in a land area covered with forests.

In disposing of liquids, wastes, tailings and fumes which have resulted from mineral production, the holder of a mineral production permit must undertake laboratory tests as may be necessary for the prevention of pollution of water, air and land in the environment and for the safety of living beings. If toxic materials are found in the waste products, which are harmful to living beings, degradation shall be made by chemical means and systematic disposal shall be made only when it is assured that there is no danger.

The holder of a permit for mineral production within an area under the Ministry's administrative control or which does not lie within the Mineral Reserve Area or Gemstone Tract, shall carry out such production only after co-ordinating and receiving agreement from the individual or organisation having the right of cultivation, right of possession, right of use and occupancy, beneficial enjoyment, right of succession or transfer of the said land¹⁸.

If the holder of a mineral production permit requires the use of public water for mineral production he shall first and foremost inform the Department of such requirement in accordance with the prescribed manner¹⁹.

If the Department, after scrutinising the requirement submitted under Section 16 finds that the use of public water is necessary for the holder of a mineral production permit, it shall co-ordinate with the relevant government department(s) and organisation(s) to obtain permission to use water in accordance with the existing law²⁰.

Chapter XXI of the Myanmar Mining Rules (MMR) describes "making provisions to prevent detrimental effects due to mining operations on the environmental conservation works". The requirements include:

- Backfilling or making safe bore holes, excavations or surface of the land damaged during the course of underground mining²¹; and
- Undertaking laboratory tests, as necessary, to prevent pollution of water, air and land²².

¹⁸ MML Section 14

¹⁹ MML Section 16

²⁰ MML Section 17

²¹ MML Section 105

²² MML Section 106

2.10 NATIONAL COMMISSION FOR ENVIRONMENTAL AFFAIRS (Currently Environmental Conservation Committee)

Environmental protection in Myanmar previously came under the authority of the National Commission for Environmental Affairs (NCEA), formed in 1990. Until 2005, the Minister of Foreign Affairs was the chair of NCEA. In 2005, however, the NCEA was transferred under the Ministry of Forestry (MoF), and the Minister of Forestry assumed the role of the NCEA chairperson.

The stated objectives of the now Ministry of Environmental Conservation and Forestry were to set environmental standards, create environmental policies for using natural resources, issue rules and regulations to control pollution, and to create short- and long-term environmental policies which balance environmental needs and development requirements.

The Ministry of Environmental Conservation and Forestry has drafted the Environmental Impact Assessment Rules, which are pending approval by the government, to complement the ECL 2012.

2.11 ENVIRONMENTAL AND SOCIAL POLICIES

A national environmental policy was drafted in 1994. The National Environment Policy is as follows:

"To establish sound environment policies, utilisation of water, land, forests, mineral, marine resources and other natural resources in order to conserve the environment and prevent its degradation, the Government of the Union of Myanmar hereby adopts the following policy: The wealth of the nation is its people, its cultural heritage, its environment and its natural resources."

The objective of Myanmar's environmental policy is to achieve harmony and balance between its people, its cultural heritage, its environment and its natural resources through the integration of environmental considerations into the development process to enhance the quality of the life of all its citizens. Every nation has the sovereign right to utilise its natural resources in accordance with its environmental policies; but great care must be taken not to exceed its jurisdiction or infringe upon the interests of other nations. It is the responsibility of the State and every citizen to preserve its natural resources in the interests of present and future generations.

The development of the environmental policy was followed by the drafting of 'Myanmar Agenda 21' in 1997, which follows a UN framework for a multi-pronged approach to sustainable development. The Myanmar Agenda 21 recognises the need for Environmental Impact Assessments. Myanmar, in its Agenda 21, calls for integrated

management of natural resources and provides a blueprint for achieving sustainable development.

The ECL provides more institutional space to regulate environmental quality and conduct EIA's and SIA's for infrastructure and investment projects funded by the government and private sector.

2.12 MYANMAR INVESTMENT COMMISSION (MIC)

The MIC issued a Notification on 30 June 1994 on Protection of Environment stating that:

1. The Myanmar Investment Commission, at its meeting 8/94 held on 17 June 1994 has resolved that all projects established with the permission of the Commission shall be responsible for the preservation of the environment at and around the area of the project site. The enterprises are entirely responsible that they shall be able to control pollution or air, water and land, and other environmental degradation, and that they can keep the project site environmentally friendly.
2. Consequently, it is hereby notified that treatment plant, industrial waste water treatment plant and other pollution control procedures should be promptly implemented and abide with the sanitary and hygienic rules and regulations set by the authorities concerned.
3. In the future proposals that are to be submitted to the Commission, either under the Union of Myanmar Foreign Investment Law or the Myanmar Citizens Investment Law, shall incorporate the provision in their contracts that they shall undertake proper sewage and industrial wastewater treatment systems and other environmental control systems. The system so used shall be in accordance with the rules and regulations specified by the respective development committees and local authorities.

2.13 IMPACT ASSESSMENTS IN MYANMAR

One of the most important internationally-accepted environmental protection methods is to conduct an environmental and social impact assessment (ESIA) prior to implementing development projects. An ESIA identifies, predicts, evaluates, and mitigates the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. The ESIA is supposed to provide appropriate opportunities to inform and involve stakeholders in a project. In the absence of formal regulations and guidelines in Myanmar regarding the scope and content for ESIA, the International Association for Impact Assessment has guidelines

on the objectives and principles of an ESIA which should be used to inform this ESIA process .

Social impact assessment (SIA) should cover 'all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society' and 'cultural impacts involve changes to the norms, values, and beliefs of individuals that guide and rationalise their cognition of themselves and their societies' (Burge and Vanclay, 1996).

2.14 NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY

The National Sustainable Development Strategy (NSDS) is part of a broader programme of the UN Sustainable Development Commission set up after the World Summit on Sustainable Development in 2002. Every country, including Myanmar, that signed Agenda 21 at the Earth Summit in Rio de Janeiro in 1992, agreed to develop an NSDS by 2010 in line with the Millennium Development Goals (MDGs). UNEP provided funding for Myanmar to develop an NSDS. The main aim of the process was to develop an NSDS in line with international standards by meeting the MDGs and ensure that environmental and social impacts are mitigated when implementing development projects. The NCEA took a lead in developing the strategy in consultation with the government and a small number of NGOs. Myanmar's NSDS was published in August 2009.

The three goals described in Myanmar's NSDS are sustainable management of natural resources, integrated economic development and sustainable social development. Specific strategies are outlined under each goal. For example, the goal for Sustainable Management of Natural Resources suggests strategies for forest resource management, sustainable energy production and consumption, biodiversity conservation, sustainable freshwater resources management, sustainable management of land resources, sustainable management for mineral resources utilisation, and so on.

The NSDS was officially accepted by the Ministry of Planning. In theory, it is a guiding document for government ministries, departments and local authorities, UN organisations, and international and local NGOs. Implementation of the strategy will be assisted by adoption of the ECL and its accompanying regulations and guidelines and the development of sectoral-specific regulations that seek to enhance environmental protection and efficiency of resource use.

The United Nations Environment Program (UNEP) (BEWG, 2011) has stated that there are opportunities to review and further develop the strategy in the future.

2.15 INTERNATIONAL COMMITMENTS

Myanmar has signed a number international treaties related to the environment which may have implications for the Project. These include:

- Plant Protection Agreement for the Asia and Pacific Region; Vienna Convention for the Protection of the Ozone Layer; Montreal Protocol on Substances that Deplete the Ozone Layer;
- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer;
- United Nations Framework Convention on Climate Change (UNFCCC); United Nations Convention to Combat Desertification;
- International Civil Aviation Organisation: ANNEX 16 Annex to the Convention on International Civil Aviation Environmental Protection Vol. I, II, Aircraft Noise;
- Vienna Convention for the Protection of Ozone Layer;
- Montreal Protocol on Substances that Deplete the Ozone Layer;
- Convention Concerning the Protection of the World Cultural and Natural Heritage;
- Convention on Biological Diversity (CBD); International Tropical Timber Agreement (ITTA);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- ASEAN Agreement on the Conservation of Nature and Natural Resources; Cartagena Protocol on Biosafety;
- Kyoto Protocol to the United Nations Framework Convention on Climate Change;
- Ramsar Convention on Wetlands; and
- Copenhagen Amendment to Montreal Protocol on Substances that deplete the Ozone Layer.

2.15.1 United Nations Declaration on the Rights of Indigenous Peoples

Myanmar was one of 144 states that endorsed the United Nations Declaration on the Rights of Indigenous Peoples in September 2007. Article 32 discusses indigenous peoples' right to free and prior informed consent (FPIC):

“States shall consult and co-operate in good faith with the Indigenous Peoples concerned through their own representative institutions in order to obtain Free and Prior Informed Consent prior to approval of any project affecting their land or territories”.

Article 10 discusses forcible relocation of indigenous people, and the need for FPIC and Article 26 about land rights are also relevant articles for indigenous peoples in relation to this project. It is good practice to ensure that relocation takes place following the free, prior and informed consent of the indigenous peoples concerned and after agreement on just and fair compensation and, where possible, with the option of return if that is possible following mining.

2.15.2 Environmental Conservation Department (ECD)

Environmental Conservation Department (ECD) was established on 11 October, 2012.

The Objectives of ECD are as follows:

1. to implement the National Environment policy
2. to develop short, medium and long term strategy, policy and planning for the integration of environmental consideration into the sustainable development process.
3. to manage natural resources conservation and sustainable utilisation
4. to manage the pollution control on water, air and land for environmental sustainability
5. to cooperate with government organization, civil societies, private and international organizations for the environmental affairs.

The RAP should conform to all relevant international environmental and social conventions ratified by Myanmar.

Where no appropriate Myanmar standards are available, standards or guidelines based on IFC guidelines or other international best practice will be applied to the project and existing environmental conditions.

2.16 GOOD PRACTICE GUIDELINES

The following list of International Finance Corporation (IFC) policies, procedures, standards and guidelines is applicable to this project:

- Policy on Environmental and Social Sustainability (2012);
- IFC Sustainability Framework (2012);
- IFC Performance Standards on Environmental and Social Sustainability (2012);

- Guidance Notes (#1 – 9) on IFC Performance Standards on Environmental and Social Sustainability (2012);
- IFC Environmental Health and Safety General Guidelines, April 30, 2007;
- IFC Environmental Health and Safety Guidelines – Mining, December 10, 2007;
- IFC Operational Policy;
 - OP 4.01 Environmental Assessment, January 1999
 - OP 4.02 Environmental Action Plans, February 2000
 - OP 4.04 Natural Habitats, June 2001
 - OP4.07 Water Resources Management, February 2000
 - OP 4.09 Pest Management, December 1998
 - OP 4.10 Indigenous People, July 2005
 - OP 4.11 Physical Cultural Resources, July 2006
 - OP 4.12 Involuntary Resettlement, December 2001
 - OP 4.20 Gender and Development, March 2003
 - OP 4.36 Forests, November 2002
 - OP 4.37 Safety of Dams, October 2001
 - BP 4.01 Environmental Assessment, January 1999
 - BP 4.02 Environmental Action Plans, February 2000
 - BP 4.04 Natural Habitats, June 2001
 - BP 4.10 Indigenous Peoples, July 2005
 - BP 4.11 Physical Cultural Resources, June 2006
 - BP 4.12 Involuntary Resettlement, December 2001
 - BP 4.20 Gender Development, March 2003
 - BP 4.36 Forests, November 2002
 - BP 4.37 Safety of Dams, October 2001
- Handbook for Preparing a Resettlement Action Plan, 2002;
- A Handbook for Addressing Project-induced In-migration;
- Investing in People – Sustaining Communities Through Improved Business Practice;

- Good Practice Note – Public Infrastructure and Mining, 2010;
- Good Practice Note – Community Development Agreements, 2010;
- Introduction to Health Impact Assessment, 2009;
- Workers Accommodation – Processes and Standards, 2009;
- Strategic Community Investment, June 2010;
- Good Practice Note – Addressing the Social Dimensions of Private Sector Projects, December 2003; and
- Good Practice Note – HIV/AIDS in the Workplace, December 2002.

2.17 DEMONSTRATING LEGAL COMPLIANCE

The Project may be audited as part of internal and external audit programmes including, but not limited to:

- Regulatory inspections/audits of the site; and
- ISO14001 surveillance process.

2.18 ENVIRONMENTAL AND SOCIAL OBJECTIVES AND TARGETS

Environmental and social objectives and targets for the Project have been identified and documented by MWMCL and are aligned with the objectives and targets set by the Company at a business level. The purpose of this plan includes establishment of performance standards for managing environmental performance and compliance and also assigns specific accountabilities for compliance with legal obligation (including approvals) and standards. Contractors shall develop specific environmental objectives and targets relevant to their scope of works which support the overall Project Key Environmental Objectives and associated targets. The community and social aspects of the construction work are very sensitive and need to be managed carefully, in consultation with MWMCL community representatives. Prior to commencing construction all Contractor personnel will be inducted, and if necessary trained in relation to managing any community and social issues that may arise in the course of their site activities.

Key objectives are agreed by MWMCL and contained in Table 2.18.1.

Table 2.18.1: Project Environment Objectives and Targets

Key Result Area	Objective	Target
Legislative	Compliance with relevant regulations, approvals, licences or permits.	Zero prosecutions, fines, penalties or breach notices from regulatory authorities.
Environmental Impact	Minimise environmental impacts associated with project development.	Zero major or catastrophic environmental or community incidents. Zero externally reportable incidents.
Management Systems	Develop and maintain an EMS compliant with standards and Project requirements.	Zero major non-conformance findings in internal and external audits. Complete environmental awareness training for 100% of construction personnel.
Water Management	Incorporate sustainable water use and disposal into design and construction	Implement designs that encourage water reuse. Separation of contaminated and non-contaminated water supplies and storage.
Air Quality	Optimise project energy use and greenhouse gas emissions during life of operation and closure. Minimise dust emissions from the construction site. Ensure no emissions impact on the community	Implement designs that encourage efficient use of energy. No adverse impacts of dust on vegetation, fauna or heritage sites outside the disturbance zone. No work stoppages as a result of excessive dust. No adverse community comment regarding the deterioration of air quality.
Biodiversity	Minimise project biodiversity impact by optimising clearing footprint of the Project.	No unauthorised impact to flora and fauna. No introduction of weed species within Project boundary. All recovered topsoil is stockpiled on-site for rehabilitation purposes.
Hazardous Material Management	Control transport, storage and use of hydrocarbons on site.	Zero externally reportable hydrocarbon spill incidents.

2.19 RESPONSIBILITIES AND AUTHORITIES

All personnel involved in the development of the Project are required to comply with this CESMS at all times. Responsibilities and authorities are set out on each EMP element in this document. As part of the Contractor EMP, the Contractor will detail the accountabilities for key staff and personnel in the EMP. Table 2.19.1 presents a generic overview of responsibilities by role.

Table 2.19.1: Summary of Key Roles and Responsibilities

Role	Key Responsibilities
Environmental Manager (MWMCL)	• The MWMCL Environmental Manager is responsible for: • Providing specialist environmental management support to the Project and Contractors. • Providing management advice in implementation and maintenance of the Integrated Management System with regards to environmental management. • Authorising and communicating with external agencies as required. • Approving the CESMS, Objectives and Targets and Audit Schedule in coordination with the Project Manager. • Providing environmental advice in the event of an incident or emergency event.
Project Manager (MWMCL)	• The MWMCL Project Manager is responsible for: • Demonstrating effective leadership to all project personnel with respect to matters concerning the environment and implementation of the IMS at a project level. • Ensuring the Project complies with all applicable requirements set out in the Standards, IMS and legislation. • Facilitating the approval of the CESMS in consultation with the MWMCL Environmental Manager. • Ensuring appropriate management actions are put into place to facilitate compliance with all legal requirements. • Communicating environmental and social matters to the various stakeholders.
Environment Engineer (Project)	• The Project Environment Engineer is responsible for: • Preparing the CESMS and other IMS outputs. • Acquiring project approvals, permits and licences. • Reviewing and approving key project environmental and heritage documentation as required. • Overseeing the implementation of the practices and procedures outlined within this CESMS. • Liaison with the MWMCL Environmental Manager and other project personnel as required. • Providing environmental support to the Project Manager. • Communicating environmental matters to the Engineer's team and Contractors.
Contractor Project Manager	• The Contractor Project Manager is responsible for: • Obtaining all necessary licences, permits and registrations required for carrying out their works, as directed by the Client Project Manager. A copy of these must be supplied to the Client. • Compliance with the requirements of the CESMS as it relates to their scope of works. • Demonstrating a commitment to provide services and materials that minimise impact to the environment. • Report environmental performance and Key Performance Indicators to the Client on a monthly basis. • Where any negative environmental impacts are caused, undertake corrective/preventative action as a result of findings

	of incidents, audits, inspections and management reviews and will seek to close out corrective/preventative actions immediately.
Contractor Site Manager	• The Contractor Site Manager is responsible for: • Demonstrating effective leadership to all Contractor personnel with respect to matters concerning the environment and implementation of the IMS at a project level. • Assisting the Project Manager to ensure the Project complies with all applicable requirements set out in the Environment Standards, IMS and legislation, including participating in management reviews and audits. • Reviewing environmental management performance on a monthly basis and supplying copies of reports to the Client. • Reporting significant incidents and emergency event to the Project Manager as soon as reasonable practicable. • Communicating environmental matters to Contractor personnel and Project personnel as required. • Ensure Contractor personnel comply with the Client's and Engineer's environmental requirements.
Contractor HSE Representative	• The Contractor HSE Representative is responsible for: • Assisting Contractor compliance with the CESMS. • Monitoring of environmental parameters and submission of environmental reports. • On-site liaison with the Client Environmental personnel as required. • Communicating environmental matters to Contractor personnel. • Providing environmental support to the Contractor Project Manager to ensure Contractor compliance with the requirements in the standards, IMS and legislation, including participating in management reviews and audits. • Supervise and train their personnel in order to meet the requirements of this CESMS.
All Personnel	• All project personnel are responsible for" • Compliance with the requirements and procedures set out in the CESMS. • Reporting incidents and near misses in a timely manner via the appropriate channels. • Being aware of the available environmental resources and requirements, as indicated in the Project environmental induction and this CESMS.

Developed in consultation with MWMCL a preliminary organisation chart for the project is shown in Figure 2.19.1.

2.20 CHANGE MANAGEMENT

Each contractor is accountable for the development and implementation of a system to ensure change, whether the change is planned or unplanned, does not increase risk of environmental impact or non-compliance.

The change management process must include the allocation and tracking of tasks associated with the proposed change.

All proposals for change must be documented and clearly identify:

- The current position and the proposed change; and
- The expected outcome.

All proposals for change by contractors must be assessed and submitted to the MWMCL Project Manager for approval. The assessment must identify:

- The impacts, hazards and controls associated with the proposed change; and
- Any further studies to be carried out, e.g. risk assessments, regulatory requirements which must be adhered to, and if a change is subject to trial and the duration and measures for the trial.

The change management process is to include changes to:

- Plant and equipment;
- Operating procedures;
- Design and construction; and
- Individual and organisational structures and accountabilities, personnel training or competency requirements.

2.21 ENVIRONMENTAL AND SOCIAL AWARENESS AND INDUCTIONS

All personnel conducting works on the Project site shall be made aware of their accountabilities and adequately trained to execute them. The environmental and social training and induction program will be modulated with a general environmental / social awareness induction received by every employee. As a minimum, the program will provide:

- A general level of environmental / social awareness;
- An overview of the environmental / social management system; and
- An understanding of the business benefits related to understanding of environmental / social management.

A Training Needs Analysis which includes a training matrix and a training schedule shall be developed for all project personnel and high risk contractors. Training records shall be retained including attendance sheets, training materials and competency assessments.

Personnel who undertake activities involving significant environmental / social risks (such as but not limited to clearing, maintenance and dust suppression) must be trained in the management and control of these risks and then assessed as competent.

Training shall be delivered by persons that are competent on the basis of appropriate education, training, experience and have a good understanding of the Project and its specific aspects and obligations.

Contractors shall develop inductions for their workforce which outline environmental / social aspects and controls specific to their scope of works. Contractors undertaking their own training and toolbox sessions are required to maintain their own training records. Contractor training records are to be kept on-site and accessible for auditing purposes.

2.22 COMMUNICATION

2.22.1 Internal Communication

Environmental requirements and responsibilities will be formally communicated to contractors prior to work via contract documents and kick-off meetings. During work, environmental matters shall be communicated both formally and informally through the following channels:

- Management meetings;
- Weekly HSE toolbox meetings;
- Daily pre-start meetings;
- Shift handover meetings;
- Noticeboards on site;
- Contract notification; and
- HSE interactions.

2.22.2 External Communication

Only the MWMCL Environmental Manager is responsible for external communication in relation to matters concerning the environment. This includes, but is not limited to, communications with the government agencies, particularly in relation to reporting of incidents that may have occurred. Communications with media agencies is the responsibility of MWMCL Public Relations group. All public complaints received by project personnel shall be directed to the MWMCL Project Manager immediately for action.

2.23 DOCUMENT CONTROL

The Engineering Department of MWMCL has established a document control system to encompass electronic and hard copy documentation, so that all documents including the CESMS can be:

- Easily located, stored and archived;
- Reviewed periodically for adequacy and approved before use; and
- Controlled to ensure that only current revisions of documents are available at required locations

These documents are managed as controlled documents and revisions will be re-submitted for approval. A copy of all relevant documents will be provided to Contractors.

2.24 OPERATIONAL CONTROL

This CESMS outlines the requirements for environmental and social management at an operational level. The CESMS is divided into a number of Environmental and Social Management Plans (EMPs / SMPs), each with a responsibility assigned.

2.25 INCIDENTS AND CORRECTIVE ACTIONS

Incidents include events that cause environmental impacts or harm as well as events involving non-compliance with internal procedures and 'near-miss' events which may or may not have resulted in an environmental impact. The purpose of incident reporting is to identify the root cause and implement controls to prevent recurrence. The procedures for incident management are outlined in the *Incident Reporting* EMP.

2.25.1 Environmental Incident Reporting

An Environmental Incident is an event that causes or may cause pollution, contamination or damage to the environment. Environmental incidents may also include complaints from the Public, Government Agencies or employees regarding environmental issues. Situations requiring reporting will range from minor to major significance.

The procedure for reporting incidents is covered in the *Incident Reporting* EMP.

2.25.2 Corrective Actions

Corrective actions may be generated from a number of sources, including but not limited to incidents, audits, inspections and management reviews. Actions will be systematically managed to ensure items raised are recorded and closed. Where corrective/preventative action is of critical importance, the Engineer will retain evidence

(documents, photographs, personnel statements) on file to demonstrate close out of the action.

2.26 MONITORING AND REPORTING

2.26.1 Monitoring

Monitoring and measurement is an important aspect of environmental management as it enables environmental performance to be measured against the objectives and targets described in the Environmental Management Programs. The collection of relevant environmental data should always be objective, verifiable, appropriate to prevailing business circumstances, and reproducible.

Environmental monitoring required under any permits, approvals and licences will be detailed in each of the various EMP elements within this document. Monitoring will be undertaken for:

- Vegetation clearing;
- Weed hygiene;
- Heritage sites;
- Dust;
- Hydrocarbons;
- Non-hazardous waste;
- Hazardous materials;
- Waste rock;
- Soil conservation;
- Acid rock drainage;
- Construction materials and earthworks;
- Access tracks, and roads;
- Soil erosion and sediment control;
- Surface water and groundwater;
- Sewage and wastewater;
- Fire safety;
- Noise and vibration;
- Greenhouse gas emissions;
- Concrete batch plant;
- Mobilisation and demobilisation;

- Ore transport and handling; and
- Blasting and Explosives.

2.26.2 Reporting

A monthly Environmental Report should be completed to record monitoring, progress and statistics. All contractors shall be required to complete and submit their own reports to the Project Manager on a weekly basis for input into project reports.

All contractors are required to maintain a record of their own fuel and energy usage related to the Project, including filing receipts and invoices for all fuel/lubrication/oil purchases. The Environmental Engineer will similarly maintain a register of its fuel purchases and maintain a repository of invoices.

Further detail is included in the *Reporting and Record Keeping EMP*.

2.27 INSPECTIONS AND AUDITS

Inspection and audit requirements are addressed in the various EMP elements within this document. In addition to field inspections, the Project will be required to participate in Client, Engineer and external audits as requested. The environmental inspections and audits are listed in Table 2.27.1.

Table 2.27.1: Environmental Inspections and Audits

Inspections and Audits	Frequency
External ISO 14001 EMS Audits	As Required
MWMCL EMS Audits	Quarterly
Engineer EMS Audits	Monthly
Workplace Inspections	Weekly
Legal and Other Requirements	Quarterly
Activity related inspections, including Borrow Pit inspections, visual inspection of trenches for fauna etc.	As Required – See relevant EMP

The above environmental management audits will be conducted during the life of the Letpadaung Project to ensure compliance with legal, IMS and CESMS requirements, demonstrate compliance and ensure any non-compliance is identified and corrected. An audit and inspection programme or schedule will be developed within 1 month of commencement on site to plan and time the audits appropriately.

To ensure MWMCL compliance with the CESMS an independent monitoring team will be appointed to oversee and audit the construction activities. The committee will comprise representatives from an international environmental consultant, an

independent Myanmar environmental consultant, and the local community. The team leader will report to the IC directly. The verification and auditing process from this team will be completely independent from MWMCL and is not discussed herein.

2.28 MANAGEMENT REVIEW

This CESMS will be reviewed by the MWMCL management team quarterly and/or following any scope changes. Any revision of this document shall be forwarded to MWMCL management for approval, and revision updates will be recorded as part of document control.

2.29 CONTINUOUS IMPROVEMENT

The CESMS will be maintained by MWMCL Environmental Manager or his representative, who will utilise the various audits, reporting, and tracking tools outlined in this CESMS to identify opportunities for improvement of the CESMS, which will lead to improved environmental performance for the Project.

The objectives are to:

- Determine the root cause(s) of nonconformities or deficiencies;
- Implement a plan of corrective and preventative action to address root causes;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Enable tracking against the environmental objectives and targets.

The following tools will be used to meet the above objectives:

- Incidents and Corrective Actions Register: this will be developed and maintained on site, recording the details of incidents and outcomes of incident investigations;
- Audits and management review: this will be used to review the implementation and effectiveness of this CESMS, determine and record the root cause(s) of non-conformities or deficiencies, and identify and implement corrective actions; and
- Environmental Reporting: reporting of environmental indicators and statistics enables tracking of environmental performance and identification of opportunities for improvement.

2.30 CONTRACTOR ENVIRONMENTAL MANAGEMENT PLANS

All contractors shall submit a detailed Work Scope specific Environmental Management Plan (EMP) or equivalent that is relevant for their specific portion of the works. No works shall commence prior to plan approval by MWMCL.

Each EMP will incorporate as a minimum:

- Scope of works and indicative project schedule;
- Environmental constraints & legal obligations;
- Potential environmental hazards / impacts associated with the works to be undertaken;
- Contractor accountabilities and requirements;
- Environmental Awareness and Inductions;
- Environmental performance objectives and indicators, (providing a guide for contractor self-assessment of performance);
- Job specific environmental management strategies to control environmental impacts and risks that ensure compliance with the requirements of this CESMS;
- Hazard impact / risk assessment and controls procedure;
- Incident Reporting, Classification and Analysis;
- Environmental aspects associated with Emergency Response; and
- Reference to relevant Standards, Guidelines, MWMCL IMS documentation, this CESMS, or new project-specific procedures which provide further details regarding how significant risks are to be controlled.

The community and social aspects of the construction work are very sensitive and need to be managed carefully, in consultation with MWMCL community representatives. Prior to commencing construction socially sensitive work areas or activities shall be clearly identified by the Contractor, in consultation with the MWMCL Community Relations team, and appropriate hold points shall be determined.

3. ENVIRONMENTAL MANAGEMENT PLANS

Environmental Management Plans (EMP) have been developed to address key environmental risk and impacts.

For each relevant environmental aspect associated with the construction activities, the procedures detail the:

- Objectives;
- Targets;
- Roles and Responsibilities;
- Management Actions;
- Control Procedures;
- Monitoring and Reporting; and
- Performance Indicators.

All personnel and Contractors are required to conform to the requirements of the Environmental Management Plans outlined in the following sections.

Contractors undertaking works on the Project shall prepare and implement an Environmental Management Plan with specific environmental procedures for their portion of the works. Contractor EMP and procedures are to conform with the requirements of this CESMS and legal requirements that are applicable to the Project.

3.1 **EMP 01 – INDUCTION, TRAINING & POLICIES**

3.1.1 Introduction

The Induction, Training and Policies Management Plan is designed to ensure that all project personnel engaged in the construction of the Project, particularly the site-based workforce, understand the key environmental sensitivities of the site and their responsibilities. Through effective inductions and training, awareness towards the environment and compliance with relevant Environmental & Community Policies and legal obligations is enhanced. The plan also describes the base necessities which should be included in the Project Site Induction.

3.1.2 Objectives

The objectives of this Management Plan are to:

- To ensure that all project personnel understand the key environmental sensitivities of the Letpadaung Project Site, the environmental management actions and their responsibilities, through effective inductions and training;
- Define targets;
- Define roles and responsibilities;
- Define the basic contents of the Project site induction for environmental purposes; and
- Define monitoring and recording requirements.

3.1.3 Targets

The targets of this Management Plan are:

- All personnel and Contractors to have completed the Project site induction prior to their commencing work on site; and
- Outline the environmental training needs of key personnel.

3.1.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to inductions and training as outlined in the RACI in Table 3.1.1.

Table 3.1.1: Roles & Responsibilities – Induction, Training & Policies

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL Environment Team
Develop an induction and training management plan	I	R	I	C/A
Introduce inductions and Project related training to the workforce	C/A	R	C/A	C/A
Monitor inductions and training across the project	I	R	C/A	I
Record and report inductions plus Project related training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to inductions and training (or lack of)	C/A	R	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Project Manager who shall report on progress to the MWMCL General Manager.

3.1.5 Management Actions

1. Mandatory completion of the Project Site Induction for all project personnel and Contractors prior to commencement of work on site.
2. The Project Site Induction shall include the following as a minimum:
 - MWMCL Values and Environmental Policies;
 - Site specific environmental and heritage aspects;
 - Key legal and approvals requirements;
 - Clearing procedure;

- Weed management and vehicles hygiene;
 - Hydrocarbon and hazardous materials management;
 - Spill response;
 - Heritage sites including their identification and avoidance;
 - Threatened Flora/Fauna and feral animal requirements;
 - Topsoil management;
 - Dust Control;
 - Fire management;
 - Surface and groundwater management;
 - General housekeeping, rubbish and waste management;
 - Workforce management;
 - Incident reporting procedures;
 - Report and record keeping;
 - Emergency response; and
 - Stop work authority in the event that an un-safe or environmentally hazardous activity is about to take place.
3. The Project Site Induction shall be reviewed at least bi-annually all personnel shall have an induction refresher training bi-annually, or if they have been absent from site for more than six (6) months.
 4. Site Environmental Team to attend Contractor pre-start meeting and weekly meetings.
 5. Formal training sessions for high risk activities including clearing, hydrocarbon management and saline water management shall be conducted for relevant personnel. A training register should be developed to highlight training required for specific personnel and plant operators.
 6. Monthly Environment Report completed. This includes the recording of environmental lead indicators such as training sessions held.

3.1.6 Monitoring & Inspection

Monitoring of Inductions and Training shall be as follows:

- An environmental report shall be completed on a monthly basis and shall include the attendance to training and inductions on site. Report to be submitted to the Client; and

- Contractors are to maintain a training register to track competence achieved. The Environmental Team will inspect the register on a monthly basis.

3.1.7 Performance Indicators

Measurement of the performance of Inductions and Training shall be as follows:

- Prior to commencing work on site, all personnel, Contractors and subcontractors have attended the Project Site Induction. Attendance is recorded and reported; and
- Contractors are to maintain a training register to track competence achieved.

3.1.8 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.1.2.

Table 3.1.2: Auditing & Reporting for Induction, Training and Policies

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Inductions	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.2 **EMP 02 – INCIDENT REPORTING**

3.2.1 Introduction

An Environmental Incident is an event that causes or may cause pollution, contamination or damage to the environment. Environmental incidents may also include complaints from the Public, Government Agencies or employees regarding environmental issues. This EMP describes the procedure to follow for Environmental Incident Reporting.

3.2.2 Objectives

The objectives of this Management Plan are to:

- Establish Procedures for construction, operations and closure activities to guide the Project Management Team and other project contractors on Environmental Incident Reporting;
- Define targets;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.2.3 Targets

The targets of this Management Plan are to:

- Achieve an efficient and usable Environmental Incident Reporting system;
- Continually improve environmental performance by assessing environmental effects of activities and regularly monitoring and reviewing environmental performance; and
- Minimise disturbance to the environment and the local community.

3.2.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to incident reporting as outlined the RACI in Table 3.2.1.

Table 3.2.1: Roles & Responsibilities – Incident Reporting

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop an incident reporting management plan	R	C/A	I	C/A
Introduce incident reporting to the workforce	C/A	R	I	C/A
Monitor incident reporting across the project	I	R	C/A	I
Record and report incidents plus related training of personnel	I	R	R	C/A
Develop a tracking system for all Project incidents.	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Senior Management Team who shall report on progress to the MWMCL General Manager.

3.2.5 Management Actions

All incidents must be reported. Environmental incidents include:

- Non-compliance with environmental procedures and the CESMS;
- Ground disturbance outside approved areas;
- Unauthorised disturbance of an exclusion site; including Heritage and Endangered Flora;
- All hydrocarbon and chemical spills;
- Legal non-compliance;
- Flora / fauna injury or death;

- Excessive erosion or generation of sediment laden run-off;
- Contamination of aquifers;
- Release of acidic water from waste rock dumps;
- Failure to meet commitments made to the community under the Community and Social Development (CSD) Plan;
- Inability to meet commitments made to landholders during land access and compensation negotiations;
- Unplanned threats to community safety and security;
- Impacts on the community which were not identified and mitigated in a management plan;
- Impacts in excess of those identified and mitigated;
- Any action contrary to the policies described in Section 2.2;
- Sewage and waste water spills; and
- Community complaints or grievances.

All incidents must be reported immediately or as soon as practicable, and recorded in accordance with the procedures set out below.

Incidents will be investigated to determine the root cause and identify corrective action to prevent recurrence.

3.2.6 Control Procedures

- All incidents must be reported immediately or as soon as practicable.
- Immediate action must be taken to control the situation and minimise impacts, including:
 - Stop all work activity;
 - Notify emergency services;
 - Make the area safe and preserve the scene of the incident;
 - Ensure any immediate hazards are adequately controlled; and
 - Preserve any evidence that may assist in the investigation.
- Incident reporting is to be carried out using the Incident Report Form Template, which is included in Annex A of the *Incident Reporting* EMP.

3.2.7 Monitoring & Inspection

- Incident reporting procedures are to be audited quarterly; and

- An Incident Register is to be maintained by MWMCL and each Contractor which will be audited on a monthly basis.

3.2.8 Performance Indicators

- All incidents, near misses and hazards reported as per this Management Plan; and
- All actions arising are closed out within the correct timeframe within a month unless otherwise agreed with the MWMCL General Manager.

3.2.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.2.2.

Table 3.2.2: Auditing & Reporting – Incident Reporting

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents reporting	• Monthly by Project Manager	• Quarterly by Environment Manager
Corrective actions	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

ANNEX A
INCIDENT REPORT FORM



INCIDENT INVESTIGATION REPORT FORM

INCIDENT REFERENCE:

IDENTIFYING INFORMATION	1. INCIDENT IMPACT (May select more than one)		COMMUNITY ☐ PROCESS ☐ ENVIRONMENT ☐ SECURITY ☐ HEALTH ☐ SAFETY ☐ QUALITY ☐			
	2. COMPANY OR DIVISION		3. DEPARTMENT			
	4. INCIDENT LOCATION		5. DATE & TIME OF INCIDENT		6. DATE & TIME OF REPORT	
	7. PEOPLE INVOLVED	FIRST NAME:		ROLE IN INCIDENT:		
SURNAME:		Injured/ Ill Person ☐ Incident Reporter ☐				
COMPANY:		Eye Witness ☐ Other..... ☐				
FIRST NAME:		ROLE IN INCIDENT:				
SURNAME:		Injured/ Ill Person ☐ Incident Reporter ☐				
COMPANY:		Eye Witness ☐ Other..... ☐				
RISK	8. ACTUAL CONSEQUENCE		9. MAXIMUM POTENTIAL CONSEQUENCE		10. PROBABILITY OF OCCURRENCE	
	Near Miss / Hit ☐ Serious ☐		Minor ☐ Major ☐		Almost Certain ☐ Unlikely ☐	
	Minor ☐ Major ☐		Medium ☐ Catastrophic ☐		Likely ☐ Rare ☐	
	Medium ☐ Catastrophic ☐		Serious ☐		Possible ☐	
DESCRIPTION	11. SHORT DESCRIPTION (Incident Title)		12. ACTIVITY AT THE TIME OF INCIDENT (e.g. Driving, welding)			
	13. LONG DESCRIPTION (Describe the sequence of events leading to the incident as well as what finally happened. Attach additional pages, sketches as required).					
IMMEDIATE ACTIONS	14. WHAT IMMEDIATE ACTIONS WERE TAKEN? E.(e.g. Including First Aid Treatment / Containment Actions)					
CAUSE ANALYSIS	15. IMMEDIATE CAUSES: WHAT SUBSTANDARD ACTS / PRACTICES AND CONDITONS CAUSED OR COULD CAUSE THE EVENT?					

CAUSE CHECKLIST	16. IMMEDIATE CAUSES: CHECK ALL APPLICABLE SUBSTANDARD ACTS / PRACTICES ☐ Operating Equipment without Authority ☐ Failure to follow Procedures / PPE ☐ Improper lifting / position ☐ Failure to Warn ☐ Removing Safety Devices ☐ Servicing Equipment in Operation ☐ Failure to Secure ☐ Using Defective Equipment ☐ Horseplay ☐ Operating Incorrectly ☐ Improper Loading ☐ Under Influence of Alcohol / Drugs																																									
	17. BASIC CAUSES PERSONAL FACTORS ☐ Inadequate Capability ☐ Lack of Knowledge ☐ Lack of Skill / Training ☐ Stress ☐ Improper Motivation JOB / SYSTEM FACTORS ☐ Inadequate Leadership ☐ Inadequate Engineering ☐ Inadequate Maintenance ☐ Inadequate Equipment ☐ Abuse or Misuse			18. TYPE OF CONTACT ☐ Struck Against ☐ Struck By ☐ Caught In / On ☐ Caught Between ☐ Slip ☐ Fall CONTACT WITH: ☐ Electricity ☐ Heat / Cold ☐ Radiation ☐ Noise / Vibration ☐ Toxic or Noxious Substances																																						
ESTIMATED COSTS & LOSSES	19. PROPERTY DAMAGE: 		22. ESTIMATED COSTS: <table border="1"> <thead> <tr> <th></th> <th>Hours</th> <th>Cost</th> <th></th> <th>Hours</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>Investigation / Analysis</td> <td></td> <td></td> <td>Administration</td> <td></td> <td></td> </tr> <tr> <td>Training / Retraining</td> <td></td> <td></td> <td>Replacement / Repair / Modify</td> <td></td> <td></td> </tr> <tr> <td>Medical Treatment</td> <td></td> <td></td> <td>Process Loss</td> <td></td> <td></td> </tr> <tr> <td>Replacement Personnel</td> <td></td> <td></td> <td>Other (Specify)</td> <td></td> <td></td> </tr> <tr> <td>Clean-up</td> <td></td> <td></td> <td>TOTAL</td> <td></td> <td></td> </tr> </tbody> </table>					Hours	Cost		Hours	Cost	Investigation / Analysis			Administration			Training / Retraining			Replacement / Repair / Modify			Medical Treatment			Process Loss			Replacement Personnel			Other (Specify)			Clean-up			TOTAL		
		Hours	Cost		Hours	Cost																																				
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Replacement Personnel			Other (Specify)																																							
Clean-up			TOTAL																																							
20. NATURE OF DAMAGE: 																																										
21. OTHER ACTUAL OR POTENTIAL LOSS 																																										
23. REMEDIAL ACTIONS: WHAT HAD AND / OR SHOULD BE DONE TO CONTROL THE CAUSES LISTED? 																																										
ACTION PLAN	24. NAME & SIGNATURE OF INVESTIGATOR: 				25. DATE & TIME: 																																					
	26. REVIEWER'S REACTIONS TO THE INVESTIGATION ANALYSIS OF THE BASIC CAUSES OF THIS INCIDENT AND THE REMEDIAL ACTIONS DIRECTED AT POSSIBLE INADEQUACIES IN THE SYSTEM, ITS STANDARDS OR COMPLIANCE TO THE STANDARDS. 																																									
FINAL REVIEW	27. NAME & SIGNATURE OF REVIEWER: 				28. DATE & TIME: 																																					

Environmental Incident Classification Guide

Consequence	Near Miss / Hit	Minor	Medium	Serious	Major	Catastrophic
Environment – on site		Near-source confined & promptly reversible impact	Near-source confined & short-term reversible impact	Near-source confined & medium-term recovery impact	Impact that is unconfined and requiring long-term recovery, leaving residual damage	Impact that is widespread, unconfined impact, requiring long-term recovery, leaving major residual damage.
Environment – off site		Not Applicable	Near-source confined and promptly reversible impact.	Near-source confined and short-term reversible impact	Near-source confined & medium-term recovery impact	Impact that is unconfined and requiring long-term recovery, leaving residual damage
Reputation		Damage to reputation of work area within an operation	Damage to reputation of several work areas within an operation. One off public exposure in local media, word of mouth or local mythologies.	Damage to reputation of Business Unit. Significant public exposure in local media.	Damage to reputation of Product Group. Criticism from national NGO which impacts credibility with neighbours/regional government. Public exposure in national media.	Damage to reputation of Myanmar Wanbao. Criticism from International NGO. Public exposure in international media.
Conformance / Compliance		Non-conformance with internal operational procedure with low potential for impact.	Non-compliance with external standard or operational procedure with low potential for impact.	Non-compliance with moderate potential for impact e.g.. One-off non-compliance with work permit or licence.	Breach of licences, legislation, regulation or repeated noncompliance with high potential for prosecution. Non-conformance with Corporate or Product Group work cycles or standards.	Events resulting in suspended or severely reduced operations imposed by regulators.
Community – Socio Economic		Not Applicable	Low level community dissatisfaction.	Censure in local media.	Significant harm with wider group implications.	Permanent or irreversible harm.
Community – Cultural Heritage		Community complaint resolved via existing site procedures.	Non-compliance with corporate standards.	Repairable damage to site or item of cultural significance.	Irreparable damage to site or item of cultural significance. Breach of licences or non-compliance with community agreement.	Irreparable damage to site or item of cultural significance.
Community - Outrage		Isolated incident	Low level community dissatisfaction.	Repeated community complaints requiring site management or business unit response.	Severe, prolonged local community resistance greater than 1 year/public exposure in national media.	Severe, prolonged local community resistance greater than 3 years/public exposure in international media.

Consequence	Near Miss / Hit	Minor	Medium	Serious	Major	Catastrophic
AIR QUALITY						
	Minor dust emission	Internal dust incident reports, community dust / noise complaints, and other environmental related matters. Dust levels at an off-site monitoring location exceeds the target and MWMCL contributed >50%. Environmental related complainants not responded to in accordance with Myanmar Wanbao community complaints procedure.	Dust levels at an off-site monitoring location exceeds the PM10 / PM2.5 target twice within a seven day period .			
WATER						
	Leaking water valve / tap, or minor dust or process material loss.	Internal administrative non-compliance against water management procedure or plan. Ongoing water leak which has not been addressed despite being reported.	Discharge to riverine environment which has resulted in temporary elevated suspended solids levels that may impact on aquatic life and downstream users. The company is likely to attract the attention of the regulators for not complying with environmental commitments.		Discharge to marine / riverine environment which has resulted in mobilisation of a contaminant that is toxic to marine / aquatic life. The company is likely to be prosecuted.	
WASTE						
	Incorrect waste segregation (non-hazardous) (e.g. food scraps in recycling bin).	Failure to follow internal waste segregation requirements. Technical non-compliance with controlled waste paper work (tracking)	Non-compliance with internal standards or procedures that causes or has the potential to cause environmental harm. Controlled waste sent to an unlicensed facility or use of an unlicensed transporter	A waste management practice that results in localised contamination.	A major WRD slope failure or rockfall leading to loss of life	

Consequence	Near Miss / Hit	Minor	Medium	Serious	Major	Catastrophic
LAND						
Flora / Fauna Injury or Death		One to several native animal deaths or injuries as a direct result of an event at our operations. Including vehicle death of animals. (e.g. due to uncapped drill hole, water bore or open drain)	Multiple native animal, or singular rare and endangered animal, death(s) or severe injury as a direct result of an event at our operations. Environmental harm caused to flora as a direct result of our operations e.g. vegetation death from rising or falling groundwater	Severe flora and/or fauna death as a direct result of our operations. Unauthorised disturbance of declared rare flora. Assessed on an individual basis.		
Fire		A fire caused by the operation (e.g. welding) that is out of control or takes some time to control on mining lease	A fire caused by the operation (e.g. welding) that is out of control or takes some time to control off mining lease			
Clearing – Biological		Minor clearing conducted without a permit, but upon review it is found that the activity is within Tenure and has had biological surveys completed.	Clearing an area without biological surveys and no destruction of significant flora or fauna.	Activities that resulted in loss of rare flora without approval. Note: this is also a non-compliance	Activities that resulted in the loss of multiple species of rare flora without approval. Note: this is also a non-compliance	
Clearing - Heritage		Impacting a heritage buffer zone with no impact to the site	Non-compliance with the specific term/s and or condition/s detailed on the permit.	Any impact to a Heritage site that is reparable (e.g. driving a vehicle through a Heritage site).	Permanent damage to or loss of a heritage site.(E.g. destruction of artefacts scatter)	
HAZARDOUS MATERIALS						
SPILL – HYDROCARBON & CHEMICAL						
Hydrocarbon / chemical spill (On Lease) – Unsealed Ground	Failure to close bund valve (no spill or environmental impact) Storage of incompatible substances (with no environmental impact)	Minor spills or leaks (<200L) onto unsealed ground, away from environmentally sensitive areas, that causes negligible harm. Spill or leak (>200L) onto unsealed ground (no potential impact to groundwater) and is recoverable.	Moderate spills (>20L) that cannot be immediately recovered, however does not cause significant harm. i.e. no impact on surface or ground waters, and will not impact on flora/fauna.	Large spills or leaks that result in significant environmental harm that cannot be immediately recovered. This includes large areas of soil or surface water contamination. Assessed on an individual basis.		

Consequence	Near Miss / Hit	Minor	Medium	Serious	Major	Catastrophic
Hydrocarbon / chemical spill (On Lease) - Unlined Drain / Waterway		A minor spill (<20L) into an unlined drain or natural waterway, but remains on lease. Includes in-pit dewatering sumps.	A minor spill (>20L) into an unlined drain or natural waterway, but remains on lease. Includes in-pit dewatering sumps.			
Hydrocarbon / chemical spill (On Lease) - Concrete/Bund	Oil drops on hard surface / bund (< 1 litre)	A spill onto a sealed surface where the spill is fully contained and immediately recoverable.	A > 5000L spill onto a sealed surface where the spill is recoverable / cleaned up.			
Hydrocarbon / chemical spill (Off-Lease) - Ground/Surface Waterway		Spill (<20L) off lease that causes negligible harm and is immediately recoverable	Spill (>20L) off lease that causes negligible harm and is immediately recoverable	Spill (>20L) off lease that causes significant harm. Impact to surface or groundwater, flora or extensive soil contamination Assessed on an individual basis.		Spill which results in negative public exposure through national or international media. The company is being queried and reputation loss is certain.
Hydrocarbon / chemical spill (Off-Lease) – Ocean / marine environment		Minor spill (<20L) into ocean	Spill (>20L) into the ocean. With no impacts to marine or shoreline and immediately recoverable Level may depend on material spilled, hydrocarbon or biodegradable oil	Spill with significant impact to marine environment or shoreline and not immediately recoverable Assess on individual basis	Assessed on an individual basis. (e.g. diesel tanker spill into river)	Vessel runs aground and all hydrocarbons on board are lost to the marine environment.
SPILL - SEWAGE						
Sewage Spill		A minor spill (<1000L) of untreated sewage.	Sewerage spill (>1000L) that is uncontained within towns or outside boundary of sewerage treatment facilities.	A large spill of untreated sewage that causes significant environmental harm to undisturbed land and/or natural waterways. Assessed on an individual basis.		

Probability of Occurrence

Likelihood	Descriptor	Frequency
Almost Certain	Recurring event during the life-time of an operation / project.	Occurs more than twice per year.
Likely	Event that may occur frequently during the life-time of an operation / project.	Typically occurs once or twice per year.
Possible	Event that may occur during the life-time of an operation / project.	Typically occurs in 1 – 10 years.
Unlikely	Event that is unlikely to occur during the life-time of an operation / project.	Typically occurs in 10 – 100 years.
Rare	Event that is very unlikely to occur during the life-time of an operation / project.	Greater than 100 year event.

3.3 **EMP 03 – CLEARING AND GROUND DISTURBANCE**

3.3.1 Introduction

The Clearing and Ground Disturbance Management Plan is designed to ensure the minimisation of impacts related to clearing during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for clearing and ground disturbance management, control procedures, monitoring and reporting.

Vegetation clearing and ground disturbance during the Project has the potential for significant environmental impacts to significant flora, fauna, vegetation or heritage sites. Further, unauthorised ground disturbance may result in significant breach or regulatory approvals or other non-conformances. Compliance with this procedure is mandatory.

3.3.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities;
- Define monitoring and reporting procedures;
- Minimise vegetation disturbance;
- Protect heritage and environmental sites;
- Maintain the abundance, diversity, broad scale geographic distribution and productivity of flora species, ecological communities and fauna habitat through heritage and environmental sites;
- Maintain the integrity, ecological functions and environmental values of soil and landforms in the Project area;
- Avoid breaches or non-conformances; and
- Utilise existing cleared areas, or areas required for future operations for temporary construction access and working areas.

3.3.3 Targets

The targets of this Management Plan are to:

- Achieve zero unauthorised clearing incidents;
- Total Project clearing to remain within approved limits;

- 100% compliance with the Project clearing procedure;
- Replanting of equivalent areas of degraded land, such as old borrow pits, with the community;
- Replanting of plantation areas to compensate for vegetation cleared that was previously harvested for firewood;
- No unapproved impact on known conservation significant species; and
- No significant change in the condition or composition of native vegetation outside of direct disturbance areas attributable to the Project activities.

3.3.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to clearing and ground disturbance as outlined the RACI in Table 3.3.1.

Table 3.3.1: Roles & Responsibilities – Clearing and Ground Disturbance

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a clearing and ground disturbance plan and clearing permit procedure	C/A	C/A	I	R
Introduce strategies to minimise clearing by the workforce	C/A	C/A	I	R
Monitor ground disturbance across the project	I	R	C/A	I
Record and report ground disturbance plus related training of personnel	I	C/A	C/A	R
Develop a tracking system for incidents related to clearing and ground disturbance	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.3.5 Management Actions

1. The Project Ground Disturbance and Clearing Procedure must be followed by all personnel and contractors planning clearing or ground disturbing works on site.
2. A Clearing Permit is required for initial vegetation clearing and associated topsoil collection and stockpiling. The permit process is outlined below under Control Procedures.
3. All contractors and personnel involved with ground disturbance and clearing must have been inducted on the Project Ground Disturbance and Clearing Procedure prior to works.

3.3.6 Control Procedures

Clearing Permit

1. Clearing shall be minimised to incorporate the footprint of the required infrastructure and where practicable make use of existing / historic clearing. This will be managed by the relevant Supervisor through the Clearing Permit Process.
2. A Clearing Permit for the proposed work is required to be obtained by the contractor responsible for the planned clearing works.
3. A drawing of the proposed work area must be provided which contains:
 - Boundaries, including coordinates, of clearing and infrastructure locations;
 - The footprint of any infrastructure to be constructed;
 - Locations of known avoidance sites (Heritage and flora / fauna etc.);
 - Any existing tracks or roads;
 - Any significant creeks or drainage lines;
 - Proposed topsoil and subsoil locations and volumes, and vegetation stockpile areas; and
 - Data is to be provided in suitable electronic format.
4. Clearing drawings shall be approved prior to authorisation of Clearing Permit Forms.
5. Clearing Permit Forms shall be reviewed by the Site Environmental Team and approved where works are shown to be compliant with all approvals, legal requirements and this CESMS.

Survey, Pegging and Pick Up

1. The area to be cleared must be pegged and flagged by a surveyor and a member of the MWMCL Environment team prior to authorisation of the Clearing Permit. Pegging shall be checked and signed off by the Site Environmental Team prior to approval of the works.
2. Avoidance areas within in the Clearing Boundary or within 50 metres of the clearing boundary shall be demarcated and the conditions specified on the Clearing Permit prior to works commencing.
3. Large trees and potential habitat trees are to be marked and avoided as far as practicable throughout the construction project.
4. Surveyors must pick up the actual area cleared, including topsoil stockpiles and all disturbance areas. This information is to be submitted for inclusion into Environmental reporting.

Clearing

1. An member of the Environmental Team is to be present for all boundary clearing and clearing adjacent to exclusion areas.
2. Vegetation shall be removed and stockpiled separate from topsoil for later return.
3. Large trees (where avoidance is inescapable) shall be salvaged during clearing and stockpiled for use during rehabilitation.
4. Topsoil and subsoil shall be stripped prior to earthworks and managed in accordance with the *Soil Management* EMP.
5. No burning of cleared vegetation is permitted at any time.

General Conditions

1. Vehicles and machinery shall only use designated tracks / roads.
2. Laydown, parking and other storage areas shall be located in Clearing Permit areas only. Where practicable, existing cleared areas shall be used for laydown areas.
3. Works will cease in the event of the discovery unrecorded Heritage sites or artefacts and will be managed in accordance with the *Heritage Management* EMP.
4. Rehabilitate surplus areas as soon as practicable to facilitate fauna habitat restoration and to reduce dust generation.
5. Clearing and topsoil stripping shall not be undertaken during weather conditions likely to generate excess dust or when ground conditions are wet.

6. Native fauna (including Elds Deer and Myanmar Hare) shall be relocated to the nature conservation reserve (near the S&K mine), should they be discovered during clearing and ground disturbance works.

Emergency Ground Disturbance

1. Under any emergency conditions there remains a requirement to avoid damage to known Heritage and other avoidance sites.
2. If emergency situations arise that could result in irreversible damage to a significant portion of the environment, ground disturbance may be conducted without a Clearing Permit provided critical protection areas are considered and clearing is under the direction of the Emergency Controller.
3. Examples of this type of circumstance include an uncontrolled fire, major environmental incident or life threatening accident. Any emergency ground disturbance work must be reported as soon as practicable.

Post-Ground Disturbance

1. Upon completion of clearing activities, the Site Environmental Team will inspect the area and the Clearing Permit will be closed out.
2. All flagging no longer in use will be removed from the site and disposed of appropriately.

3.3.7 Monitoring & Inspection

- The Site Environmental Team will inspect operational areas during and after clearing activities to ensure only authorised clearing is being undertaken;
- Cleared areas shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS database; and
- Unauthorised clearing and non-compliance with Clearing Permits shall be reported as an incident through the Incident Reporting process.

3.3.8 Performance Indicators

- All clearing activities within approved areas; and
- A Clearing Permit form is complete and in place for all vegetation clearing as per this EMP.

3.3.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.3.2.

Table 3.3.2: Auditing & Reporting - Clearing and Ground Disturbance

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Clearing related Incidents or accidents reporting	Monthly by Project Manager	Quarterly by Environment Manager
Clearing Permit Register	Monthly by Project Manager	Quarterly by Environment Manager
Recording of areas cleared	Weekly by Project Manager	Monthly by Environmental Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

ANNEX A
CLEARING PERMIT FORM



Clearing Permit

SECTION 1 – CLEARING REQUEST

Contractor	1. Project Details		MWMCL Reference:
			Contractor Reference:
	Project Name:		Date:
	Requestor's Name:		Contractor / Position:
	Location of Clearing:		
	Purpose of Land Clearing:		
	Total Disturbance Area (ha):		Proposed Date to Commence Clearing:
	Estimated Topsoil Volume to be Recovered (m ³):		Expected Date of Completion:
	Machinery to be Used: GPS Fitted:		Electronic File Reference:

SECTION 2 – REVIEW

Site Environmental Manager			Conditions/Instructions
	The activities proposed in this clearing request comply with the scope of work for the Project.	☐	
	All avoidance areas have been demarcated as required the Project. Demarcation has been checked in the field.	☐	
	Topsoil stockpile locations have been identified and included on the clearing map. Buffer distances from drainage lines and future works are adequate.	☐	
	Weed populations within the clearing request area have been identified and controls put in place.	☐	
	The area to be cleared has been checked against site limits and is within the site allocation and/or other approvals. Any approvals associated with this permit are:	☐	
	A Borrow Pit Management Plan has been received and reviewed against Project requirements (where applicable):	☐	
	A map has been attached that clearly shows the clearing area; avoidance areas; topsoil stockpiles; and weed locations.	☐	
	General Conditions:		
	Site Environmental Manager: _____ Signed: _____ Date: _____		
	Is the area of clearing requested required for the scope of the work:	☐	
Senior Project Representative: _____ Signed: _____ Date: _____			

SECTION 3 – AUTHORISATION TO CLEAR

Prior To Clearing Commencing	Boundary pegging has been checked using a GPS and is clearly visible	☐		
	All avoidance areas demarcated as required by the Project.	☐		
	All pegging not required for this clearing has been removed	☐		
	A pre-start meeting been completed involving all persons involved in the clearing	☐		
	A JHA identifying risks specific to this clearing been completed and is attached to this permit	☐		
	The boundary of the area to be cleared has been walked with all persons involved in the clearing	☐		
	A Spotter is onsite and has radio communication with the equipment Operator	☐		
	The Supervisor, Operator and Spotter have completed the site induction and clearing related training	☐		
	MWMCL Environmental Manager:		Signed:	Date:
	Senior Project Representative:		Signed:	Date:
	Contractor Supervisor:		Signed:	Date:
	Contractor Operator:		Signed:	Date:

SECTION 4 – PERMIT CLOSE OUT

Subsequent To Clearing	The area cleared has been inspected for compliance and conditions in Section 2 of this permit	☐		
	Environmental incidents associated with this clearing permit have been reported to MWMCL	☐	Incident Reference:	
	Areas not required for permanent infrastructure have been rehabilitated to MWMCL requirements	☐		
	The area cleared has been surveyed and the electronic file provided to the MWMCL Environmental Manager	☐		
	The area rehabilitated has been surveyed and the dxf file provided to the MWMCL Environmental Manager	☐		
	The Project Topsoil Stockpile Register has been updated	☐		
	The Project Clearing Permit Register has been updated with all survey information	☐		
	Contractor Supervisor:		Signed:	Date:
	MWMCL Environmental Manager:		Signed:	Date:

MWMCL Land Clearing Permit Procedure

Overview

This Procedure outlines the minimum steps to be taken on site prior to, during and following any land clearing on MWMCL Project Sites.

All steps outlined in this Procedure are mandatory and variations to this Procedure must be approved by the MWMCL Environmental Manager and supported by a risk assessment. Clearing procedures that are developed by MWMCL Contractors must meet the requirements of this procedure and be approved by the MWMCL Environment Manager.

All activities that meet the definition of 'land clearing' (section 3) shall be completed under a valid clearing permit.

No land clearing work is to be undertaken until a Clearing Permit has been issued.

Training and Competency

All personnel involved in clearing are to complete training that provides an overview of this procedure and the risks associated with land clearing including legal prosecution.

Where possible, Operators and Spotters experienced in land clearing should be utilized for all boundary clearing.

Clearing Permit Process

1. Clearing Request

The Contractor proposing to undertake the clearing work is required to complete Section 1 of the clearing permit form.

All required information is to be submitted to the MWMCL Environmental Manager at least 72 hours prior to the proposed start of clearing.

A labelled drawing detailing the proposed clearing area, avoidance areas and other relevant information is to be submitted along with the Clearing Request.

The Contractor is responsible for surveying and pegging the clearing permit boundary.

2. Review

The MWMCL Environmental Manager is responsible for reviewing the clearing request area and completing Section 2 of the clearing permit form.

Avoidance sites that are required to be demarcated are to be checked in the field.

The clearing request area is to be checked to identify any weed populations in the area. Where weeds are located within the clearing request area adequate controls to mitigate weed transfer are to be included as conditions.

Following review of the Clearing Request, the MWMCL Environmental Manager is to detail any general conditions and sign the permit.

The MWMCL Senior Project Representative must confirm that the area of clearing requested does not exceed what is required for the scope of the permit and sign the

permit.

If no modifications are required, the clearing permit form (completed up to Section 3) is to be returned to the Contractor within 72 hours of receiving the permit.

3. Authorisation to Clear

The Contractor is to notify the MWMCL Environmental Manager or delegate that the clearing request area has been pegged.

Prior to undertaking the clearing, the MWMCL Environmental Team is to inspect all boundary pegging. The following should be checked during the inspection:

- Peg locations for obvious errors;
- Missing peg flagging;
- Adequacy of peg spacing;
- Visibility of pegs; and
- That all unrelated pegs have been removed.

Prior to undertaking the clearing the MWMCL Environmental Team is to inspect all avoidance sites to ensure demarcation is adequate.

Prior to commencing work, a pre-start meeting is to be held onsite involving all persons involved in the clearing.

Following a pre-start meeting a JHA is to be completed and reviewed by all team members. The JHA is to be attached to the clearing permit.

The JHA is to be reviewed on each subsequent day of clearing. Where there is a change in Contractor Supervisor, Operator or Spotter, the oncoming employee is to sign on to the JHA and a handover addressing all aspects is to occur.

The boundary of the area to be cleared is to be walked with all persons involved in the clearing. The purpose of the inspection is to familiarise the Operator and Spotter with the work area and explain specific permit requirements.

All personnel involved in the clearing are to sign Section 3 of the Clearing Permit prior to works commencing.

4. Permit Close Out

On completion of the work the area is to be inspected within 1 month to ensure all clearing has been completed within the clearing permit boundary and that the work has been undertaken in accordance with the clearing permit conditions.

All clearing completed for the construction of temporary infrastructure must be rehabilitated prior to close out of a clearing permit.

Total area cleared, total area rehabilitated, topsoil stockpile locations and topsoil volumes within the clearing permit are to be surveyed and electronic files provided to the MWMCL Environment Manager.

3.4 **EMP 04 – WEED HYGIENE**

3.4.1 Introduction

The Weed Hygiene Management Plan is designed to ensure the minimisation of impacts related to weeds and invasive plant species to the Project area during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for weeds and hygiene management, control procedures, monitoring and reporting.

3.4.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.4.3 Targets

The targets of this Management Plan are to:

- Minimise the impact of the Project on significant flora;
- Prevent the introduction and spread of invasive flora into the Project area;
- Maintain the abundance, diversity, geographic distribution and productivity of native flora and ecosystems; and
- Ensure there is no unauthorised vehicle traffic outside of the Project disturbance area.

3.4.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to dust as outlined in the RACI in Table 3.4.1.

Table 3.4.1: Roles & Responsibilities - Weed and Hygiene Management

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a weed management and minimisation plan	I	C/A	C/A	R
Introduce weed management and minimisation strategies to the workforce	I	C/A	C/A	R
Monitor weeds and vehicle hygiene across the project	I	R	R	I
Record and report weeds and vehicle hygiene plus related training of personnel	I	R	C/A	I
Control new outbreaks of invasive weeds	I	C/A	I	R
Develop a tracking system for incidents related to weeds and vehicle hygiene	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.4.5 Management Actions

1. Flora management, vehicle hygiene and invasive flora control requirements shall be included in the Site Induction.
2. Clearing activities shall comply with the *Clearing and Ground Disturbance* EMP.
3. Pets and private vehicles are not permitted on site unless approved by MWMCL.
4. Disturbed areas shall be rehabilitated as soon as practicable to facilitate habitat restoration.

5. No unauthorised off-track driving.
6. No landscaping material is to be brought into the Project Site unless inspected and approved by the MWMCL Environment Manager.

3.4.6 Control Procedures

Flora

1. Known locations of rare flora or protected flora species shall not be impacted and will be visibly demarcated within 50m of disturbance areas.
2. Any new locations of rare fauna found shall be reported to the MWMCL Environmental Team as soon as practicable.
3. A site plan shall be produced to show known locations of rare or protected flora and known locations of weeds.
4. A flora guide shall be made available to all project personnel.
5. Impacts to riparian vegetation and vegetation along drainage lines, gullies, gorges and creek crossings shall be minimised as far as practicable.
6. Burning of cleared vegetation is not permitted.
7. Only the minimum area required for safe work will be disturbed.
8. New infestations of weeds must be reported as an environmental incident.
9. Upon identification of new weed infestations; the Site Environmental Team will be notified, who will inspect the site, identify the species and undertake the following actions:
 - Remove isolated weeds by hand where practicable;
 - Initiate the incident reporting process;
 - Notify all personnel working in the area of the location and nature of the infestation;
 - If the area is not in use, fence off the area to prevent access; and
 - Consider appropriate treatment methods, such as weed spraying as required.

Vehicle Hygiene

1. No plant material shall be brought onto the Project site.
2. All mobile plant, machinery, heavy vehicles and earthmoving equipment shall be inspected and cleaned of vegetation, mud and soil prior to entry to site. Cleaning shall be done off-site prior to entry. Records of vehicle and equipment inspection shall be maintained.

3. A register of equipment including equipment details, date of arrival/departure, etc. will be maintained.
4. Wash down facilities shall be established at suitable locations designated by the relevant Supervisor and Site Environmental Team in consultation with a MWMCL representative within the Project area for the purposes of vehicle wash-down / cleaning.
5. Equipment and vehicles used in invasive flora areas shall not be used in non-contaminated areas. The exception can occur only if equipment and vehicle hygiene measures have been met when moving equipment from a contaminated area to a non-contaminated area.
6. Light vehicles must also be kept clean and washed down as required.
7. Weed seeds and clean down material will be disposed of at an appropriate landfill by burial below 300 mm of soil.
8. Construction material such as soil/sand or borrow material collected from within an invasive species area shall only be used in this area.
9. All mobile plant, machinery, heavy vehicles and earthmoving equipment shall be inspected and cleaned of vegetation, mud and soil prior to demobilisation from site. Records of vehicle inspection shall be maintained.

3.4.7 Monitoring & Inspection

- Inspection for evidence of invasive flora shall be included in the Site Environmental Team weekly environmental inspections;
- The type of invasive flora, its extent, herbicide treatment, and location shall be recorded in a database and layout plan or uploaded onto a GIS database; and
- All vehicles will be inspected by the Site Environmental Team or delegate for cleanliness prior to mobilisation to or demobilisation from site.

3.4.8 Performance Indicators

- All heavy vehicles and earthmoving equipment will be clean and show evidence of cleanliness prior to entry to the survey area;
- Environmental workplace inspection checklist will include inspection for new weed infestations; and
- New infestations of declared plants (weeds) shall be reported as an environmental incident and require remedial actions.

3.4.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.4.2.

Table 3.4.2: Auditing & Reporting - Weed and Hygiene Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
New infestations of Invasive Species	Monthly by Project Manager	Quarterly by Environment Manager
Invasive Species remedial works	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.5 **EMP 05 – HERITAGE**

3.5.1 Introduction

The Heritage Management Plan is designed to ensure the minimisation of impacts related to culturally sensitive sites in the vicinity of the Project area during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for heritage management, control procedures, monitoring and reporting.

3.5.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.5.3 Targets

The targets of this Management Plan are to:

- Avoid unauthorised disturbance or access to heritage sites;
- Use heritage survey results to design a construction footprint that will protect Heritage sites; and
- Promote awareness of the significance of Heritage issues on site amongst the project workforce.

3.5.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to dust as outlined in the RACI in Table 3.5.1.

Table 3.5.1: Roles & Responsibilities – Heritage Management

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a heritage management plan	C/A	C/A	I	R
Introduce heritage management to the workforce	C/A	R	I	R
Monitor heritage management across the project	I	R	C/A	I
Record and report heritage management plus related training of personnel	I	C/A	R	I
Develop a tracking system for incidents related to heritage sites	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.5.5 Management Actions

1. Where possible, no heritage sites (potential or confirmed) will be disturbed. There exists a monastery which is situated where the proposed mining pit will be excavated. To ensure the heritage site is sustained it should be relocated, if possible and following permission granted from the Myanmar Government and the local community, to a new location agreed by all parties.
2. The importance of heritage management and relevant control requirements shall be included in the Site Induction.

3. Clearing activities shall comply with the Clearing and Ground Disturbance Environmental Management Plan.

3.5.6 Control Procedures

- Known locations of heritage or culturally sensitive sites shall not be impacted and will be visibly demarcated within 50m of disturbance areas. In addition, any new locations for relocated heritage sites should be visibly demarcated within 50m of disturbance areas;
- Any new locations of potential heritage sites found shall be reported to the MWMCL Environmental Team as soon as practicable;
- A Project site plan shall be produced to show known locations of heritage and culturally sensitive sites. The site plan is to be made available to all project personnel;
- A member of the Site Environmental Team is to be present during all clearing activities adjacent to known heritage sites;
- Upon discovery of any potential heritage sites:
 - Work will stop immediately within 50 m of the site; and
 - The sites will be promptly reported to the Site Environmental Team.
- Disturbance to identified or potential heritage sites will result in the following:
 - Work to stop immediately within 50 m of the heritage site;
 - The incident must be immediately reported to the Site Environmental Team using the incident reporting process – see the *Incident reporting* EMP; and
 - Work can recommence upon completion of the incident investigations and authorisation by the Project Manager.

3.5.7 Pagoda Relocation Plan

The following procedures will be used for the relocation of the Villey Tawya Stupa (a monumental in memory of Buddha or Buddhist saint) with two buildings attached (Thein building and Gandaguri building) which is located in the area of the proposed open pit:

1. In accordance with the Implementation Committee (IC) requirements, the government will fully be responsible for the relocation plan;
2. The present plan is to start the building of a new pagoda outside of the project area in an area without the land compensation issues. The precious, historical,

cultural and religious valuables will be taken out of the old pagoda and transferred to the new pagoda;

3. It is planned to complete the pagoda relocation activity before the end of 2013.

3.5.8 Monitoring & Inspection

- Inspection for of known heritage sites shall be included in the Site Environmental Team weekly environmental inspections;
- Details of the known heritage sites including type, extent and location shall be recorded in a database and layout plan or uploaded onto a GIS database.
 - Details of chance finds including extent, level of disturbance, and location shall be recorded in a database and layout plan or uploaded onto a GIS database; and
 - Unauthorised interference with heritage sites will be reported immediately as an incident through the incident reporting system and reported immediately to the MWMCL Environment Team.

3.5.9 Performance Indicators

- No unauthorised disturbance to Heritage sites;
- Immediate reporting upon identification of potential heritage sites; and
- Immediate reporting of all heritage-related incidents.

3.5.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.5.2.

Table 3.5.2: Auditing & Reporting – Heritage Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Chance finds	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.6 **EMP 06 – AIR QUALITY**

3.6.1 Introduction

The Air Quality Management Plan is designed to ensure the minimisation of impacts related to air quality during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for air quality management, control procedures, monitoring and reporting.

3.6.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities;
- Define monitoring and reporting procedures.

3.6.3 Targets

The targets of this Management Plan are to:

- Keep ambient air quality within appropriate regulatory guidelines and standards;
- Keep all air emissions within appropriate regulatory and industry guidelines;
- Protect workers, local communities livestock, wildlife and vegetation from adverse impacts due to dust emissions;
- Implement air quality management procedures;
- Avoid nuisance from dust or odour;
- Achieve zero work stoppages as a result of excessive dust; and
- Achieve zero regulatory or community concerns regarding air quality / emissions management.

3.6.4 Potential Air Emission Sources & Impacts

Air emissions relate principally to production of dust from plant, equipment and vehicles. The potential for dust to be emitted during construction is strongly dependent on the type and nature of activities taking place, such as the movements of vehicles and their speed, soil stripping activities, trench excavation, backfill and reinstatement. Wind speed and wind direction relative to receptors are also key factors in determining the magnitude and duration of dust impacts.

Construction Phase

Potential sources of dust and gaseous emissions during the construction phase include:

- Land clearance and preparation;
- Drilling, blasting and excavation;
- Heavy vehicle operations, particularly on unsealed roads;
- Topsoil / overburden loading, unloading, transportation and storage;
- Loading, transport and dumping of waste rock;
- Crushing and stockpiling of ore;
- Construction of heap leach pads;
- Access road construction;
- General vehicle use; and
- Power generation.

Operations Phase

Potential sources of dust and gaseous emissions during operation of the mine include:

- Ore processing and leaching has the potential for the release of gases and fumes;
- General vehicle use and exhaust emissions;
- Drilling, blasting and excavation;
- Ore crushing, stockpiling and reclamation;
- Operation of the conveyor;
- Open pit operations;
- Topsoil / overburden transportation and storage;
- Wind erosion of cleared surfaces;
- Heavy vehicle operations. and
- Power generation.

Impacts

Potential impacts associated with dust emissions include:

- Vegetation stress;
- Nuisance impacts associated with the soiling action of deposited dust within local communities;

- Health impact to workers, livestock and the local community; and
- Visual impacts and community perception of the mine.

3.6.5 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to dust as outlined in the RACI in Table 3.6.1.

Table 3.6.1: Roles & Responsibilities – Dust Management

Activity Description	MWMCL Senior Project Team	MWMCL Construction Team	Contractors Team	MWMCL Environment Team
Develop a dust and air quality management and minimisation plan	I	R	R	C/A
Introduce air quality and dust minimisation strategies to the workforce	I	R	R	C/A
Monitor air quality across the project	I	R	C/A	I
Record and report air quality management plus related training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to air quality	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.6.6 Management Actions

1. Environmental induction and toolbox meetings will include dust management and air emissions awareness.

2. Practices to reduce gaseous emissions and improve power / fuel use efficiency will be promoted ;
3. Vegetation clearing and exposed surfaces will be kept to a minimum.
4. Vehicle speeds on roads and construction areas will be restricted.
5. Rehabilitate temporary disturbance areas as soon as possible.
6. Dust mitigation measures such as sprinklers, water cannons, and enclosed storage areas shall be used in areas that have high potential to generate dust. This includes the use of water carts on unsealed access roads and haul roads.
7. Any saline or hypersaline water used for dust suppression shall not be used on topsoil stockpiles.
8. If saline water is to be used for dust suppression, controls shall be adopted to prevent salinization of adjacent vegetation.
9. The use of dust suppressant and other methods such as sealing, sheeting, shielding and chemical treatment where dust is likely to cause Occupational Health and Safety issues will be investigated.
10. All dust complaints received from the local community, village occupants or other members of the public shall be logged as an Incident and resolved within 24 hours.
11. Adverse impacts from dust on vegetation, fauna or heritage sites outside of the Disturbance Zone shall be reported within 24 hours.

3.6.7 General Control Procedures

General Procedures during Construction

General emissions control measures during Construction shall include:

- Use of low sulphur and low aromatic fuel, if available and competitively priced;
- Equipment maintenance to be undertaken in accordance with manufacturer's instructions and at the specified maintenance interval;
- Avoid vehicle and machinery idling;
- Unnecessary and/or unused lighting and air conditioning shall be turned off;
- All air conditioned buildings will be appropriately insulated;
- Vapour recovery units will be used on fuel/chemical storage tanks;
- Dust collection systems will be used for bulk materials unloading;
- Dumping of loads from trucks will be conducted using the minimum fall achievable for the material within the truck;
- Land disturbance will be minimised;

- Vehicle movements will be optimised to eliminate unnecessary vehicle movements; and
- Dust suppression measures will be used throughout construction (wetting work areas, roads, storage piles and equipment).

General Procedures during Operations

General dust control measures during mining/production operations shall include:

- Use of low sulphur and low aromatic fuel, if available and competitively priced;
- Equipment maintenance to be undertaken in accordance with manufacturer's instructions and at the specified maintenance interval;
- Equipment operators will be trained in and will follow equipment operational guidelines and standards;
- Vehicles and/or construction equipment left idling for more than 10 minutes shall be turned off until required;
- Unnecessary and/or unused lighting and air conditioning shall be turned off;
- All air conditioned buildings will be appropriately insulated;
- Vapour recovery units will be used on fuel/chemical storage tanks;
- Dust collection systems will be used for bulk materials unloading;
- Water or dust control devices will be used for crushing operations;
- Land disturbance will be minimised;
- Vehicle movements will be optimised to eliminate unnecessary vehicle movements;
- Dust suppression measures will be used throughout operations (wetting work areas, roads, storage piles and equipment; minimizing drop distances by using adjustable height conveyors; and using dust hoods and shields);
- The surface feeder at each truck dump will be enclosed in a profiled steel clad structure; the truck dumps its load through a flexible entry curtain;
- All conveyor belts are to have water spray equipment, or other effective dust mitigation methods implemented. Belts are to be operated at low speed to minimise dust generation;
- At conveyor transfer points, dust will be contained by water spray equipment; and
- Ore stockpiles will have water spray equipment to contain dust.

3.6.8 Specific Control Procedures

The following management procedures have been developed to reduce potential dust emissions from specific operations.

Topsoil, Aggregate and Overburden Storage

The following procedures will be adopted to limit dust emissions from topsoil:

- Topsoil stockpiles will be oriented in the direction of the prevailing wind, as far as practicable, to minimise windblown dust;
- Topsoil stockpiles will be restricted to a maximum height of 1.5 m in one layer to reduce the potential for windblown dust;
- As soon as practicable, topsoil stockpiles will be conditioned and seeded with native grass species to encourage soil binding and reduce the potential for wind and water soil erosion; and
- Vegetation screening will be used, where appropriate, to provide further protection from windblown dust.

Access Roads and Cleared Areas

The following procedures will be adopted to limit dust emissions from access roads and cleared areas:

- A 50 kph maximum speed limit will be imposed at all times;
- Vehicles will follow specific access routes and use designated turning areas;
- All heavy vehicles leaving the site will be fitted with appropriate sheeting and covers to control dust from haul roads;
- Unsealed roads will be watered at regular intervals to provide adequate dust suppression;
- Vegetation screening will be used, where appropriate, to provide further protection from windblown dust.

Conveyors, Crushers and Material Stockpiles

The following procedures will be adopted to limit dust emissions from conveyors, crushers and material stockpiles:

- Raw material handling areas, such as loading and unloading, transfer points and conveyor belts will be designed to avoid the generation of fugitive dust through careful siting and water spray equipment to collect dust as far as possible;
- Material drop heights will be minimised;

- All dusty work areas such as crushers, conveyors, hoppers or truck loading will be designed to avoid dust emissions through careful siting, regular cleaning of equipment and use of water sprays as appropriate;
- All heavy vehicles transferring soil and rock materials off the site will be fitted with appropriate sheeting and covers for dust control;
- Waste containers for materials which could be blown about by the wind will be located in areas sheltered from the wind or, preferably, covered to avoid windblown dust; and

3.6.9 Monitoring & Inspection

Effects Monitoring

MWMCL will collaborate with other industry and government-sponsored monitoring programmes to measure the effects of air quality occurring in the Project area during the construction and operations phases of the project. Information collected during monitoring program for this project will be made available to the public.

Sampling Requirements

Sampling for ambient air quality will be undertaken as outlined in Table 3.6.2 below.

Table 3.6.2: Ambient air quality sampling requirements

Parameter	Sampling Frequency	Sampling Duration
TSP	Weekly	24 hrs
PM10	Weekly	24 hrs
PM2.5	Weekly	24 hrs
SO ₂	Monthly	30 days
NO _x	Monthly	30 days

Appropriate sampling equipment will be selected based on accuracy, ease of use, durability in the field and cost. Sampling locations will be determined using the output of a dispersion model (to identify areas of maximum concentration). In addition, certain measurements will be collected at nearby sensitive receptors including occupied dwellings and ecologically-sensitive areas. Emissions monitoring for stack emissions from power plants will be undertaken as summarised in Table 3.6.3.

Table 3.6.3: Emissions monitoring for stack emissions from power plants

Pollutant	Sampling Frequency
Dust	Annually
SO ₂	Annually
NO _x	Annually

Dust air quality analysis and the applied rationale are detailed below in Table 3.6.4.

Table 3.6.4: Air Quality data parameters

Parameter	Rationale	Analysis Required
24 hr TSP	TSP (particles less than 35 µm in aerodynamic diameter) is generated from mechanical mining activity	- Filter weight (from which dust concentration is determined) every 6 days - Composition of the dust for metals quarterly
24 hr PM ₁₀	- PM₁₀ (particles less than 10 µm in aerodynamic diameter) is generated from mechanical mining activity and diesel combustion and has been extensively related to human health impacts. - PM₁₀ is a better indicator of mechanical mining emissions than finer particles.	- Filter weight (from which particulate concentration is determined) every 6 days - Composition of the dust for metals quarterly
24 hr PM _{2.5}	PM_{2.5} (particles less than 2.5 µm in aerodynamic diameter) is generated from mechanical mining activity and especially from diesel combustion. While there is no WB or WHO guideline, there are relevant guidelines in other jurisdictions.	- Filter weight (from which particulate concentration is determined) every 6 days - Composition of the dust for metals quarterly

Dust record keeping shall be as follows:

- Monitoring records of the dust levels will include the date and the weather conditions at the time of measurement.
- All dust measurements are to be reported on a monthly basis. and

- The results of the dust monitoring will be incorporated into the MWMCL Monthly and Annual Monitoring Report.

Regular record keeping will help to identify and address air quality issues in a timely manner. Record keeping will be undertaken as follows:

- MWMCL will implement an ambient air quality and emission monitoring programme and an appropriate monitoring protocol will be established (based on this Plan);
- Emission reporting protocols will include a controlled emissions reporting protocol as well an emergency reporting protocol; and
- MWMCL will maintain monitoring records and prepare an annual emissions report

The annual emission report will include the following information for each piece of equipment/activities emitting pollutants:

- Fuel consumption;
- Mileage;
- Operational hours;
- Volume of excavated ground, gravel, moved soil etc.;
- Volume of ore, overburden, tailings and waste rock;
- Volume of materials transported/shipped;
- Environmental monitoring records and observations related to air quality;
- Unexpected/emergency emissions; and
- Public complaints on air quality.

3.6.10 Performance Indicators

Measurement of the performance of dust management shall be as follows:

- Dust and emissions minimisation practices addressed in personnel inductions and toolbox meetings;
- Adherence to vehicle speeds limits;
- Compliance with dust and air quality limits; and
- Dust complaints received from the local community.

3.6.11 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.6.5.

Table 3.6.5: Auditing & Reporting – Air Quality Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Complaints from community	Monthly by Project Manager	Quarterly by Environment Manager
Dust minimisation and emissions reduction measures implemented	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager
Project activities and equipment emissions	Quarterly by Project Manager	Annually by Environment Manager

3.7 **EMP 07 – HYDROCARBON**

3.7.1 Introduction

The Hydrocarbon Management Plan is designed to ensure the effective storage, management and disposal of petroleum and oils for the Project. The plan contains methods that shall be used to prevent adverse effects occurring during construction and operations, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation.

3.7.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.7.3 Targets

The targets of this Management Plan are to:

- Protect workers, local communities livestock, wildlife and vegetation from adverse impacts due to uncontrolled spillage or unsafe handling of hydrocarbons;
- Prevent the creation of hydrocarbon contaminated sites;
- Design, construct and install appropriate hydrocarbon storage and transfer facilities;
- Implement hydrocarbon management and storage facility maintenance procedures;
- Implement safe hydrocarbon handling procedures; and
- Implement proper waste hydrocarbon management and disposal procedures.

3.7.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hydrocarbons as outlined in the RACI in Table 3.7.1.

Table 3.7.1: Roles & Responsibilities – Hydrocarbons Management

Activity Description	Senior Management Team	MWMCL Design Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate hydrocarbon storage facility design	I	R	C/A	I	C/A
Construct and install appropriate hydrocarbon storage facilities	I	C/A	R	C/A	I
Develop hydrocarbon management and safe handling plans	I	C/A	R	C/A	C/A
Introduce hydrocarbon management strategies to the workforce	I	I	R	C/A	C/A
Monitor hydrocarbon management across the project	I	I	C/A	I	R
Record and report hydrocarbon spills / losses and training of personnel	I	I	R	C/A	I
Develop a tracking system for incidents related to hydrocarbons	R	I	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.7.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include hydrocarbon management and awareness.
2. Hydrocarbon storage facilities will be appropriately designed, constructed and installed.
3. Personnel working with hydrocarbons will be trained to ensure safe handling, transfer, spill response, and waste disposal.
4. Hydrocarbon spills will be reported to the Environment Manager within 24 hours.
5. Damage to containment structures will be inspected immediately and repairs undertaken.
6. Reconciliation of total hydrocarbon amounts received against amounts ordered, with appropriate recording and reporting of losses.

3.7.6 Control Procedures

Hydrocarbon control procedures to reduce loss, spillage, theft environmental damage and injury to project personnel are described below.

Design, Construction and Installation of Appropriate Storage Facilities

The following provisions will be built into the project design to minimise the potential for spills:

- All pipeline materials will be selected with respect to corrosion potential and material transfer;
- Appropriate signage will be used to identify potential spill risks and other hazards;
- All storage facilities for hydrocarbons and oils will be provided with suitable secondary containment, spill detection devices, and spill kits;
- Secondary containment will comprise non-permeable, chemically-resistant material. Secondary containment will be capable of containing the larger of 110% of the largest tank or 25% percent of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 litres;
- Storage facilities will be designed to comply with American Petroleum Institute (API) Std 650 „*Welded Steel Tanks for Oil Storage*“ and other applicable API standards. API 650 establishes minimum requirements for material, design,

fabrication, erection, and testing for vertical, cylindrical, aboveground, closed- and open-top, welded carbon or stainless steel storage tanks;

- In accordance with manufacturers design protocols, shut-off and diversion valves will be installed on all pipelines and processing facilities to enable selected pipeline segments or facilities to be separated into emergency intervals;
- There will be no below ground bulk storage of hydrocarbons. Above ground tanks will be equipped with volume-measuring devices, which serve as an indicator for losses occurring within the tanks and the internal pipeline system;
- All transfer and filling operations will be undertaken in designated areas with impervious surfaces and fitted with drainage systems that include oil-water interceptors;
- All drum storage of fuel and lubricants will be under cover from both rain and sun;
- Smoking and use of mobile phones will be strictly prohibited from any areas where fuel loading operations take place;
- Bulk storage facilities will be located at least 500 m away from offices and the camp;
- Storage facilities must have the relevant material safety data sheets (MSDS) displayed prominently;
- The base of containment areas will be sloped so that spilt oil may be recovered and removed;
- Storage containers will be equipped with wide-mouth, long-necked funnels to reduce spills during filling; and
- Storage containers will be equipped with pressure relief valves to reduce a build-up of pressure which could cause leaks.

Management and Maintenance

Any accidental damage to containment structures will be inspected immediately and repairs undertaken. The extent of damage will be reported in writing to the Project Manager, or designate, as well as remedial repairs effected together with the date of repairs and any follow up inspection. Inspection will be followed in accordance with the schedule herein.

Inventory Management

Bulk hydrocarbons, including those products discussed in this plan, will be transported to site. The division managers will reconcile total amounts received against amounts

ordered. The senior manager for each division will regulate use. Fuel and petrol use will be automatically metered as it is distributed from bulk tanks. The metered volumes will be summarized weekly and reconciled against manual dipping of the tanks. The exception will be used for power generators where weekly fuel use will be recorded. Lubricant and other petroleum products will be inventoried monthly.

Safe Fuel and Oil Handling

Procedures for safe handling of hydrocarbons on site are described in Table 3.7.2.

Table 3.7.2: Safe Fuel and Oil Handling

Product	Safe Handling Procedures
Diesel	• Do not get in eyes, on skin or on clothing. Avoid breathing vapours, mist, fume or dust. Do not swallow. Wear protective equipment and/or garments if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation. • Keep away from heat, sparks, and flames. Store in a well-ventilated area. Store in a closed container. Bond and ground during transfer.
Lubricants, hydraulic oil, transmission fluid	• Wear protective clothing and impervious gloves when working with used oils and transmission fluids. • Keep container closed until ready for use.
Aviation Petrol	• Avoid skin contact. Launder contaminated clothing before reuse. • Store in a flammable liquids area. Store away from heat, ignition sources, and open flames. Bond and ground during transfer. Aviation gasoline will burn vigorously and can explode with the right fuel-air mixture.
Unleaded Petrol	• Avoid skin contact. Launder contaminated clothing before reuse. • Store in a flammable liquids area. Store away from heat, ignition sources, and open flames. Bond and ground during transfer. Gasoline will burn vigorously and can explode with the right fuel-air mixture.

Varsol	• Avoid eye contact. Use with adequate ventilation. Wash thoroughly after handling. • Empty container retains residue. Follow label instructions. Avoid repeated skin contact. • Store in cool, ventilated area, away from ignition sources and incompatibles. Keep container tightly closed.
Ethylene Glycol	• Use adequate ventilation, wear protective gloves and chemical safety goggles if possibility of eye contact. • Keep in tightly closed container, stored in a cool, dry, ventilated area. Separate from acids and oxidizing materials. Containers of this product may be hazardous when empty since they retain product residues (vapours; liquids).
Automotive grease	• Minimize breathing vapor, mist or fumes. Avoid prolonged or repeated contact with skin. Remove contaminated clothing; launder or dry-clean before re-use. Remove contaminated shoes and thoroughly clean before re-use; discard if oil-soaked. Cleanse skin thoroughly after contact, before breaks and meals, and at end of work period. • Product is readily removed from skin by waterless hand cleaners followed by washing thoroughly with soap and water. • To prevent fire or explosion risk from static accumulation and discharge, effectively ground product transfer system in accordance with the National Fire Code. Keep containers closed when not in use. Do not store near heat, sparks, flame or strong oxidants.

Fuel Transfer

A contract supplier will fill fuel tanks in the main fuel farm. Fuelling is the contractor's responsibility. Fuel transfer will take place inside the bunded area; general procedures to be followed are presented below. For fuelling station tanks, if they are used, similar procedures will be followed:

- Before fuel transfer verify that:
 - all fuel transfer hoses have been connected properly and couplings are tight;

- transfer hoses are not obviously damaged;
 - fuel transfer personnel are familiar with procedures; and
 - for fuelling stations, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to shut off fuel flow manually.
- A means of communication has been established between the two people transferring fuel;
 - A high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff should be verified each time it is used;
 - Transfer fuel as per established procedures of the fuelling contractor; and
 - The Contractor (or mine employee in the case of fuelling station tanks) will report any accidents or spills immediately to the mine or plant manager and in writing to the Environment Manager.

Disposal of Waste Hydrocarbons

Waste hydrocarbons shall be disposed of as follows:

- All used petroleum products will be collected in tanks marked “Waste Oil” (signage will also be in Chinese Mandarin and Burmese) and disposed of under the direction of the mine services manager;
- Empty petroleum containers will, unless otherwise directed, be stored on site in a designated area and returned to the supplier on back hauls; and
- Further details of hydrocarbon spill and disposal management are provided in the *Hazardous Waste EMP*.

3.7.7 Monitoring & Inspection

The inspection schedule will be followed for fuel and oil storage areas as outlined in Table 3.7.3.

Table 3.7.3: Monitoring & Inspection for Hydrocarbons

Facility/Equipment	Inspection Schedule	Inspection Procedures
Bulk storage tanks	- Weekly by facility operators - Quarterly by Environment Manager	- Weekly visual inspections - Quarterly visual inspections and records review - Annual visual inspections and records review - Period integrity testing according to manufacturer's instructions - Report and repair leaks promptly
Diesel generator building	Monthly by Environment Manager	Visual inspection and records review
Fuelling points	Weekly by Environment Manager	Visual inspection
Spill kits	- Quarterly by Environment Manager - Annually by EHS Dept	Visual inspection and records review
Other hazardous materials storage areas	Monthly by Environment Manager	Visual inspection and records review

The MWMCL Supply Department will maintain an inventory of all chemicals purchased, delivered, stored and used at the project site. This inventory will be updated on a monthly basis. This Supply Department will collect and maintain records on fuels and lubricants in consultation with the Project Manager, for the following:

- Reconciled bulk inventory;
- Weekly use summaries;
- Weekly reconciliation for each storage tank;
- Overfill alarm tests;
- Pressure tests (if applicable);
- Inspections and maintenance checks of storage tank system, piping and delivery system;
- Any alteration to the system;
- Reports of leaks or losses;
- Reports of spill responses; and
- Records of training.

Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.7.8 Training

All employees of MWMCL and project Contractors shall be provided with training in the management and handling of fuels and lubricants. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve frequent contact with, and use of, fuels and lubricants.

3.7.9 Performance Indicators

Measurement of the performance of hydrocarbon management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of leaks and losses;
- Reporting of spill responses; and
- Recording of training.

3.7.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 3.7.4.

Table 3.7.4: Auditing & Reporting for Hydrocarbons

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Leaks and losses	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.8 **EMP 08 – NON-HAZARDOUS WASTE**

3.8.1 Introduction

The Non-Hazardous Waste Management Plan is designed to ensure the effective collection, storage, management and disposal of non-hazardous industrial and domestic waste for all phases of the Project. The plan contains methods that shall be used to prevent adverse effects occurring during construction and operations, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation.

For the purposes of this plan, industrial waste includes inert bulk wastes other than mining wastes, and domestic waste is defined as kitchen, biological, and general camp waste.

3.8.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.8.3 Targets

The targets of this Management Plan are to:

- Protect workers, local communities, livestock, wildlife and vegetation from adverse impacts due to storage and handling of non-hazardous waste;
- Design, construct and install appropriate non-hazardous waste storage facilities; and
- Implement non-hazardous waste management procedures;

3.8.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to non-hazardous waste as outlined in the RACI in Table 3.8.1.

Table 3.8.1: Roles & Responsibilities - Non-Hazardous Waste Management

Activity Description	Senior Management Team	MWMCL Design Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate non-hazardous waste storage facility design	I	R	C/A	I	C/A
Construct and install appropriate non-hazardous waste storage facilities	I	C/A	R	R	I
Develop non-hazardous waste management and safe handling plans	I	I	R	I	C/A
Introduce non-hazardous waste management strategies to the workforce	I	I	R	C/A	C/A
Monitor non-hazardous waste management across the project	I	I	R	C/A	C/A
Record and report non-hazardous waste spills and training of personnel	I	I	R	I	C/A
Develop a tracking system for incidents related to non-hazardous waste	R	I	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.8.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include non-hazardous waste management and awareness.

2. Non-hazardous waste storage facilities will be appropriately designed, constructed and installed.
3. Personnel working with non-hazardous waste will be trained to ensure safe handling, transfer, spill response, and disposal.
4. Non-hazardous waste spills will be reported to the Environment Manager within 24 hours.
5. Damage to non-hazardous waste containment structures will be inspected immediately and repairs undertaken.

3.8.6 Waste Disposal and Reuse Philosophy

The Project will employ the waste hierarchy approach whereby the first aim will be to reduce the amount of waste generated through design, use of approved suppliers for materials, contract arrangements, minimisation of over-ordering etc. Under the waste management hierarchy, management options will be evaluated in the following sequence to minimise the amount of waste generated for final disposal.

Reuse

As far as practicable, wastes will be reused. Recycle: There are currently no recycling facilities in Myanmar. Materials or goods that are waste but cannot be reused can often be recycled i.e. paper, wood, metal, plastic, and glass; this recycling may occur on the site, in the immediate communities or in the region.

Segregation

Segregation of inert, hazardous and non-hazardous wastes will be carried out. Segregation of materials such as wood, metal, plastic and inert materials should be the initial targets as this may provide benefits such as cost savings for waste disposal and benefits to the community.

Recovery

If neither reuse nor recycling can be carried out, materials should be considered for recovery as a last resort.

Disposal

Where none of the above are practicable the waste can be sent for disposal at controlled on-site disposal location.

3.8.7 Wastes Produced by the Project

Typical non-hazardous wastes that will be generated from construction are listed below:

Domestic Wastes

- Food waste (i.e., any food remains or wastes that have been in direct contact with food such as containers, napkins, wrappers);
- Paper and cardboard;
- Some plastics; and
- General camp and office wastes such as used office supplies, liners.

Inert Bulk Waste

- Conveyor belts, tyres;
- Crusher and chute liners, screen elements;
- Motors, v-belts;
- Piping and fittings;
- Reinforcing bars;
- Building and bulk debris, cladding, carpeting, drywall, light bulbs (except in the case of mercury vapour/low energy bulbs. These must be disposed of as per hazardous waste requirements), broken glass, insulation and timber; and
- Scrap metals.

3.8.8 Control Procedures

Waste Recycling

Several of the wastes listed above can be recycled normally, such as:

- Paper and cardboard;
- Printer and copier cartridges;
- Some plastics;
- Some scrap metal;
- Glass bottles and jars; and
- Aluminium and tin cans.

MWMCL will consult with the community on the demand for any recyclable products such as scrap metal, cardboard and wood which may have a value or a use locally. MWMCL will also look at commercial options for recycling; if recycling facilities are available and accessible on a commercially-justifiable basis, waste will be recycled. If

not, waste will be disposed of in accordance with this Management Plan. The Environment Department will identify what waste recycling routes are available to the Project, appoint suitable contractors and establish a series of recycling points for glass, paper, cardboard and tin. Recycling containers will be clearly labelled and preferably colour-coded. For non-recyclable waste, the procedures are documented below.

Domestic Waste

- Food wastes will be collected from the food waste bins in the accommodations complex, service complex, and other facilities and immediately placed and sealed in plastic bins; and

Burning of hazardous domestic waste will be prohibited at all times. All organic non-hazardous domestic waste will be stored temporarily in secure (weather-proof) bins, designed for this purpose. The Environment Manager will establish a schedule for domestic waste collection which is frequent enough to avoid the build-up of odour or attraction of vermin. The volume of domestic waste material will be highly variable; monitoring will be conducted with the use of a Waste Inventory which will take into account any recycled waste materials. The approximate volume of wastes generated will be registered in order to establish a reliable baseline for waste minimisation purposes.

Solid Waste

This includes all office wastes, concrete, steel, rubble, timber, plasterboard and mixed construction waste. These are all classified as non-hazardous. These will mainly be generated during the operational phase with minor amounts generated in the construction and decommissioning phases.

Wastes will be segregated at source prior to being transported to the waste storage area on hard-standing with controlled access. The site will be installed with an apron and appropriate perimeter drainage. Areas used for loading and unloading will also have suitable drainage structures, spill containment and other control equipment. Suitable protection from rainfall and sunlight will be provided.

- A separate area will be provided for hazardous waste;
- Copies of waste contractor's licenses and those of the disposal facilities used by the contractors will be kept on site; and
- The area used for waste storage will be covered to prevent contact with rain water.

Liquid Wastes

Liquid waste procedures apply to all non-hazardous liquid wastes on the site. The procedure for managing these wastes is as follows:

- Any spills will be cleaned up using absorbent materials and placed in bins, unless washing is appropriate and the liquid will not impact the wastewater treatment plant;
- There will be no onsite disposal of liquid direct to the soil surface or storm water collection system; and
- Non-hazardous waste bins will be finally disposed of to the landfill which is an engineered cell within the WRD.

Laboratory Waste

Laboratory wastes will comprise a mixture of non-hazardous and hazardous materials. Non-hazardous are likely to include glass products, non-hazardous reagents and bi-products used on-site. The procedures for managing this waste will be as follows:

- Liquid wastes from the laboratory will not be disposed of down sinks, to the ground or storm water drainage system;
- Liquid wastes will be collected for temporary storage and disposal by licensed contractor; and
- It may be possible to co-ordinate waste pick-ups to coincide with the collection of waste solvent from the workshops and maintenance areas.

Litter

This includes any general litter on-site, and the objective is to minimise the visual impact of litter on the site and surrounding area, and minimise the potential to attract vermin. This will be achieved through the provision of appropriate disposal facilities around the Project Area and the education of the work force in the importance of litter control.

3.8.9 Waste Containers and Storage

General

Separate bins for food waste, metals, paper and other waste will be located throughout the accommodation village, service complex, process plant, and other facilities on site for immediate sorting of domestic waste.

Steel bins and dumpsters will be located at each major facility for the collection of burnable and non-burnable materials and recyclable wastes such as scrap metal, timber, tyres, and unsalvageable equipment;

Hauliers will have appropriate training and hauling will be undertaken in a manner that prevents inadvertent release of wastes or recyclables en route;

Solid wastes which are inadvertently dumped in unauthorized locations will be removed immediately and disposed at an approved facility;

Hauliers will provide receipts or other confirmation that recyclables and wastes were disposed at authorised, approved facilities;

Non-toxic, non-food solid wastes will be sorted in the waste transfer storage area into four types:

- Combustible;
- Non-combustible;
- Recyclable; and
- Reusable.

Non-combustible items will be landfilled or recycled if practical. Inert bulk wastes that cannot readily be recycled or reused, will be stored in bins and dumpsters in the waste transfer storage area and transferred to the landfill.

Containers

Drums, bins, receptacles, and dumpsters used for storage of waste will be selected based on waste material requirements, prevention of wildlife attraction (steel or heavy-duty plastic containers with positive clamping lids), and transport requirements (truck, forklift). All containers will be labelled to identify only those wastes for which they are suitable.

Landfill

Purpose designed and built landfill cells will be prepared. Landfill cells will be designed to prevent the inflow of rainfall runoff from upslope areas and will be lined with a compacted soil layer. Once a cell is full, it will be covered with a low permeability compacted soil capping. The capping will be constructed to shed stormwater.

Waste Transfer Storage Area

A fenced area will be established for the handling and transfer of wastes. Fencing will be 2 m high, slatted-type and partially buried to prevent animals burrowing underneath.

Non-food waste products that are not landfilled immediately will be collected, sorted, and placed in designated areas within the fenced area. Depending on the nature of the waste, it will be placed in sealed, wildlife-resistant containers and stored for transport to the landfill.

Domestic Sewage and Greywater

Treated effluent will be discharged to a temporary lagoon during construction (where water will evaporate) and to the processing plant during operations.

3.8.10 Waste Management Documentation

The Supply Department will maintain an inventory of all wastes arising on site including a description of the waste, its source, classification and volume. An example of a waste inventory is presented in Table 3.8.2.

Table 3.8.2: Example Waste Inventory

Waste Materials	Estimated quantity		Planned Actions		
	Vol (m ³)	Mass (t)	On-site recycling/reuse (specify method and use and if waste processing licence or exemption are held or required)	Off-site recycling/reuse (specify recycler and recycling outlet)	Disposal (specify landfill site)
Rubble/mixed construction waste					
Paper					
Glass					
Cardboard					
Tyres					
Plastic					
Aluminium					
Lubricants					
Waste oils					
Solvents					
Reagents					

The Environment Manager will be responsible for preparing and filing Waste Consignment Notes for any wastes leaving the site. Waste Consignment Notes will detail:

- Nature of waste;
- Waste classification;
- Waste volume;

- Date of collection;
- Disposal route; and
- Details of haulier.

The Environment Manager will designate employees with authorisation for waste disposal, using a template similar to Table 3.8.3:

Table 3.8.3: Waste Disposal Template

Waste Consignment Note: Ref.....							
Register of Waste Carriers/Contractors/ Disposal Sites & Transfer Stations							
Date	Carrier/ Disposal Site Name	Carrier/ Disposal Site Address	Details of Carrier's / Disposal Site License				Description of Waste to be Carried
			Reference	Original Inspected		Copy In File	
				By	Date		

3.8.11 Monitoring & Inspection

Waste monitoring and inspection procedures shall be as follows:

- The MWMCL Project Manager shall report on a monthly basis to the MWMCL Environment Manager on the implementation of this Management Plan including:
 - Construction of waste storage facilities
 - Use of recycling facilities
 - Vermin and litter control
 - Status of wastes inventory
- The MWMCL Environment Manager shall prepare and update the Waste Inventory as the mine develops;
- The MWMCL Project Manager shall inspect the condition of waste storage and waste disposal areas and shall maintain appropriate records. The inspection shall include:
 - Physical walk-over and inspection of the condition of all areas;
 - Review of waste documentation;
 - Condition of waste transfer and storage areas;

- Condition of landfill;
- Condition of recycling activities (if undertaken); and
- Compliance with applicable regulatory and corporate requirements.
- Inspection records will comprise the following:
 - Designated waste storage locations marked on a plan;
 - Each waste storage area will be numbered to facilitate inspections;
 - Any spills, leaks, poor containment, lack of labelling or other issues will be recorded and reported to the relevant department for corrective action; and
 - Corrective actions will be documented on completion.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.8.12 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with basic training in waste management. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve non-hazardous waste management.

3.8.13 Performance Indicators

Measurement of the performance of non-hazardous waste management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Recording of waste inventories and disposal;
- Reporting of any incidents or accidents;
- Reporting of leaks and losses;
- Reporting of spill responses; and
- Recording of training.

3.8.14 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 3.8.4.

Table 3.8.4: Auditing & Reporting - Non-Hazardous Waste Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Waste inventory / disposal	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Leaks and losses	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.9 **EMP 09 – HAZARDOUS MATERIALS**

3.9.1 Introduction

The Hazardous Materials Management Plan is designed to ensure the effective storage, management and disposal of all hazardous materials used at the Project. The plan contains methods that will be used to prevent adverse effects occurring during construction, and monitoring plans, to assess potential effects, and determine the effectiveness of mitigation.

Hazardous material includes but is not limited to:

- Hydrocarbons;
- Solvents;
- Explosives; and
- Acids.
- Any other solid or liquid toxic chemical

A provisional list of the hazardous materials to be used on site during the construction period is provided at Annex A. It describes the type and character of the material, its storage requirements and management controls.

The potential impacts associated with the above materials are as follows:

- Impact to soil and/or groundwater, which may result in degradation of the resource and requirement for remedial action;
- Impacts on livelihoods due to impacts to surface or groundwater and impacts on ability to provide water for animals;
- Impacts on human health & safety due to either direct exposure or through fire/explosion; and
- Impacts on human health & safety due to airborne releases of toxic materials in confined spaces.

3.9.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction activities which recognise the need to transport, store, handle, use and dispose of hazardous materials in a manner that does not cause harm to the environmental or the community;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;

- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.9.3 Targets

The targets of this Management Plan are to:

- Protect workers, local communities, livestock, wildlife and vegetation from adverse impacts due to storage and handling of hazardous materials;
- Design, construct and install appropriate hazardous materials storage facilities; and
- Implement hazardous materials management procedures.

3.9.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI in Table 3.9.1.

Table 3.9.1: Roles & Responsibilities - Hazardous Materials Management

Activity Description	MWMCL Senior Management Team	MWMCL Design Consultant	Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate hazardous materials storage facility designs	I	R	C/A	I	C/A
Construct and install appropriate hazardous materials storage facilities	I	C/A	R	C/A	I
Develop hazardous materials management and safe handling plans	I	I	C/A	I	R
Introduce hazardous materials management strategies to the workforce	I	I	R	I	C/A
Monitor hazardous materials management across the project	I	I	C/A	I	R
Record and report hazardous materials spills and training of personnel	I	I	R	R	C/A
Develop a tracking system for incidents related to hazardous materials	R	I	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.9.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include hazardous materials management and awareness.
2. Hazardous materials storage facilities will be appropriately designed, constructed and installed.
3. Personnel working with hazardous materials will be trained to ensure safe handling, transfer, spill response, and disposal.
4. Hazardous materials spills will be clean up immediately and reported to the Environmental Manager within 24 hours.
5. Damage to hazardous materials containment structures will be inspected immediately and repairs undertaken.

3.9.6 Control Procedures

General Procedures

The following general procedures will be adopted:

- Maintain an inventory of hazardous materials including a summary of the physical and chemical properties of the materials held or generated, to ensure that these are understood and that appropriate measures are in place to mitigate the potential hazards posed by them both to humans and the environment; this will include provision of Material Safety Data Sheets (MSDSs) for all stored materials and details on the segregation of potentially reactive materials. MSDSs will be held in English, Chinese Mandarin, and Burmese;

- Appropriate Personal Protective Equipment (PPE) will be made available to personnel involved in fuel and hazardous substance handling operations; all relevant personnel will be trained in the use and maintenance of protective equipment;
- All project personnel will be trained in the use of fire extinguishers;
- Fuel storage and handling areas will be located away from offices and domestic facilities;
- Hazardous substances storage areas will be protected from rainfall and direct sunlight;
- Materials will be clearly labelled, segregated, protected from general access and stored on pallets to prevent the contamination of runoff;
- Suitable fire-fighting equipment will be located close to hazardous material storage areas;
- Surface runoff/storm water drainage from material storage areas will be directed through a perimeter drainage system to oil/water separators and sediment traps;
- Oil-filled electrical appliances will be maintained in good and fire-resistant condition;
- The overall volume of hazardous materials purchased and present on site will be minimised through careful stock control and materials inventory;
- The MWMCL Environment Manager will assess suitable locations for materials storage and stipulate the minimum distances from water courses etc;
- All suppliers to the Project will provide MWMCL with:
 - All pertinent data necessary to ensure maximum protection of the environment, health and safety;
 - Instructions in the use, operation, storage, transportation, handling and disposal of the Goods supplied, sufficiently clear and specific for use by non-technical personnel;
 - Appropriate shipping certification; and
 - Labelling in compliance with any Workplace Hazardous Materials Information System prepared for the Project; and
- Hazardous materials or Goods containing hazardous materials shall be packed, documented and marked strictly in accordance with statutory requirements or the laws and regulations of all parties having jurisdiction over the goods.

Liquid Hazardous Wastes

Liquid waste procedures apply to solvents and reagents (see laboratory waste as part of the Non-Hazardous Waste EMP), waste oils, solvents or greases from maintenance or workshop areas:

- Any spills of oils, grease, solvents or other hazardous materials in the maintenance areas, fuel storage areas or loading/unloading areas will be cleaned up using absorbent materials and placed in bins, not washed;
- Waste oils and solvents will be stored in separate drums on bunded pallets, on paved areas equipped with secondary containment and protected from the weather; drums will be clearly labelled with their contents;
- Waste oils will not be stored for extended periods in underground sumps; tanks and sumps will be emptied and inspected regularly for any signs of cracks or holes. The findings of the inspection will be recorded; any cracks or holes will be repaired, and any repairs conducted will be recorded;
- As far as possible, waste oils will be reused;
- If waste oil is not of suitable quality for onsite use, it will be collected by a licensed contractor for offsite recycling; copies of contractor licenses will be retained onsite. If recycling is not possible it will be burnt;
- Spill clean-up and fire extinguishing equipment will be available in the storage area, and personnel will be trained in its use; and
- There will be no onsite disposal of waste oils and solvents direct to the soil surface or storm water collection system.

Hazardous Substances Storage

- Storage areas will be designed to adequately and safely store a sufficient quantity of substances required for the project;
- The storage area will be properly designed to contain and prevent contamination of the environment, particularly soil and groundwater;
- Floor, curbing, walls and roofs will be designed to adequately contain spills and protect the storage area from weather where necessary;
- Spill kits, protective equipment, and other necessary equipment will be in the storage area or approximate to the storage area to clean and mitigate spills;
- Fire prevention systems will be designed to be appropriate and adequate to the material being stored;
- Only containers that are in good condition will be used;

- Incompatible (e.g., bases and acids) materials will not be stored in the same container and will be stored in safe manner and distance to prevent accidents;
- To provide a safe work area, walls, dykes, berms, or separate facilities of other means will separate incompatible materials;
- Drums, containers, and storage areas will be properly labelled, marked, placarded, and secured;
- Sufficient storage space between containers will be allowed for safe access and handling of containers; and
- No smoking, fire prevention and management practices will be developed specific to the materials being stored.

Transportation of Hazardous Substances

- Non-compatible materials will be transported by separate shipment;
- Fire extinguisher and fire prevention materials shall be adequate and appropriate for the material being transported;
- Containers will be appropriate for the material being shipped;
- Containers will be properly secured;
- Containers and trucks will be properly marked, labelled and placarded;
- Manifests will be maintained in accordance with Myanmar regulations;
- Spill response materials will be adequate and appropriate for materials being transported; and
- Driver teams will be adequately trained and equipped for spill first response, containment and communication.

Explosives Storage and Handling

- All blasting activity will be performed by a specialist contractor who will be responsible for blasting design, explosives calculations, delivering blasting agents to the blast-holes, placing powder or emulsion in the holes, charging the holes, placing detonators and boosters, filling the holes with stemming material and tie-in patterns;
- The blasting contractor will provide the explosives, boosters, detonators, transport it to site and store it until required in the explosive magazines, which the contractor will supply. The contractor will also supply mixing and delivery trucks;
- Explosive magazines will be constructed away from receptors at designated limits in accordance with Myanmar legislation; and

- A plan will be produced of explosives storage locations.

3.9.7 Monitoring & Inspection

All hazardous materials will be subject to strict inventory control from the time they enter the site. The MWMCL Supply Department will maintain an inventory of all hazardous substances purchased, delivered, stored and used at the mine site. This inventory will be updated on a monthly basis. Logs will be kept as required for inspection by the regulatory agencies. The MWMCL Project Manager will conduct routine inspections of all hazardous substances storage areas, and worksite areas to look for spills, leaks, overflows and compliance with the procedures. Where necessary, Corrective Actions will be recommended. The MWMCL Environmental Manager will monitor all activities to do with explosives use and storage. The MWMCL Supply Department will collect and maintain records on hazardous substances in consultation with the Project Manager, for the following:

- Reconciled bulk inventory;
- Weekly use summaries;
- Weekly reconciliation for each storage area;
- Overfill alarm tests;
- Pressure tests (if applicable);
- Inspections and maintenance checks of storage tank system, piping and delivery system;
- Any alteration to the system;
- Reports of leaks or losses;
- Reports of spill responses; and
- Records of training.

Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.9.8 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with basic training in the management and handling of hazardous substances. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve frequent contact with, and use of, hazardous substances. The workplace hazardous material information system (WHMIS) will be utilized to screen and classify materials. Hazardous materials and wastes require special handling and training procedures. All employees will be provided with training under the umbrella of the WHMIS system so that they can identify hazardous materials; know how to obtain appropriate information on special handling procedures required, i.e., know where Material Safety Data Sheets (MSDS) are to be found and how to read them; precautions required and protective equipment required and know how to label and package hazardous substances. Records of completion of WHMIS training will be kept for all employees. Employees who are tasked with receiving, off-loading and storing potentially hazardous substances will receive hazardous substances handling training. This training will be directed at ensuring that appropriate employees know how hazardous materials are to be packaged, handled, and labelled during transport and during storage.

3.9.9 Performance Indicators

Measurement of the performance of hazardous materials management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Recording of waste inventories and disposal;
- Reporting of any incidents or accidents;
- Reporting of leaks and losses;
- Reporting of spill responses; and
- Recording of training.

3.9.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 3.9.2.

Table 3.9.2: Auditing & Reporting - Hazardous Materials

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Waste inventory / disposal	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Leaks and losses	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

ANNEX A

IDENTIFICATION AND MANAGEMENT OF HAZARDOUS MATERIALS

No	Type	Hazardous	Storage Precautions	Remarks
1	Flammable Liquids	Paints	Storage must be set in a cool ventilated dry place. Storage must have a fire control and management system warning board i.e." No Smoking", "Caution, Fire". Equipped with appropriate fire fighting equipment. Ensure materials are stored by type, grade. All containers of painting material shall remain in unopened original manufacturer's containers until required for use. Control the goods lift. Maintain an appropriate temperature and keep the storage area clean and tidy. Loading and unloading must be taken carefully and to prevent collision or rolling on the ground. Use by relevant personnel only.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
2	Flammable Liquids	Thinners	Storage must be set in a cool ventilated dry place. Storage must have a fire control and management system warning board i.e." No Smoking", "Caution, Fire". Equipped with appropriate fire fighting equipment. Ensure materials are stored by type, grade and separately to paints. All containers of painting material shall remain in unopened original manufacturer's containers until required for use. Control the goods lift. Maintain an appropriate temperature and keep the storage clean and tidy. Loading and unloading must be taken carefully and to prevent collision or rolling on the ground. Use by relevant personnel only.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
3	Flammable Solids	Polymers	Storage must be set in a cool airtight dry place. Storage must have a fire control and management system warning board i.e." No Smoking", "Caution, Fire". Equipped with appropriate fire fighting equipment. Ensure materials are stored by type, grade. Containers of polymers must be tightly closed and stored out of contact with water. Dust Precautions must be developed. Use by relevant personnel only.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.

No	Type	Hazardous	Storage Precautions	Remarks
4	Flammable Liquids	Solvents	Storage must be set in a cool ventilated dry place. Storage must have a fire control and management system warning board i.e." No Smoking", "Caution, Fire". Equipped with appropriate fire fighting equipment. Ensure materials are stored by type, grade and separately to paints. All containers shall remain in unopened original manufacturer's containers until required for use. Control the goods lift. Loading and unloading must be taken carefully and to prevent collision or rolling on the ground. Maintain an appropriate temperature and keep the storage clean and tidy. Only relevant personnel are allowed.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
5	Oils	Greases	Ensure Greases are stored according to type, grade and packaging. Priority should be placed on indoor storage, to avoid rainwater and high temperature affecting the oil quality. If material is to be stored outdoors, a material shed must be built. Oil drums shall lie on wooden pads high off the ground, to avoid rust. Flammable liquid storage cabinets must be labelled "FLAMMABLE –KEEP FIRE AWAY." Never smoke, weld, or generate sparks in areas where flammable liquids are stored or used. When the workers have completed any task with flammable liquids or spray cans, ensure they immediately return the container to the designated flammable storage cabinet.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
6	Fuel	Diesel	Oil is flammable and combustible; it shall be stored in a tank or in a container. Tanks located above ground or inside buildings shall be constructed of non-combustible materials. Never smoke, weld, or generate sparks in areas where flammable liquids are stored or used. The flammable liquid itself does not burn, but rather it is the invisible vapours that ignite and burn. Flammable liquid storage cabinets must be labelled "FLAMMABLE – KEEP FIRE AWAY." Ensure that tanks satisfy the Bonding & Grounding condition. When workers have completed any task with flammable liquids or spray cans, ensure they immediately return the container to the designated flammable storage cabinet.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.

No	Type	Hazardous	Storage Precautions	Remarks
7	Fuel	Petrol	Oil is flammable and combustible; it shall be stored in a tank or in a container. Tanks located above ground or inside buildings shall be constructed of non-combustible materials. Never smoke, weld, or generate sparks in areas where flammable liquids are stored or used. The flammable liquid itself does not burn, but rather it is the invisible vapours that ignite and burn. Flammable liquid storage cabinets must be labelled "FLAMMABLE – KEEP FIRE AWAY." Ensure that tanks satisfy the Bonding & Grounding condition. When you have completed any task with flammable liquids or spray cans, ensure you immediately return the container to the proper flammable storage cabinet.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
8	Compressed gases	Oxygen cylinder	Pollution of oxygen cylinders by moisture is hazardous as it causes corrosion which in turn may cause cylinders to burst when pressurised. They must be stored in a cool and dry place. Oxygen cylinders must be secured at all times to prevent tipping. Oxygen cylinders must have the valve fully open due to the high pressure in the cylinder. It is hazardous to overfill liquid storage tanks; the level in the tank must be monitored. An open flame shall never be used. Storage area must be clean, and kept out of contact with oils, grease, hydrogen; flammable liquids, solids, or gases. Empty and full cylinders should be stored in separate areas. Cylinders should never be rolled or dragged.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.
9	Compressed gases	Acetylene cylinder	Cylinders containing flammable gases such as acetylene must not be stored in close proximity to open flames, areas where electrical sparks are generated, or where other sources of ignition may be present. Acetylene cylinders must keep out of chlorine, bromine, copper, fluorine, silver, mercury. All cylinders should be stored in a well-ventilated area. An open flame shall never be used to detect leaks of flammable gases. Always make sure that the regulator and valve fittings are compatible. Empty and full cylinders should be stored in separate areas. Acetylene cylinders should never be rolled or dragged.	Members must accept Hazards Induction before work. Toolbox meetings will be held include hazardous waste management, awareness and emergency measures.

3.10 **EMP 10 – WASTE ROCK**

3.10.1 Introduction

The *Waste Rock Management Plan* is designed to ensure the effective storage, management and disposal of waste rock and low grade ore generated by the Project during the construction, operations and closure. The plan contains the methods that shall be used to prevent adverse effects occurring during construction and operations, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation.

The Project will generate significant volumes of waste rock. Waste Rock Dumps (WRDs) need to be designed appropriately to be stable to avoid catastrophic failure during adverse weather, earthquakes and general operating conditions. WRDs also have the potential to generate acid runoff, depending on the type of rock. For the purposes of this EMP the term waste rock also applies to low grade ore.

In the case of Letpadaung, it is likely that much of the waste rock will be potentially acid-generating (PAG). This can potentially impact groundwater and surface water resources, unless protection and mitigation measures are employed. Due to the size and extent of the WRDs, consideration must be given to the following:

- Layout;
- Foundation conditions;
- Stability; and
- Overall waste rock dump management.

3.10.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.10.3 Targets

The targets of this Management Plan are to:

- Protect local communities, livestock, wildlife and vegetation from adverse impacts due to run-off or seepage from WRDs;
- Design, construct and install appropriate WRDs; and
- Implement waste rock management procedures.

3.10.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI presented in Table 3.10.1.

Table 3.10.1: Roles & Responsibilities – Waste Rock

Activity Description	Senior Management Team	MWMCL Project Manager	Contractors Team	Contractors Team	MWMCL Environment Team
Develop appropriate WRD designs	I	R	C/A	C/A	C/A
Construct and install appropriate WRDs	I	C/A	R	C/A	C/A
Develop WRD management plans	I	R	C/A	I	C/A
Introduce WRD management strategies to the workforce	I	C/A	R	I	I
Monitor WRD management across the project	I	I	R	C/A	C/A
Record and report WRD incidents and training of personnel	I	I	R	C/A	I
Develop a tracking system for incidents related to WRDs	R	I	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.10.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include WRD management and awareness.
2. WRDs will be appropriately designed, constructed and installed.
3. Personnel working with WRDs will be trained to ensure safe handling, transfer, and disposal.
4. Damage to WRD containment structures will be inspected immediately and repairs undertaken.
5. Promotion of progressive rehabilitation of WRDs.

3.10.6 Control Procedures

Layout

In relation to layout the following procedures will be adopted:

- The WRDs shall be placed close to the pit to minimize haul distances while maintaining, as a minimum, a setback of 100 m from the ultimate design crest for pit slope stability considerations;
- During operations, all surface drainage to and from the waste dumps will be captured in a system of interceptor ditches and runoff collection ponds and drains, and not released to the environment;
- The waste rock generated by the open pit excavation below the present ground surface will be dumped into 12.5 m high lifts (comprising two approximate 6.25m thick layers) across the natural ground surface after water collection measures and visual/noise buffers have been completed;
- Waste rock will be sampled and tested during preparation of each blast zone to assess the presence/absence of potentially acid forming (PAF) waste or low grade ore and the location of not-acid or metal draining (AMD) materials. PAF material shall be placed in encapsulation cells within the dumps and capped with compacted geochemically benign material when the cell is filled. Cells should be designed such that drainage from this area of the dumps will flow toward the open pit, or other runoff collection and treatment facilities.;
- PAF low grade ore shall be treated in the same manner as PAF waste and stored in compacted encapsulation cells if not placed on a heap leach pad and processed immediately;

- Geochemically benign material with nil or lower AMD potential (and not contaminated with metals) shall be used to construct the cover encapsulation;
- Once waste rock is assigned as PAF, AMD, or benign its quantity and dumping location should be recorded on a layout plan. An inventory of PAF/AMD/benign quantities should be maintained; and
- WRDs in close proximity to villages shall be protected by rock bunds at to the toe of each WRD.

Foundation Conditions

A geotechnical site investigation programme shall be undertaken on the site proposed to be used for WRDs. Samples from test pits shall undergo testing in a geotechnical laboratory for physical and geochemical properties.

Stability Analysis

In relation to stability analysis the following procedures will be adopted:

- Waste rock dumps shall be of moderate height, and shall be placed on relatively level ground with good geotechnical foundation conditions;
- The overall dumps slopes shall be designed to be geotechnically stable and resistant to erosion. A stability analysis shall be carried out to confirm the batter slopes; and
- Lifts within the WRD slopes shall not exceed 12.5 m in height and shall include a 7 metre bench at the top of each 12.5 m lift; and

Waste Rock Dump Development

In relation to waste rock dump development the following procedures will be adopted:

- Good access shall be established between the pit working area and the WRDs;
- Consideration of the location of the WRDs in relation to the working pit must be established early on;
- The perimeter of the WRD should be established to a bench lift height of 12.5 m above the operating height to assist in the management of dust and noise arising from the transport and placement of waste in the WRD;
- Waste shall be dumped in layers not exceeding 6.25 m in depth to control dust generation and segregation of the waste to minimise the amount of oxygen stored in the waste;

- If WRDs are used as part of water management structures, consideration will be given to minimizing the potential for acid leachate to enter surface watercourses at concentrations that would adversely impact downstream water quality; and
- Topsoil should be stripped and placed on progressively completed faces of the WRD to expedite revegetation and improve the site aesthetics or stockpiled for re-use later during rehabilitation.

Waste Rock Dump Water Management

In relation to water management the following procedures will be adopted:

- Careful surface water management for the WRDs will be necessary to both limit uncontrolled water flow into the open pit and to prevent release of contaminated drainage from the site;
- A series of perimeter ditches shall be installed around the WRDs to intercept expected surface flows up to the design event and direct them into collection ponds;
- The collection ponds shall be sized to store design storm volumes;
- During the operating life of the mine, collected water will be stored for use as process water; and
- Following mine operation, all waste dump drainage will be directed to sedimentation pond before release.

Waste Rock Dump Closure / Rehabilitation

In relation to waste rock dump closure / rehabilitation the following procedures will be adopted:

- Prior to rehabilitation, the slopes of individual 12.5 m lifts of the WRDs will be sloped to angles of 2.5 horizontal to 1 vertical, or flatter, to provide long-term stable slopes;
- An overall WRD drainage plan will be designed for closure;
- WRD closure design will include control measures to minimize infiltration and water movement through the dump in WRDs containing PAF or metal leaching materials and allow for vegetation to establish itself;
- Drainage from the PAF – containing or metal leaching WRDs will be free flowing and should be directed into the open pit or an on-site storage pond;
- Any seepage which bypasses the low permeability geotechnical barrier into the underlying sediments is predicted to flow towards the open pit; and

- In WRDs formed entirely of benign material, the top of the waste dump can be shaped to store water and allow infiltration into the WRD, if the geotechnical properties of the waste rock are suitable and the rock is physically stable; and
- WRDs should be rehabilitated progressively throughout project development to minimise the need for topsoil storage and subsequent degradation of the nutrients and biological values within the topsoil, as well as providing an aesthetically improved mine site.

A schematic illustration of the above concepts for placement of rock waste is shown in Figures 3.10.1 to 3.10.5.

3.10.7 Monitoring & Inspection

The main performance concern for the WRDs will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary. Following closure, water management systems will be inspected quarterly, and any required maintenance carried out until abandonment.

Stability analysis shall be carried out at the commencement of the project to confirm initial WRD stability factors of safety. Critical WRD slopes, completed to closure profile, should be surveyed at key locations to identify potential zones of slope instability. Survey pin locations should be assessed on a case by case basis by an independent geotechnical engineer, noting any instability, rock falls, seepage, slumping or cracks relative to previous assessments. Acid rock drainage and metal leaching from waste rock will be monitored on a monthly basis during operations and continue post mining. The need for treatment of AMD drainage will be assessed from water quality samples collected during the operations and closure phases. The physical stability of WRDs and the water diversion system will be monitored annually by an independent geotechnical engineer and a report prepared for MWMCL which will be forwarded to the relevant government regulatory body. Weekly visual inspections of these facilities will be conducted by mine personnel and observations logged for inspection by the independent geotechnical engineer, and government regulators upon request. Responsibility for the construction phase monitoring detailed above shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan; and
- The Environment Manager shall inspect the condition of the WRDs after every major rainfall or earthquake event and shall maintain appropriate records. The inspection shall include:

- A physical walk-over and evaluation of the condition of all areas
- A pickup of survey pins for critical WRD slopes
- Assessment of condition of access roads between the pit and WRDs
- Compliance with applicable regulatory and corporate requirements.

During construction the Project Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the Environmental Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Updated survey pin pickup records;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.10.8 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with training in waste rock management as part of their initial training. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve waste rock transportation, storage and placement. Specialist training will also be provided on rehabilitation and revegetation methods, as well as seed collection, direct seeding, plant propagation and planting and maintenance of seedlings.

3.10.9 Performance Indicators

Measurement of the performance of hazardous waste management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of progressive rehabilitation of WRDs.
- Reporting of spill responses; and
- Recording of training.

3.10.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.10.2.

Table 3.10.2: Auditing & Reporting – Waste Rock

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Waste inventory / disposal area plans	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Uncontrolled releases of contaminated water	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
WRD areas that have been rehabilitated	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.11 **EMP 11 – SOIL CONSERVATION AND LAND IMPROVEMENT**

3.11.1 Introduction

The Soil Conservation and Land Improvement Management Plan is designed to ensure the protection of soil resources and promote land improvement during the construction, operation and closure phases of the Letpadaung Project. The plan includes recommendations to conserve soil resources, sustainable land use and management practices, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation.

3.11.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECP) for construction, operations and closure activities;
- Define requirements and procedures to guide the Project Management Team and other project contractors;
- Define mitigation measures;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.11.3 Targets

The targets of this Management Plan are to:

- Outline management procedures to collect, store and reuse topsoil for rehabilitation;
- Conserve topsoil quantities and topsoil vegetative productivity; and
- Provide guidance on sustainable land use and management practices.

3.11.4 Potential Impacts

Impacts to topsoil will occur in all phases of the Project. Impacts will be greatest during construction when topsoil is removed and terrain disturbed for the open pit and associated facilities. Impacts during the operations phase will be related to the continued development of the open pit, WRDs and HLPs. There will be minor topsoil disturbance during closure as facilities are dismantled and removed.

Impacts on topsoil will occur due to the following:

- Erosion:
 - Clearance of vegetation prior to topsoil stripping and exposure of topsoil to wind and precipitation;

- Redirection of drainage courses during construction
 - Stripping, loading, hauling and handling of topsoil
 - Storage of topsoil in stockpiles
 - Lifting of topsoil from stockpiles and redistribution on rehabilitated surfaces
 - Wind and water erosion of recently re-laid topsoil in rehabilitated areas, prior to its stabilisation with vegetation growth
 - Erosion of topsoil in areas which will not be stripped for project activities but which may be impacted by traffic routes or new drainage configurations
 - Failure to achieve sustainable vegetation cover in rehabilitated areas due to planting of inappropriate species or due to overgrazing, leading to breakdown of cohesive soil structure and increased vulnerability to erosion
- Loss of soil productivity and agricultural capacity:
 - Loss of soil structure and biota due to stripping and stacking in stockpiles;
 - Potential contamination of soil resources from hazardous materials and spillage of fuels, lubricants and reagents;
 - Temporary and permanent loss of productive, agricultural land, either through permanent change of land use such as to open pit mining areas or the processing plant area, or through temporary occupation by mine services and installations; and
 - Loss of mineral nitrogen from the soil.

3.11.5 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to soil as outlined in the RACI in Table 3.11.1.

Table 3.11.1: Roles & Responsibilities – Soil Conservation and Land Improvement

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a soil conservation and land management plan	I	R	C/A	C/A
Introduce soil conservation and land management to the workforce	I	R	I	C/A
Monitor soil conservation and land management across the project	I	R	C/A	C/A
Record and report soil conservation and land use plus related training of personnel	I	R	R	C/A
Develop a tracking system for incidents related to soil conservation and land management	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.11.6 Management Actions

1. The proposed clearing areas, stockpile locations, estimated volume and recovery method are to be included on Clearing Permits.
2. A formal soil conservation and land use monitoring plan is to be developed in accordance with this Management Plan.
3. Vegetation and Topsoil shall have separate stockpiles.

4. Planting of appropriate trees and vegetation be promoted to provide shade and shelter from the wind as well as reduce dust and soil erosion.
5. Seeding of topsoil stockpiles with natural leguminous shrubs and plants to regenerate nutrients within the stockpiles.
6. Inclusion of leguminous shrub and plant species in the mix of species used in land rehabilitation works and buffer plantings around the site.
7. All complaints regarding topsoil and land management related factors received from the local community, village occupants or other members of the public shall be logged and acted on as an incident in a timely manner.

3.11.7 Control Procedures

Topsoil Stripping

The following procedures shall be adopted by the Project to minimise the environmental impacts of topsoil stripping:

- Stripping and clearance operations shall be undertaken on an as-required basis, so that at any time, only the minimum quantity of topsoil is in storage and stripped areas remain exposed for the minimum period of time;
- A map of topsoil storage locations, quantities and soil types shall be prepared and updated;
- Prior to the commencement of stripping activities, the area to be stripped shall be clearly marked out in the field; for access road, the vegetation stripping area shall be marked out to avoid unnecessary vegetation removal;
- Topsoil stripping and stacking shall be undertaken only under favourable weather conditions and shall not be undertaken in periods of heavy rainfall or high winds exceeding 15 km/h;
- Stripping depth shall be clearly indicated to the machine operator;
- Haulage vehicles shall adhere to designated routes to minimise soil compaction;
- Drainage from the disturbance area shall be directed towards suitable perimeter drains and sediment control structures; and
- Indications / evidence encountered during the stripping operations of possible presence of archaeological / culture-heritage assets at the site shall be immediately reported. Stripping activities at the site shall be suspended until approval to proceed is obtained.

Topsoil Storage / Management of Stockpiles

The following procedures shall be implemented by the Project to conserve topsoil resources and promote effective reinstatement:

- Topsoil and subsoil shall be segregated and stored separately;
- If appropriate and subject to available quantities and practicality, where separate soil types can be distinguished on the basis of soil type and biological viability they shall be stored separately with appropriate measures for their management and conservations;
- Topsoil stockpiles shall be restricted in height to 4.0 metres to minimise wind erosion;
- To reduce the loss of soil to wind erosion, topsoil stockpiles will be constructed and managed to take account of the prevailing wind direction;
- Topsoil stockpiles are to be appropriately signed and clearly marked with vehicle activity restricted appropriately;
- Mobile plant and machinery should not operate on top of topsoil stockpiles; and
- As soon as practicable, the surface of topsoil stockpiles shall be conditioned and seeded with native grass species to encourage soil binding and reduce the potential for wind and water soil erosion.

Soil Improvement

Some areas of land within the project boundary limits may not be developed (at least until much later in the project life cycle). If not managed properly the soil geochemistry and structure of these areas has the potential to deteriorate over time, leading to loss of future agricultural productivity. To maintain (and where possible improve) soil quality on the undeveloped parts of the site the following procedures shall be implemented

- Planting of legume crops (such as lupins, lentils and peas) at the end of each dry season;
- Harvesting legume crops at the end of each wet season; and
- Maintenance of crop stubble over the dry season to assist with soil stabilisation and water retention.

Afforestation and Tree Planting

Planting of appropriate trees and vegetation shall be promoted to provide shade and shelter from the wind as well as reduce dust and soil erosion. This will benefit adjacent communities as well as resident MWMCL mine site and construction staff. As shown on

Figure 3.11.1, the tree planting and afforestation can be broadly subdivided into three areas:

- Afforestation of Letpadaung hill-slopes (69.8 Ha);
- Tree planting and landscaping around the accommodation village (14.2 Ha); and
- A line of trees along the northern and western project boundaries (2 rows with a length of 10.4 km).

The proposed species for tree planting and afforestation are summarised in

Table 3.11.2: Plant species for tree planting and afforestation

Common Name	Scientific Name
Eucalypt	Eucalyptus globculus
Aurisha	Acacia semegal
Bawsagaing	Leucaena Glauca benth
Kokko	Albizzia lebbek
Mezali	Cassia siamea
Bandar	Prunus amygdalus
Tama	Neem
Magyi	Tamarindus indrca
Kabwi	Casuarina equisetifolia

3.11.8 Monitoring & Inspection

Topsoil monitoring procedures shall be as follows:

- A monthly report during the construction phase will include:
 - Quantities of topsoil removed
 - Storage locations, quantities and type of topsoil
 - Storage procedures and methods used
- A Topsoil Storage Plan should be developed to show a map and inventory of topsoil stockpiles; and
- Active topsoil stockpiles shall be inspected on a monthly basis for compliance with this Management Plan.

In additional to topsoil monitoring, changes in soil conditions shall be monitored to ensure that the soils in the area do not undergo any adverse changes over the life of the project. It will require establishing representative sampling locations to assess the potential effects of acid deposition, fugitive dust emissions and the mobilization of

metals / elements through changes in soil chemistry during construction and mine operations.

Monitoring of land improvement shall be as follows:

- Areas of afforestation, tree planting, and cultivation shall be surveyed and their extents and plant type shall be recorded in a database and layout plan or uploaded onto a GIS database; and
- The health of afforested and cultivated areas shall be monitored. Plant deaths or health deterioration shall be noted and remediation measures recommended.

3.11.9 Performance Indicators

- All available topsoil and vegetation directly returned to temporary work areas to assist rehabilitation or stockpiled for later use.

3.11.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.11.3.

Table 3.11.3: Auditing & Reporting – Soil Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Volumes and location of topsoil stored	• Weekly by Project Manager	• Monthly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Topsoil Stockpiles, Creation or use of	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.12 **EMP 12 – ACID ROCK DRAINAGE**

3.12.1 Introduction

The *Acid Rock Management Plan* is designed to ensure the effective storage, management and disposal of acid rock generated by the Project during the construction and operations. The plan contains the methods that shall be used to prevent adverse effects occurring during construction and operations, monitoring plans to assess potential effects during construction and operations, and monitoring plans for determining the effectiveness of mitigation.

In the case of Letpadaung, it is likely that much of the waste rock and ore will be potentially acid-forming (PAF) through the oxidation of sulphides. This can potentially impact groundwater and surface water resources, unless protection and mitigation measures are implemented. The potential sources of acid runoff during operation include, but are not limited to:

- Waste Rock Dumps (WRDs);
- Low grade ore stockpiles;
- Pits; and
- Heap Leach Pads (HLPs).

Encapsulation of stockpiled PAF material and backfilling of pits will limit the exposure of material to water through leaching and drainage. This will limit oxidation of sulphides to an extent and prevent any potential impacts.

Management of ARD associated with WRDs is discussed separately in the *Waste Rock EMP*.

Management of ARD in the long term, post closure is discussed in the *Mine Closure Plan*.

3.12.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction and operations activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.12.3 Targets

The targets of this Management Plan are to:

- Protect local communities, livestock, wildlife and vegetation from adverse impacts due to run-off or seepage from ore stockpiles, Pits and HLPs;
- Design, construct and install appropriate ore stockpiles, Pits and HLPs; and
- Implement acid rock management procedures.

3.12.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to acid rock as outlined in the RACI presented in Table 3.12.1.

Table 3.12.1: Roles & Responsibilities – Acid Rock

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate acid rock drainage designs	I	R	C/A	C/A
Construct and install appropriate designs	I	C/A	R	C/A
Develop acid rock management plans	I	R	C/A	C/A
Introduce acid rock management strategies to the workforce	I	C/A	R	I
Monitor acid rock management across the project	I	R	C/A	C/A
Record and report acid rock incidents and training of personnel	I	R	R	I
Develop a tracking system for incidents related to acid rock drainage	R	I	C/A	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.12.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include acid rock management and awareness.
2. Acid rock drainage will be appropriately designed, constructed and installed.
3. Personnel working with acid rock will be trained to ensure safe handling, transfer, and disposal.
4. Exposure of acid rock from containment structures will be inspected immediately and repairs undertaken.
5. Promotion of progressive rehabilitation of HLPs.

3.12.6 Control Procedures

Low Grade Ore stockpiles

The intent is that stockpiled low grade ore will be processed at a later date. On this basis it is not possible to limit acid rock exposure in the low grade ore stockpiles by the same means as that employed for the WRDs. ARD from low grade ore stockpiles will be achieved managed the following procedures:

- Drainage from stockpiles shall be collected in lined evaporation ponds. If the water meets process quality standards then it should be recycled. If not it should be stored in the wastewater pond prior to treatment and release.
- Depending on the ore geochemistry, the foundation soils, and the groundwater quality it may be necessary to install a liner / underdrainage system similar to that proposed for the HLPs.
- At closure, the operational underdrainage collection ponds will be removed and any residual low grade ore will be processed or transferred to a PAF storage cell within a WRD.

Pits

Pit design and operation will require the following procedures to limit acid generation:

- Where water quality differs in the pit, according to the source aquifer, clean water will be differentiated from contaminated water and pumped to different

storage ponds so as to reduce the quantity of “wastewater” on site that may require treatment prior to release.

- Sampling and testing of groundwater on a regular basis.
- Water that meets release quality criteria will be released into the river unless it is required as process make-up water.
- Water that does not meet release quality criteria will be recycled as process make-up water or stored in the wastewater storage pond prior to treatment and release.
- No net discharges from the pit are expected, and on closure the pit lake level is estimated to be below the discharge elevation. As a result, the pit will act as a groundwater sink and will not discharge water to the environment.

Heap Leach Pads

Procedures to manage ARD associated with HLPs include:

- Construction of pads to include under liners and an underdrainage collection system
- Run-off from the surface of the heap, and drainage is to be collected in lined collection ponds for process reuse.
- At closure, the heaps will be covered with a low permeability cap and NAF rockfill cover designed to shed run-off and minimise ingress of water. Post closure the heap will have to be rinsed and there will be a period of time afterwards where the heap run-off and seepage water will continue to be processed or treated. There will be regular ongoing water quality monitoring post closure and once the heap drainage is of suitable quality criteria a “walk-away” closure system will be implemented. The details of this will be described in detail in the mine closure plan but options may include directing drainage into the open pit through lined channels or installing a passive wetlands water treatment system.

3.12.7 Monitoring & Inspection

Monitoring of acid rock drainage (ARD) from the following potential sources is required over the life (and after closure) of the mine:

- The open pit;
- The waste rock dumps (WRDs);
- The low grade ore stockpiles; and
- The heap leach pads (HLPs).

From an acid rock drainage (ARD) perspective the main performance concern for the HLPs and ore stockpiles will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary. Following closure, water management systems will be inspected quarterly, and any required maintenance carried out until abandonment. Acid rock drainage and metal leaching from waste rock and seepage will be monitored on a monthly basis during operations and continue post mining. The need for treatment of acid rock drainage will be assessed from water quality samples collected during the operations and closure phases

The ARD monitoring, inspection and record keeping requirements for the Project is detailed in the following management plans:

- Open pit: The *Water and Groundwater* EMP.
- WRDs and low grade ore stockpiles: The *Waste Rock and Water and Groundwater* EMPs.
- HLPs: The *Ore Handling and Placement* and *Water and Groundwater* EMPs.

Responsibility for the construction phase monitoring detailed above shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan.
- The Environment Manager shall inspect the condition of the ore stockpiles and HLPs after every major rain event and shall maintain appropriate records. The inspection shall include:
 - A physical walk-over and evaluation of the condition of all areas; and
 - Compliance with applicable regulatory and corporate requirements.

During construction the Project Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the Environmental Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.12.8 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with training in acid rock management as part of their initial training. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve potentially acid generating rock transportation, storage and placement. Specialist training will also be provided on rehabilitation and revegetation methods, as well as seed collection, direct seeding, plant propagation and planting and maintenance of seedlings.

3.12.9 Performance Indicators

Measurement of the performance of hazardous waste management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of progressive rehabilitation of HLPs.
- Reporting of spill responses; and
- Recording of training.

3.12.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Project and Environmental Departments in accordance with the schedule presented in Table 3.12.2.

Table 3.12.2: Auditing & Reporting – Acid Rock

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
PAG rock inventory / dumping area plans	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Uncontrolled releases of contaminated water	• Monthly by Project Manager	• Quarterly by Environment Manager
Spill responses	• Monthly by Project Manager	• Quarterly by Environment Manager
Areas that have been rehabilitated	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.13 **EMP 13 – CONSTRUCTION MATERIALS AND EARTHWORKS**

3.13.1 Introduction

The Construction Materials and Earthworks Management Plan is designed to:

- Reduce environmental impacts to natural water surface systems associated with bulk earthworks, development of borrow pits and importation of natural construction materials (comprising soils and rock); and
- Reduce impacts of earthmoving machinery traffic on sensitive receptors.

The plan contains methods that shall be used to minimise adverse effects occurring during the construction, operations and closure phases of the Project, and monitoring plans to assess potential effects and determine the effectiveness of mitigation.

3.13.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.13.3 Targets

The targets of this Management Plan are to:

- Protect local communities, wildlife and vegetation from adverse impacts due to bulk earthworks, development of borrow pits and importation of natural construction materials;
- Ensure that earthworks and borrow pits developed during construction, do not significantly interrupt natural surface water flows;
- Design, construct and install appropriate borrow pits; and
- Implement earthworks, borrow pit development, construction material importation, and construction management procedures;

3.13.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to borrow pits as outlined in the RACI in Table 3.13.1.

Table 3.13.1: Roles & Responsibilities – Construction Materials and Earthworks

Activity Description	MWMCL Senior Project Team	MWMCL Construction Team	Contractors Team	MWMCL Environment Team
Develop appropriate earthworks and borrow pit designs	I	R	I	C/A
Construct and install appropriate borrow pits	I	R	C/A	I
Develop earthworks, construction materials importation and borrow pit management plans	I	R	C/A	C/A
Introduce earthworks, construction materials importation and borrow pit management strategies to the workforce	I	R	C/A	I
Monitor earthworks, construction materials importation and borrow pit management across the project	I	R	C/A	C/A
Record and report earthworks, construction materials importation and borrow pit usage / development, and training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to earthworks, construction materials importation and borrow pits.	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.13.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include earthworks, construction materials importation and borrow pit management and awareness.
2. Borrow pits and construction materials stockpiles will be appropriately designed, constructed and installed.
3. Personnel involved with earthworks / construction or using borrow pits will be trained to ensure safe and responsible operation and usage.
4. Borrow pits and earthworks areas will be inspected periodically. Their use and performance will be reviewed and any rectifications or improvements will be undertaken. Major erosion shall be reported to the Environment Manager within 24 hours of sighting.
5. The source of all imported construction materials shall be confirmed and recorded. Prior to its use the material shall be inspected and sampled to ensure that they comply with the specification and are fit for purpose. All construction materials shall be tested to ensure their suitability both in terms of their physical and geochemical properties.

3.13.6 Control Procedures

Borrow Pits

Borrow pit control procedures to reduce impact on natural surface water systems are described below:

- Borrow pit locations shall be sited so as to facilitate rehabilitation to a free draining landform that conforms to the surrounding landscape on completion;
- A borrow pit development plan shall be completed by the Contractor prior to the construction of new borrow pits. The plan shall include a provisional rehabilitation methodology including the intended drainage of the borrow pit;
- Borrow pit plans are to include a map detailing:
 - Existing contours;
 - Proposed borrow pit boundaries;
 - Existing drainage;

- Locations of geotechnical test pits;
- Locations of stockpiles; and
- Locations of access tracks;
- Borrow pit plans are to include intended post-rehabilitation detail including:
 - A map showing final contours and surface drainage; and
 - Typical cross-sections;
- Borrow pit plans shall include adequate geotechnical and geochemical information to determine the suitability of the material for the intended purpose;
- Borrow pits shall maintain at least a 100m buffer from “No Go Areas”, priority flora, Heritage sites, public and private roads, and watercourses unless otherwise approved by the Environment Manager;
- Drainage and erosion control structures shall be developed around the pits to control the impact of substantial rainfall events where required;
- Noise during borrow pit development shall be controlled as per the *Noise and Vibration* EMP.
- Dust control during borrow pit development shall be monitored as per the *Dust* EMP.
- All topsoil / growth medium removed from the borrow pit areas shall be stockpiled along the edge of the borrow pit or at dedicated topsoil storage areas for subsequent use in rehabilitation;
- Trees and heavy stands of vegetation shall be preserved where practicable.
- Borrow pits shall be rehabilitated, progressively, as below:
 - Deep ripping shall take place along the contour, at a depth of 0.5 – 1 m;
 - Previously stockpiled topsoil shall be spread over the pit floor and battered walls;
 - After topsoil and vegetation spreading, the area shall be cross ripped to a minimum depth of 0.3 metres;
 - Access roads shall be ripped;
 - In the case of a shortfall of topsoil, the pit area shall be seeded with seed from local species endemic to the area (local provenance); and

- The Environment Manager shall sign off all borrow pits following rehabilitation. Where additional rehabilitation works are deemed necessary, these are the responsibility of the contractor.

Bulk Earthworks

Bulk earthworks include all significant cut / fill activities on the site. Earthworks control procedures to reduce impact on natural surface water systems are described below:

- An earthworks development plan shall be completed by the Contractor prior to construction;
- Earthworks plans are to include a map detailing:
 - Existing contours;
 - Proposed cut / fill extents;
 - Existing drainage;
 - Locations of geotechnical test pits;
 - Locations of stockpiles; and
 - Locations of access tracks;
- Earthworks plans shall include adequate geotechnical and geochemical information to determine the suitability of the material for the intended purpose;
- Earthworks shall maintain at least a 100m buffer from “No Go Areas”, priority flora, Heritage sites, public and private roads, and watercourses unless otherwise approved by the Environment Manager;
- Drainage and erosion control structures shall be developed around the earthworks to control the impact of substantial rainfall events where required;
- Noise during borrow pit development shall be controlled as per the *Noise and Vibration* EMP.
- Dust control during borrow pit development shall be monitored as per the *Dust* EMP.
- All topsoil / growth medium removed from the earthworks areas shall be stockpiled along the edge of the borrow pit or at dedicated topsoil storage areas for subsequent use in rehabilitation;
- Trees and heavy stands of vegetation shall be preserved where practicable.

Construction Materials

Earthwork materials imported from borrow pits are to be placed as per the design layout, whether it be a designated stockpile or direct to the construction works.

- Adequate geotechnical and geochemical testing of construction materials shall be performed to determine the suitability of the material for the intended purpose;
- Construction material stockpiles are to have appropriate heights and batter slopes so as to avoid excessive erosion, with a v-drain around the perimeter to ensure adequate drainage; and
- Drainage and erosion control structures shall be developed around stockpiles to control the impact of substantial rainfall events where required.

3.13.7 Monitoring & Inspection

The inspection checklist and schedule for earthworks, construction materials, and borrow pits shall be as follows:

- New borrow pits shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS type database.
- Verification that the borrow pits and earthworks are not encroaching into buffer zones for “No Go Areas”, priority flora, heritage sites, watercourses, or public / private roads.
- Areas cleared for development of borrow pits / quarries / stockpiles and areas rehabilitated shall be reported to the EHS Manager on a monthly basis.
- The relevant MWMCL Construction Supervisor shall inspect and arrange maintenance for erosion and sediment control structures (associated with borrow pits, stockpiles and earthworks) during the wet season.
- A post-rehab survey pickup will be completed to verify the borrow pit as free draining.
- Regular inspections of active borrow pits by the MWMCL Environment Manager, including for weed infestations, erosion and compliance with the borrow pit plan.
- Photographic record of pit development will be maintained. Photographs will be taken:
 - After pegging, before clearing;
 - At least once during operation; and
 - At completion of rehabilitation;

- Photograph points will be recorded by GPS and used for ongoing monitoring and rehabilitation purposes.
- Verification that all earthworks areas are being monitored for dust, noise, and erosion / sediment control EMP compliance;
- Verification that all imported natural materials are tested for geochemical suitability.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.13.8 Training

All employees of MWMCL and project Contractors shall be provided with training in earthworks / construction materials management, and the usage and management of borrow pits. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve earthworks. borrow pit development, and construction.

3.13.9 Performance Indicators

Measurement of the performance of borrow pit management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the borrow pit plan;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents and rehabilitation; and
- Recording of training.

3.13.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.13.2.

Table 3.13.2: Auditing & Reporting – Construction Materials and Earthworks

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / earthworks / borrow pit plan	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Rehabilitation	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.14 **EMP 12 – BORROW PITS, ACCESS TRACKS AND ROADS**

3.14.1 Introduction

The Borrow Pits, Access Tracks and Roads Management Plan is designed to:

- Reduce environmental impacts to natural water surface systems associated with construction of borrow pits and roads; and
- Reduce impacts of traffic on sensitive receptors.

The plan contains methods that shall be used to minimise adverse effects occurring during construction, and monitoring plans to assess potential effects and determine the effectiveness of mitigation.

3.14.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.14.3 Targets

The targets of this Management Plan are to:

- Protect local communities, wildlife and vegetation from adverse impacts due to construction of borrow pits, tracks and roads;
- Ensure that roads and tracks, developed during construction, do not significantly interrupt natural surface water flows;
- Design, construct and install appropriate borrow pits, tracks, and roads; and
- Implement borrow pit development, track usage, and road construction management procedures;

3.14.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hydrocarbons as outlined in the RACI in Table 3.14.1.

Table 3.14.1: Roles & Responsibilities - Borrow Pits, Roads and Access Tracks

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate borrow pit, track and road designs	I	R	I	C/A
Construct and install appropriate borrow pits, tracks and roads	I	R	C/A	I
Develop borrow pit, track and road management plans	I	R	C/A	C/A
Introduce borrow pit, track and road management strategies to the workforce	I	R	C/A	I
Monitor borrow pit, track and road management across the project	I	R	C/A	C/A
Record and report borrow pit, track and road usage, and development, and training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to borrow pits, tracks and roads	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.14.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include borrow pit, track and road usage, management and awareness.

2. Borrow pits, tracks and roads will be appropriately designed, constructed and installed.
3. Personnel using borrow pits, tracks and roads will be trained to ensure safe and responsible usage.
4. Borrow pits, tracks and roads will be inspected periodically. Their use and performance will be reviewed and any rectifications or improvements will be undertaken. Major erosion associated with roads and tracks shall be reported to the Environment Manager within 24 hours of sighting.

3.14.6 Control Procedures

Borrow Pits

Borrow pit control procedures to reduce impact on natural surface water systems are described below:

- Borrow pit locations shall be sited so as to facilitate rehabilitation to a free draining landform that conforms to the surrounding landscape on completion;
- A borrow pit development plan shall be completed by the Contractor prior to the construction of new borrow pits. The plan shall include a provisional rehabilitation methodology including the intended drainage of the borrow pit;
- Borrow pit plans are to include a map detailing:
 - Existing contours
 - Proposed borrow pit boundaries
 - Existing drainage
 - Locations of geotechnical test pits
 - Locations of stockpiles
 - Locations of access tracks
- Borrow pit plans are to include intended post-rehabilitation detail including:
 - A map showing final contours and surface drainage
 - Typical cross-sections;
- Borrow pit plans shall include adequate geotechnical information to determine the suitability of the material for the intended purpose;
- Borrow pits shall maintain at least a 100 m buffer from “No Go Areas”, priority flora, Heritage sites, public and private roads, and watercourses unless otherwise approved by the Environment Manager;

- Drainage and erosion control structures shall be developed around the pits to control the impact of substantial rainfall events where required;
- All topsoil / growth medium removed from the borrow pit areas shall be stockpiled along the edge of the borrow pit or at dedicated topsoil storage areas for subsequent use in rehabilitation;
- Trees and heavy stands of vegetation shall be preserved where practicable; and
- Borrow pits shall be rehabilitated, progressively, as below:
 - Deep ripping shall take place along the contour, at a depth of 0.5 – 1 m
 - Previously stockpiled topsoil shall be spread over the pit floor and battered walls
 - After topsoil and vegetation spreading, the area shall be cross ripped to a minimum depth of 0.3 metres
 - Access roads shall be ripped
 - In the case of a shortfall of topsoil, the pit area shall be seeded with seed from local species endemic to the area (local provenance)
 - The Environment Manager shall sign off all borrow pits following rehabilitation. Where additional rehabilitation works are deemed necessary, these are the responsibility of the contractor.

Roads and Access Tracks

Road and access track control procedures to reduce disturbance of natural surface water systems and minimise impact on sensitive receptors are described below:

- Temporary and permanent roads constructed for the Project shall be restricted to Project vehicles only, members of the public shall be excluded from using Project roads;
- Road speed limits shall be presented in the induction and signposted in areas of conservation significance as identified by MWMCL;
- Existing roads and tracks on-site, that are under the jurisdiction of the Project Manager, shall be used in preference to clearing new routes;
- Routes shall be located, if possible, along contours and on the lower slopes of hills to minimise earth moving disturbances and erosion potential;
- Roads shall be designed to avoid, where practicable, valleys, drainage lines, dense woodland, wetlands, creeks / floodplains, rough terrain, rocky outcrops, steep slopes and clay pans;

- Where practicable, creek crossings shall be approached by gentle grades, at right angles to the creek;
- Proposed routes shall be inspected by the relevant MWMCL Supervisor prior to the issuing of the Clearing Permit;
- Access tracks shall be made to the minimum width necessary for safe passage;
- Erosion shall be minimised by breaking windrows to allow drainage;
- Haul roads and infrastructure access roads shall be cambered to channel surface water run-off from the road and allow surface water flow through the existing area by using culverts and flood ways; and
- Temporary access tracks shall be rehabilitated progressively. The Environment Manager shall sign off on all rehabilitation activities.

3.14.7 Monitoring & Inspection

The inspection checklist and schedule for borrow pits, tracks and roads shall be as follows:

- New tracks and roads shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS database;
- Verification that the borrow pits are not encroaching into buffer zones for “No Go Areas”, priority flora, heritage sites, watercourses, or public / private roads;
- Areas cleared for development of borrow pits / quarries / roads / access tracks and areas rehabilitated shall be reported to the EHS Manager on a monthly basis;
- The MWMCL Project Manager shall inspect and arrange maintenance for erosion and sediment control structures (associated with borrow pits, tracks and roads) during the wet season;
- Roads and tracks shall be maintained to be serviceable and to maintain clear markings at all times;
- Unapproved access tracks shall be reported and investigated by the MWMCL Project Manager;
- A post-rehab survey pickup will be completed to verify the borrow pit as free draining;
- Regular inspections of active borrow pits by the MWMCL Environment Manager, including for weed infestations, erosion and compliance with the borrow pit plan;

- Photographic record of pit development will be maintained. Photographs will be taken:
 - After pegging, before clearing
 - At least once during operation
 - At completion of rehabilitation
- Photograph points will be recorded by GPS and used for ongoing monitoring and rehabilitation purposes.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.14.8 Training

All employees of MWMCL and project Contractors shall be provided with training in the usage and management of borrow pits, tracks, and roads. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve borrow pit, track, and road development, construction or use.

3.14.9 Performance Indicators

Measurement of the performance of borrow pit, track, and road management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the borrow pit plan;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents and rehabilitation; and
- Recording of training.

3.14.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Project and Environmental Departments in accordance with the schedule presented in Table 3.14.2.

Table 3.14.2: Auditing & Reporting - Borrow Pits, Access Tracks and Roads

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / borrow pit plan	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Rehabilitation	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.15 **EMP 13 – SOIL EROSION AND SEDIMENT CONTROL**

3.15.1 Introduction

The Erosion Control Management Plan is designed to ensure the protection of soils and the maintenance of terrain in the areas surrounding the Project footprint during the construction phase of the Project. The plan contains methods that will be used to prevent adverse effects occurring, and monitoring plans to assess potential effects and determine the effectiveness of mitigation.

During the construction phase, key issues relate to soil removal and terrain disturbance for the open pit and associated facilities including the fuel station, explosives magazine, mine services area, crusher area, access roads, conveyor alignment, and waste rock dump site. The key issues related to erosion include the minimization of disturbance and the design of activities and facilities to minimize the potential for future erosion to occur.

3.15.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.15.3 Targets

The targets of this Management Plan are to:

- Protect local communities, livestock, wildlife and vegetation from adverse impacts due to construction related soil erosion and sediment laden rainfall run-off;
- Design, construct and install appropriate erosion and sediment control infrastructure;
- Implement erosion and sediment management procedures; and
- Achieve zero regulatory or community concerns regarding erosion and sediment management.

3.15.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to water management as outlined in the RACI in Table 3.15.1.

Table 3.15.1: Roles & Responsibilities - Soil Erosion and Sediment Control

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate erosion and sediment control infrastructure design	I	R	I	C/A
Construct and install appropriate erosion and sediment control infrastructure	I	R	C/A	I
Develop erosion and sediment control plans	I	R	C/A	I
Introduce erosion and sediment control strategies to the workforce	I	R	I	C/A
Monitor erosion and sediment control across the project	I	R	C/A	I
Record and report erosion and sediment control incidents and training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to erosion and sediment control	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.15.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include erosion and sediment control and awareness.
2. Erosion / sediment control structures will be appropriately designed, constructed and installed.
3. Personnel working with erosion / sediment control infrastructure will be properly trained to ensure its proper management.
4. Uncontrolled water releases / spills, or non-compliance with sediment related environmental performance limits will be reported to the Environment Manager within 24 hours.
5. Damage to erosion / sediment control infrastructure will be inspected immediately and repairs undertaken.

3.15.6 Control Procedures

General

The effects on the terrain can be minimized and managed using relatively standard mitigation measures. These measures include:

- Minimizing the project footprint to limit surface disturbance; and
- Where practicable and depending on its acid-producing potential, using waste rock as an alternative construction aggregate.

If new facilities are required during the development phase, they will be built in areas that have been previously disturbed so as to avoid disturbing new areas. The following measures will be followed during design to reduce the area to be disturbed:

- Grouping administrative buildings and mine site facilities wherever possible;
- Constructing waste rock dumps bounding the open pit on the northern and southern ends to reduce drainage control concerns;
- Using existing roads to access the site, and limiting linear developments throughout the project development area as much as feasible; and
- Using drainage control measures and culverts to control natural runoff and overland flow.

Adverse effects on terrain stability will be reduced by:

- Using appropriate blasting methods that are in accordance with regulatory requirements and industrial best practices procedures;

- Reducing, as much as feasible, slope gradients along road cuts and disturbed areas to gradients at or below the angle of repose of those disturbed surfaces; and
- Where appropriate, using drainage control structures and culverts to manage the natural flow of surface runoff.

Erosion Site Clearance

- Vegetation stripping and clearance operations will be undertaken on an as-required basis, so that stripped areas will remain unused for the minimum period of time;
- Prior to the commencement of stripping activities, the stripping panel will be clearly marked out in the field; for access roads, the vegetation stripping area will be marked out to avoid unnecessary vegetation removal;
- Stripping depth will be clearly indicated to the machine operator; and
- Stripping activities will be carried out using a scraper or suitably light front-loader and tractor for haulage; haulage vehicles will adhere to designated routes to minimise soil compaction.

Access Roads

- Access routes will use established roads wherever possible. In instances where un-sealed roads must be used, route selection will include consideration of the condition of these routes and the need for the implementation of additional erosion control measures, with particular reference to where the road structures and associated drainage intersect current or planned drainage patterns;
- The moisture content of access road surface layers will be maintained through routine spraying or the use of an appropriate dust suppressant;
- Access roads will be designed with a camber to avoid ponding and to encourage drainage to side drains; where necessary, culverts will be installed to permit free drainage of existing water courses;
- Access road surfaces will be suitably compacted to limit sediment release;
- Access road side drains will be protected with sediment traps and/or gabions to reduce the erosive velocity of water during storm events; where necessary geomembrane lining to drains will be employed;
- Routine inspections will be undertaken to ensure that side drains and culverts are kept free of debris;

- Access road verges will be planted with fast-growing grass or other species to reduce erosion potential and
- Off road driving and the creation of new roads/tracks will be avoided where ever possible and disciplinary action for off road driving offences should be included in employee policy and personnel inductions.

Water Management

This management objective seeks to control the interaction of precipitation, surface water runoff, and contact with friable soil and rock material. This scope includes the management of existing natural drainage systems, the construction of modified drainage routes, the location of impoundment structures, catch basins, settling ponds and other surface water collection facilities. Design of water control structures will necessarily include the calculation of storm event runoff and peak flows. The following principles will apply to the management of water and erosion control:

- Ditches and culverts will be used as required to manage drainage. Roads and other corridors will be designed and constructed to minimize changes to natural drainage patterns as much as possible. Culverts and other drainage systems will be constructed so that water does not build up on one side of a road and cause those soils to become waterlogged and the soils down slope to become dry;
- The perimeter drainage system of each site operational area will be kept free of blockages or obstructions and inspected on a regular basis;
- Continuous maintenance will be provided to drainage structures to collect sediment and prevent silting and modification of runoff patterns; including in culverts and side drains;
- Drainage channels will be lined and will be of sufficient capacity to carry storm flows;
- If necessary, water bars will be constructed within working areas and around access routes to control surface water runoff and erosion. Water bars will be designed to simulate the slope contour and direct and diffuse surface water away from disturbed areas;
- Flumes, berms or other similar structures will also be provided to control drainage and migration of sediment where cross drainage is necessary (e.g. if slopes are cut);
- Diversion channels for the collection of normal surface drainage to prevent its passage into operational areas (perimeter ditches of open-pits, overburden and uneconomic ore stockpiles), will endeavour to direct un-impacted flows

downstream to the natural drainage course to which they would previously have fed;

- Energy diffusers will be installed at the outlet of drainage channels to reduce erosion in downstream river courses; and
- Where possible erosion and sediment control measures shall be implemented at the potential source, as detailed in the *Erosion and Sediment Control Guidelines*. These guidelines provide summary design and construction guidelines for local, small scale sediment control structures to be put in place whilst constructing and developing the mine. If implemented properly they will significantly reduce generation of sediment loads at the source.

Soil Stabilisation

- Soil stabilisation measures will be applied to any areas where uncontrolled erosion is affecting topsoil. Erosion matting may be used locally to:
 - Provide immediate protection to the working areas on slopes and adjacent to access routes
 - Minimise washing-out of seeds
 - Enhance the micro-climatic conditions of the soil for plant germination and growth
- Once installed, erosion mats will be regularly inspected for degradation and installation integrity. Mats will be maintained and replaced as appropriate to achieve project needs.

3.15.7 Monitoring & Inspection

Letpadaung has a distinct wet and dry season. The soils monitoring programme will include two rounds of samples per year during construction (February and September) to determine if any seasonal variations occur. Thereafter, annual monitoring will take place once per year, preferably at the end of the dry season (early March). Monitoring will be conducted with test pits located downwind and down gradient from mine facilities such as waste rock pile, open pit, plant site and leach pad; and upwind and upstream from these facilities at designated control points. The suite of analyses for the monitoring programme will include:

- Soil chemistry:
 - pH;
 - Anion exchange capacity

- Electrical conductivity
- Metals (full suite using ICP-MS)
- Toluene-extractable organics
- Soil structure:
 - Clay fraction (<0.002 mm)
 - Particle size distribution
 - Water retention
 - Permeability
 - Total suspended solids.

Sampling frequency and parameters analysed will be reassessed based on results from air quality and surface water monitoring results but are likely to be more frequent during the rainy season to correspond with rains. Terrain and erosion monitoring procedures shall be as follows:

- The MWMCL Project Manager shall report on a monthly basis to the MWMCL Environment Manager on the implementation of this Management Plan including:
 - Quantities of vegetation removed
 - Storage locations, quantities and type of topsoil and overburden
 - Storage procedures and methods used
- The MWMCL Project Manager shall inspect the condition of areas on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Areas prone to erosion
 - Evidence of erosion
 - Condition of access roads
 - Condition of cleared areas
 - Condition of perimeter drains (if installed) and associated settlement ponds (if installed)
 - Compliance with applicable regulatory and corporate requirements.

The MWMCL Project Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted by the MWMCL Environmental Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.15.8 Training

All employees of MWMCL and project Contractors shall be provided with basic training in the protection of terrain and reduction of erosion. Additional, specialist training shall be provided to mine operators, plant operators and key personnel involved in activities which involve activities likely to impact terrain or erosion.

3.15.9 Performance Indicators

Measurement of the performance of water management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of water body contamination responses; and
- Recording of training.

3.15.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule and presented in Table 3.15.2.

Table 3.15.2: Auditing & Report - Soil Erosion and Sediment Control

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Water contamination responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.16 **EMP 14 – SURFACE WATER, WATER STORAGE AND GROUNDWATER**

3.16.1 Introduction

The Water Resources Management Plan is designed to ensure the protection of water resources in the areas surrounding the Project during the construction phase. The plan contains methods that will be used to prevent adverse effects occurring, monitoring plans to assess potential effects, and monitoring plans for determining the effectiveness of mitigation measures. This EMP should be read in conjunction with that for the *Erosion and Sediment Control* EMP.

3.16.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation including mitigation of off-site impacts on regional water resources and users;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.16.3 Targets

The targets of this Management Plan are to:

- Protect local communities, livestock, wildlife and vegetation from adverse impacts due to construction related changes to surface water and groundwater flows or quality;
- Design, construct and install appropriate water management infrastructure;
- Implement water management procedures; and
- Achieve zero regulatory or community concerns regarding water management.

3.16.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to water management as outlined in the RACI in Table 3.16.1.

Table 3.16.1: Roles & Responsibilities - Surface Water, Water Storage and Groundwater

Activity Description	MWMCL Senior Management Team	Project Manager	MWMCL Construction Team	Contractors Team	MWMCL Environment Team
Develop appropriate water infrastructure design	I	R	C/A	I	C/A
Construct and install appropriate water infrastructure	I	C/A	R	I	I
Develop water management plans	I	R	C/A	I	C/A
Introduce water management strategies to the workforce	I	I	R	C/A	I
Monitor water management across the project	I	I	R	I	C/A
Record and report water spills / losses, contamination and training of personnel	C/A	I	R	I	C/A
Develop a tracking system for incidents related to water	R	I	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.16.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include water management and awareness.
2. Water diversion, dams, storage facilities, bores, wells and abstraction infrastructure will be appropriately designed, constructed and installed.
3. Personnel working with water infrastructure will be properly trained to ensure its proper management.
4. Uncontrolled water releases / spills, or non-compliance with water related environmental performance limits will be reported to the EHS Manager within 24 hours.
5. Damage to water infrastructure will be inspected immediately and repairs undertaken.
6. Changes in water availability and quality in relation to water resources in areas surrounding the Project will be monitored and changes to activities made to mitigate any adverse impacts reported or observed.

3.16.6 Control Procedures

Construction Water

Any water required over the construction period will be sourced from the water standpipe at S&K (which is sourced from the Chindwin River) or piped directly to the site from the Chindwin River.

Water Management and Discharges from the Process Area

The Process Area will be installed with a network of perimeter drains to collect storm water run-off which will be held in lined storage ponds prior to discharge.

No discharges to the environment will be permitted from stormwater or process water, unless it has been tested and proven to be suitable for release by the Environment Department.

The process area will be kept free of chemicals, oils and other materials which may contaminate storm water drainage from the area.

Storm water diversion channels are to be kept free of debris to ensure clean storm water is carried away from the process area.

Diversion of streams during construction which impact the livelihood and quality of life of water users surrounding the site will be compensated by alternative supply by MWMCL.

Groundwater Abstraction

No groundwater will be extracted during the construction period.

Water Management and Discharge from the Open Pit, Stockpiles and Waste Dumps

All ore stockpiles are to be installed with impermeable under-liners and a drainage collection system. Drainage from ore stockpiles will be collected in lined evaporation ponds.

No fuel storage or other chemicals which have the potential to contaminate groundwater are to be located within 10 m of surface water courses. All such chemicals will be stored with suitable secondary containment. Adsorbent booms or similar materials should be available adjacent to such stores, ready for use in the event of an emergency spill.

Storm water channels are to be kept free of debris to minimise the volume of storm water contacting the working areas (and therefore minimise sediment laden run-off).

Contact water collection ponds are to be kept free of debris and sediment build-up will be removed regularly to maintain the capacity of the collection pond.

Surface Water Management

All rock material used in the construction of water infrastructure is to be geochemically benign.

At times of rainfall and river flows, surface water is to be monitored for quantity and quality. Flood risk is to be monitored and any local communities are to be alerted as soon as possible of risk of flooding of agricultural areas and villages;

The impacts of flooding are to be evaluated after each flood event and appropriate changes made to management practices and procedures.

Erosion and Sediment Control

Erosion and sediment control and management is discussed in EMP 14.

3.16.7 Monitoring & Inspection

Water resources monitoring procedures shall be as follows:

- The MWMCL Project Manager shall report on a monthly basis to the MWMCL Environment Manager on the implementation of this Management Plan including:
 - Collection of climate data at the current station and addition of evaporation data

- Development of a numerical model to obtain long-term prediction of the effects due to groundwater withdrawal/dewatering associated with open pit development
- The effect of groundwater withdrawal/dewatering and its implications for other environmental resources, including habitat diversity, surface water, vegetation and soil saturation
- Maintenance of stream and stream diversion discharge measurements at agreed environmental compliance points. These measurements should be carried out frequently during all flood events. Attempts should be made to collect manual flow measurements for the entire duration of the wet season
- An inventory of all surface and groundwater users, identifying any potential conflicts and proposed resolutions
- The MWMCL Project Manager shall inspect the condition of areas on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Groundwater monitoring (quality and quantity) will be conducted through all mine phases to provide information to be used in the mine's adaptive management
 - The volume of surface water leaving site and the location of watercourses diverted shall be inspected periodically to determine any adverse impacts on local users
 - Evidence of any reduction of water resources
 - Records and evaluations of flood events
 - Condition of wells
 - Efficiency of wells.
- The MWMCL Project Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the MWMCL Environmental Manager. Reporting shall include:
 - A summary of activities undertaken during the reporting period
 - Any material deviations or non-compliances to this Management Plan
 - Planned activities during the next reporting period
 - Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.16.8 Training

All employees of MWMCL and project Contractors shall be provided with training in the protection of water resources. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve activities likely to impact water resources. Orientation of all employees will be undertaken to instil a culture of water conservation.

3.16.9 Performance Indicators

Measurement of the performance of water management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of leaks, diversions and losses;
- Reporting of water body contamination responses; and
- Recording of training.

3.16.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.16.2.

Table 3.16.2: Auditing & Reporting - Surface Water, Water Storage and Groundwater

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Leaks and losses	• Monthly by Project Manager	• Quarterly by Environment Manager
Water contamination responses	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.17 **EMP 15 – SEWAGE AND WASTE WATER**

3.17.1 Introduction

The Sewage and Waste Water Management Plan is designed to ensure the environmentally-sound disposal of waste water generated from the Letpadaung project during the construction, operations and closure phases of the Project. The plan establishes guidelines for waste water quality and management, monitoring and reporting. This plan covers all activities that could result in adverse effects of stormwater and sanitary sewage on humans, livestock and the environment.

3.17.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities;
- Define requirements and procedures to guide the Project Management Team and other project contractors;
- Define mitigation measures;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.17.3 Targets

The targets of this Management Plan are to:

- Zero unauthorised discharge to the environment;
- Ensure that waste water is treated within appropriate regulatory and industry guidelines; and
- Ensure that there are no regulatory or community concerns or complaints regarding waste water treatment and management.

3.17.4 Potential Sources & Impacts

The main sources of domestic waste water within the Project area include:

- The Accommodation Camp (for both construction and operations staff); and
- The Process Plant.

Impacts

Waste water can be harmful to humans and the environment due to the various components which can include:

- Faecal bacteria;

- Phosphates;
- Nitrates;
- BOD;
- Metals;
- Oil and grease; and
- Total suspended solids.

3.17.5 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to waste water as outlined in the RACI in Table 3.17.1.

Table 3.17.1: Roles & Responsibilities – Sewage and Waste Water Management

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a waste water management plan	I	R	I	R
Introduce waste water management and minimisation strategies to the workforce	I	R	C/A	I
Monitor waste water generation and management across the project	I	R	C/A	C/A
Record and report waste water generation plus related training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to waste water	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.17.6 Management Actions

1. Facilities will be managed to preserve the amenity of the area.
2. Formal waste water monitoring shall be carried out as specified in this Management Plan.
3. All waste water complaints received from the local community, village occupants or other members of the public shall be logged as an Incident within 24 hours.
4. Adverse impacts from waste water on vegetation, fauna or heritage sites outside of the Disturbance Zone shall be reported within 24 hours.

3.17.7 Control Procedures

Stormwater Management

The Process Plant Area will be installed with a network of perimeter drains to collect storm water.

- No discharges to the environment will be permitted from the Process Plant Area from storm water, unless it has been tested and proven to be suitable for release;
- The Process Plant Area will be kept free of chemicals and other materials which may contaminate storm water collected from the area;
- Stormwater diversion channels are to be kept free of debris to ensure that clean stormwater is carried away from the Process Plant Area;
- Stormwater courses are to be kept free of debris to minimise the volume of stormwater contacting the working areas (and therefore minimise sediment laden run-off); and
- If waste rock dumps are used as part of water management structures, consideration will be given to minimizing the potential for acid leachate to enter surface watercourses at concentrations that would adversely impact downstream water quality.

Sanitary Waste Water Management

The World Bank Group produces Environmental, Health and Safety guidelines for the management of sanitary wastewater.²³ Recommended management strategies include:

- Segregation of wastewater streams to ensure compatibility with selected treatments option (e.g. septic system which can only accept domestic sewage);
- Segregation and pre-treatment of oil and grease containing effluents (e.g. use of a grease trap) prior to discharge into sewer systems;
- If sewage from the industrial facility is to be discharged to surface water, treatment to meet national or local standards for sanitary wastewater discharges;
- If the sewage from the industrial facility is to be discharged to either a septic system, or where land is used as part of the treatment system, treatment to meet applicable national or local standards for sanitary wastewater discharges is required; and
- Sludge from sanitary wastewater treatment systems should be disposed in compliance with local regulatory requirements, in the absence of which disposal has to be consistent with protection of public health and safety, and conservation and long-term sustainability of water and land resources.

In the absence of national or local standards for sanitary wastewater discharges, indicative guideline values are shown in Table 3.17.2

Table 3.17.2: Indicative Values for Treated Sanitary Sewage Discharges

Pollutants	Units	Guideline Value
pH	pH	6 – 9
BOD	mg/l	30
COD	mg/l	125
Total Nitrogen	mg/l	10
Total Phosphorus	mg/l	2
Oil and Grease	mg/l	10
Total Suspended Solids	mg/l	50
Total Coliform Bacteria	MPN ^a / 100 ml	400
Notes: ^a MPN = Most Probable Number		

²³ World Bank Group. General Environmental, Health and Safety Guidelines. 30 April 2007. pp 29-32

3.17.8 Monitoring & Inspection

A wastewater and water quality monitoring program with adequate resources and management oversight should be developed and implemented to meet the objectives of the monitoring program. The wastewater and water quality monitoring program should consider the following elements:

- **Monitoring Parameters** – The parameters selected for monitoring should be indicative of the pollutants of concern from the process, and should include parameters that are regulated under compliance requirements;
- **Monitoring Type and Frequency** – Wastewater monitoring should take into consideration the discharge characteristics from the process over time. Monitoring of discharges from processes with batch manufacturing or seasonal process variations should take into consideration of time-dependent variations in discharges and, therefore, is more complex than monitoring of continuous discharges. Effluents from highly variable processes may need to be sampled more frequently or through composite methods. Grab samples or, if automated equipment permits, composite samples may offer more insight on average concentrations of pollutants over a 24-hour period. Composite samplers may not be appropriate where analytes of concern are short lived (e.g. quickly degraded or volatile);
- **Monitoring Locations** – The monitoring location should be selected with the objective of providing representative monitoring data. Effluent sampling stations may be located at the final discharge, as well as at strategic upstream points prior to merging of different discharges. Process discharges should not be diluted prior or after treatment with the objective of meeting the discharge or ambient water quality standards; and
- **Data Quality** – Monitoring programs should apply internationally approved methods for sample collection, preservation and analysis. Sampling should be conducted by or under the supervision of trained individuals. Analysis should be conducted by entities permitted or certified for this purpose. Sampling and Analysis Quality Assurance/Quality Control (QA/QC) plans should be prepared and implemented. QA/QC documentation should be included in monitoring reports.

3.17.9 Performance Indicators

- Monitoring of water quality and record keeping to track any changes; and
- Waste water complaints received from the local community.

3.17.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.17.3.

Table 3.17.3: Auditing & Reporting - Sewage and Waste Water Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Leaks and losses	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.18 **EMP 16 – FIRE**

3.18.1 Introduction

The Fire Management Plan is designed to ensure the minimisation of impacts related to fire to the Project area during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for fire management, control procedures, monitoring and reporting.

3.18.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECP) for construction, operations and closure activities;
- Define requirements and procedures to guide the Project Management Team and other project contractors;
- Define mitigation measures;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.18.3 Targets

The targets of this Management Plan are to:

- Prevent fire as a result of construction and operation activities; and
- Ensure no uncontrolled fires are started as a direct result of the Project activities.

3.18.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to waste water as outlined in the RACI in Table 3.18.1.

Table 3.18.1: Roles & Responsibilities – Fire Management

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a fire management plan	R	C/A	I	C/A
Introduce fire management and minimisation strategies to the workforce	I	R	C/A	I
Monitor fire management across the project	I	R	C/A	I
Record and report fire plus related training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to fire	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.18.5 Management Actions

1. Fire management, including cigarette smoking rules are to be covered in the Site Induction
2. Unauthorised fire use may result in disciplinary action against individuals or contractors, including dismissal from the Project.
3. Fire fighting equipment including fire extinguishers or other control equipment shall be made available at all times in all vehicles and at designated work area points.
4. Fire fighting equipment shall be maintained to comply with relevant fire safety standards.
5. All project vehicles will run on diesel.

3.18.6 Control Procedures

- Cigarette smoking shall be restricted to approved areas only, with appropriate cigarette butt disposal facilities provided;
- No burning of rubbish or cleared vegetation shall be permitted anywhere in the Project area;
- Open fires may be permitted only in designated areas directed by MWMCL;
- No open fires will be allowed during fire ban periods;
- Particular attention shall be paid to fire risks associated with the use of earthmoving equipment that can result in sparks (metal blade on rock surface). Equipment involved in vegetation clearing activities shall be managed to minimise the build-up of vegetation underneath vehicle bodies;
- Vehicle undersides shall be checked and any material stuck around exhaust manifolds is to be removed as part of normal vehicle pre-start check routines;
- All vehicles shall remain on dedicated routes, unless off-track driving has been authorised;
- All flammable materials and chemicals shall be stored accordingly to procedures in the Hydrocarbon and Hazardous Materials EMP; and
- Hot work permits will be required for work that has the potential to create ignition sources. Welding and grinding activities require Hot Work Permits and shall be undertaken with a minimum 3 m radius free of combustible material and vegetation.

3.18.7 Monitoring & Inspection

- Fires within and around the Project footprint shall be reported immediately and investigated; and
- House-keeping and vehicle inspections (as part of general site inspections) shall be undertaken and documented by the Safety Supervisor and Site Environmental Team.

3.18.8 Performance Indicators

- Fire minimisation practices addressed in personnel inductions and toolbox meetings; and
- Incidents related to fire reported.

3.18.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule and presented in Table 3.18.2.

Table 3.18.2: Auditing & Reporting – Fire Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Fire minimisation measures implemented	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.19 **EMP 17 – NOISE AND VIBRATION**

3.19.1 Introduction

The Noise and Vibration Management Plan is designed to ensure the control and limitation of potential sources of noise and vibration during the construction, operation and closure phases of the Letpadaung Project. The plan describes the proposed measures that shall be used to protect people and settlements in close proximity to the Project from any adverse impacts related to airborne or ground-borne noise and vibration. The plan recognises that the generation of some noise and vibration emissions is inevitable but, nevertheless, sets out a systematic approach for noise control, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation.

3.19.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities;
- Define monitoring and reporting procedures.

3.19.3 Targets

The targets of this Management Plan are to:

- No sensitive receptor (such as school, clinic, residential house, monastery, temple) shall experience more than a 3dB(A) rise in noise level from the background level experienced prior to the Project commencement;
- Protect workers and local communities from adverse impacts due to noise and vibration generated by the Project;
- Implement noise and vibration management procedures;
- Avoid nuisance from noise and vibration;
- Achieve zero work stoppages as a result of excessive noise or vibration;
- Achieve zero regulatory or community concerns regarding noise and vibration management.

3.19.4 Potential Sources & Impacts

Noise impacts will occur in all phases of the Project, with noise and vibration being generated from a number of sources including:

- Road traffic;
- Impact equipment (pile drivers, jack hammers, drills, pneumatic tools);
- Stationary equipment (compressors, generators, pumps);
- Blasting;
- Materials handling equipment (crushers, concrete mixers, cranes);
- Earth moving equipment (trucks, loaders, dozers, graders); and
- Compactive equipment (vibratory rollers, hand compactors).

In general, many equipment noise sources will have their own mitigation features implemented by manufacturers.

The primary noise receptors for the Project will include the site workers; both when they are on the site and when they are in camp and the local community with several settlements in close proximity to the Project.

Construction Phase

During the construction phase, a higher level of noise is usually tolerated if the duration of works is relatively short. Also, the construction stage works are frequently associated with noise mitigation measures such as natural topographical obstructions (different ground elevation), which shield construction noise. Controlling construction noise involves noise level and time restrictions. The shorter the work phase, the more likely that a higher level of construction noise will be acceptable. As the length of the construction period increases, the tolerable exceedance of the background noise level is reduced.

Operations Phase

During the operations phase, the key issues related to noise concern the ongoing excavation of soils involving blasting and earth moving, as well as the use of various crushers, mills and a power plant.

Closure Phase

The closure phase will generally involve less noise generation due to the absence of operational equipment. Much of the area will be reclaimed with a covering of soil, involving limited use of earth moving equipment.

Impacts

Potential impacts associated with dust and vibration include:

- Nuisance impacts within local communities;
- Health impact to workers and the local community; and
- Aural impacts and community perception of the mine.

3.19.5 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to noise as outlined in the RACI in Table 3.19.1.

Table 3.19.1: Roles & Responsibilities – Noise and Vibration

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a noise and vibration management and minimisation plans	I	R	R	C/A
Introduce noise and vibration management and minimisation strategies to the workforce	I	R	R	C/A
Monitor noise and vibration generation and management across the project	I	R	C/A	I
Record and report noise and vibration generation plus related training of personnel	I	R	R	C/A
Develop a tracking system for incidents related to noise and vibration	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.19.6 Management Actions

1. Requirements and controls associated with Noise and Vibration Management are to be included in the Project Site Induction.
2. Plant and equipment shall be regularly maintained as per maintenance schedules. Any plant / equipment with faulty or inefficient mufflers / noise dampeners shall be taken out of service.
3. Blast management plans must include an assessment of proximity to sensitive receptors (including accommodation villages).
4. Formal noise and vibration monitoring shall be carried out as specified in this Management Plan.
5. All noise and vibration complaints received from the local community, village occupants or other members of the public shall be logged as an Incident within 24 hours.
6. Adverse impacts from noise and vibration on vegetation, fauna or heritage sites outside of the Disturbance Zone shall be reported within 24 hours.

3.19.7 Control Procedures

Construction Phase

The following procedures shall be adopted by the Project to minimise the impacts of construction noise and vibration:

General

- Develop a noise and vibration monitoring programme for the construction phase;
- Schedule noisy construction activities at normal working hours to the extent possible;
- Perform regular inspection and maintenance of construction vehicles and equipment to ensure that they have mufflers installed and worn parts are replaced. All vehicles and equipment should have a maximum sound power level of 85 dB(A) at one (1) metre from the item of concern;
- Limit equipment on-site – only have necessary equipment on-site;
- Reduce power operation – use only necessary size and power;

- Consider noise barriers, baffles, sound insulation or enclosures for particularly noisy equipment such as generators, crushers, grinders, compressor, pumps, gearboxes etc.;
- Staff accommodation will be sited away from major noise sources; and
- Consider the strategic placement of earth/rock bunds, so as to create buffer zones between operational areas and sensitive receptor locations; and
- Appropriate PPE will be made available to personnel that have the potential to be exposed to loud noise. Workers will be trained in the correct use of PPE. PPE may include ear plugs, ear muffs or noise abatement protective head gear.

Road Traffic

- Avoid trucking operations during night-time, where possible;
- During routine maintenance, check that noise abatement devices are in good order (e.g., brakes, exhaust mufflers, engine hoods); and
- Select vehicles with minimum noise output including tyre noise.

Impact Equipment

- Use of a noise-attenuating jacket around the jackhammer; and
- Avoid operating numerous pneumatic tools at the same time and spread operations throughout working periods.

Stationary Equipment

- Position equipment in sheltered locations, e.g. behind an earth berm if possible;
- Keep equipment in good condition; and
- Most stationary diesel-powered equipment will be enclosed in insulated buildings.

Blasting

- Use delays, both surface and down hole;
- Follow approved blasting practices; and
- Select time when the environment is least sensitive to noise impact (e.g., daytime hours).

Materials Handling Equipment

- Place crushers behind engineered or natural berms if possible;
- Maintain equipment in good working condition;
- Turn equipment off when not in use; and

- Mobile equipment will have exhaust muffling maintained at manufacturer's specifications.

Earth Moving Equipment

- Where possible, restrict equipment age so only newer, more efficient machinery will operate;
- Operate equipment within specification and capacity (e.g. don't overload machines; and
- Use noise abatement accessories such as sound hood and mufflers.

Other Internal Combustion Powered Equipment

- Equipment restrictions: use equipment conforming to noise standards;
- Intake and exhaust silencers: ensuring equipment has quality mufflers installed;
- Reduced power option: use only necessary size and power; and
- Equipment maintenance: maintain equipment on a regular basis, replace worn parts, lubricate as required.

Operational Phase

The following procedures shall be adopted by the Project to minimise the environmental impacts of noise and vibration during the operational phase:

General

- Comply with established noise and vibration limits; a 100 m wide buffer along the property perimeter will be considered;
- Provide an air inlet silencer and exhaust silencers for combustion engines and other units;
- Utilise sound insulation on equipment and sound barriers around stationary equipment; and
- Conduct noise and vibration survey at the property line and at the location of critical receptors when the Project attains full production capacity and annually thereafter during daytime and night-time hours to confirm compliance.

Road Traffic

- Avoid trucking operations during night-time;
- Select vehicles with minimum noise output including tyre noise, exhaust and compressor/fan noise;

- During routine maintenance, check that noise abatement devices are in good order (e.g., brakes, exhaust mufflers, engine hoods);
- Place speed limit for the plant area and on the haul road and use shallow slopes for the haul road; and
- Educate truck drivers about the characteristics of diesel engines (i.e., that the flat torque characteristic allows ascending an incline in a higher gear, which is a less noisy operation).

Impact Equipment

- Use of a noise-attenuating jacket around the jackhammer; and
- Avoid operating numerous pneumatic tools at the same time and spread operations throughout working periods.

Stationary Equipment

- Position equipment in sheltered locations, e.g. behind an earth berm if possible; and
- Keep equipment in good condition.

Blasting

- Select time when the environment is least sensitive to noise and vibration impact (e.g., daytime hours);
- Monitor blasts and revise blast design, as required;
- Limit ground-borne vibration and minimize air over pressure by taking care in unusual situations e.g. corners and geological considerations in blast;
- Adequate stemming of holes;
- Use of down-hole initiation with short delay detonators; this improves fragmentation whilst at the same time minimises ground vibration which is directly related to Maximum Instantaneous Charge (MIC) and not to the total charge in the blast;
- Ensure the correct blasting ratio is obtained (the blasting ratio is a measure of the amount of work expected per unit volume of explosives i.e. tonnes/kg);
- Notify nearest residences (if present) prior to the blast;
- Eliminate exposed detonating cord and secondary blasting;
- Restrict blasts to favourable weather conditions (wind and temperature gradient);
- Use hole spacing to ensure that the explosive force is just sufficient to break the ore to the required size; and

- Perform blasting in depressed pits.

Outdoor Materials Handling Equipment

- Place crushers in sheltered/enclosed locations if possible;
- Maintain equipment in good working condition;
- Turn equipment off when not in use if practicable; and
- Use of noise absorbing pads at foundations of vibrating equipment to reduce noise emissions.

Earth Moving Equipment

- Where possible, restrict equipment age so only newer, more efficient machinery will operate;
- Operate equipment within specification and capacity (e.g. don't overload machines); and
- Use noise abatement accessories such as sound hood and mufflers.

Primary Plant Facilities

- Equipment restrictions: use equipment conforming to noise standards;
- Provide building with walls absorbing noise;
- Use of rubber linings on chutes and transfer points;
- Maintain equipment on a regular basis, replace worn parts, lubricate as required;
- Provide diesel plant units with efficient intake and exhaust silencers;
- Restrict use of sirens and reversing alarms to the minimum;
- Use conveyor system with low noise output, paying particular attention to rollers;
- Enclose conveyors where necessary; and
- Minimize height which material drops from plant and machinery.

Transportation Noise During Construction and Operation

The following measures will be implemented to minimise transportation-related noise impacts:

- Enforce speed limits in relation to road conditions and on-route communities;
- Maintain road surfaces in good repair to reduce tyre noise;
- Ensure continuous traffic flow to avoid prolonged idling; and
- Schedule transportation for daytime hours whenever possible.

3.19.8 Monitoring & Inspection

Monitoring of changes in noise and vibration levels within the operational areas will be done to ensure that noise levels do not increase significantly over the life of the Project and do not breach thresholds. It will be done at the same locations and will require establishing representative sampling locations to assess the potential effects of noise and vibration levels across the site. Any complaints from the community should be documented and managed through to resolution. In the event that public complaints arise, steps should be taken to investigate the root cause without delay and remedial action should be taken to correct the deficiency. Actions should ensure that similar incidents do not occur and should be reported as part of the performance reporting process.

Noise monitoring will be assessed against World Bank Guidelines. Noise impacts should not exceed the level presented in Table 3.19.2 below, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Table 3.19.2: Noise Level Guidelines

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 – 22:00	Night time 22:00 – 07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

For vibration and air blast associated with the operations the following limits shall apply:

- Ground vibration at residential, institutional and educational sites (Sensitive Sites) should be below 5 mm/s (ppv) for 95% of all blasts.
- Airblast at Sensitive Sites should be below 115dB (Lin Peak) for 95% of all blasts.

Noise monitoring procedures shall be as follows:

- Noise monitoring shall be conducted using a digital sound level meter:
 - PPE such as a hard hat, safety glasses, safety boots, long sleeve shirt and trousers must be worn;
 - Ear defence must also be worn in high / loud noise areas;

- Noise monitoring must be undertaken at the same repeat locations to ensure accurate assessment of changes to noise levels;
- Measure the sound level with the device; and
- Record the data in the log sheet.

Vibration monitoring should be conducted as follows:

- Monitoring should generally be in two parts, the initial monitoring and ongoing monitoring.
- Initial Monitoring
 - Initial monitoring should be conducted where it is possible that one or more Sensitive Sites may be exposed to airblast or ground vibration to ensure that the blasting program is able to comply with the prescribed criteria. This will enable changes to be made to the blasting methods if it is found that the levels do not comply with the criteria.
 - Initial monitoring should be done over a sufficient number of blasts to show consistent results, usually a minimum of five. These tests should be done at the most affected Sensitive Sites in two or more directions (unless there are Sensitive Sites only in one direction)
 - Initial monitoring should be undertaken directly at or adjacent to Sensitive Sites or where this is not practical may be at defined locations. Where monitoring cannot be done at Sensitive Sites initial monitoring may be done at sites such as at site boundaries, depending upon the requirements of the Work Authority or Licence and the specifications of the approved Environmental Monitoring Plan.
- Ongoing Monitoring
 - On-going monitoring should generally be conducted around each mine and quarry to confirm that the airblast and ground vibration levels do not exceed the criteria specified. The monitoring program will generally be included in the approved Environmental Monitoring Plan. Blasts should be randomly selected or monitored on a fixed schedule (eg five continuous blasts.
 - Where initial monitoring shows that all blasts are below 3 mm/s and below 115 dB (Lin Peak) ongoing monitoring may not be required. However, any change in the methods of blasting or other factors such as the direction of a rock face, or proximity to Sensitive Sites, should be monitored as for an initial monitoring program.

- Monitoring Data
 - Data from a number of approved monitoring sites may be aggregated for the purpose of assessing compliance with percentile limits. However, data records should identify specific measurement sites so that individual site results can be reviewed if necessary.
 - For comparison with the percentile limits applying to new sites, a rolling 12 month data set should be used. However, if there are too few blasts in a 12 month period to establish an adequate basis for assessment, a longer period may be used. Statistical outcomes should be recalculated on a monthly basis so that the percentage exceedance of the lower limits is known for the immediate past twelve month (or longer) period.
- Records of initial monitoring data should be reported to the Environmental Manager within 24 hours of being completed.
- In the event of complaints, or suspected non-compliance with blasting limits, the Environment Manager may request submission of monitoring data to the complainant and MOECA.
- Blast monitoring results should be stored and maintained in a systematic manner. Data should be available for perusal when and if necessary. Data may be stored in electronic or hard copy form. However, whatever storage medium is used is secure and that data is retained for an appropriate length of time.
- Measurement
 - Measurements should be conducted by suitably trained personnel using appropriate equipment. Equipment used for blast monitoring should meet or exceed the relevant overseas standards for field equipment.
 - Equipment should be calibrated on a regular basis in accordance with the manufacturers recommendations or other appropriate standards.
 - Measurement Procedures should be in accordance with the equipment manufacturers' recommendations. In particular, the use of the ground vibration transducer should be consistent with achieving optimum coupling with the ground.

The following items are to be included in a noise and vibration monitoring report:

- The type of monitoring test conducted (that is, the construction stage or operation);
- The noise and vibration limits (daytime & night time) for the facility;

- Description of the nearest affected receivers;
- The monitoring locations;
- The noise and vibration instrumentation used;
- The weather conditions during noise survey;
- The time and duration of monitoring, including dates;
- The results of noise and vibration monitoring at each monitoring location;
- A statement outlining the Project's compliance or non-compliance with the limit; and
- Where noise and vibration exceedances are found; the reason for non-compliance should be stated; and the strategies to be used to manage the noise exceedance.

Reports shall be prepared on a monthly basis on the implementation of this Management Plan during the construction phase, including:

- Noise and vibration monitoring undertaken;
- Noise and vibration reduction actions undertaken;
- Maintenance of mobile and fixed plant to reduce noise impact;
- Non-compliances identified; and
- Corrective actions planned and undertaken.

3.19.9 Performance Indicators

- Noise and vibration minimisation practices addressed in personnel inductions and toolbox meetings;
- Monitoring of noise and vibration level and record keeping to track any changes; and
- Noise and vibration complaints received from the local community.

3.19.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.19.3.

Table 3.19.3: Auditing & Reporting - Noise and Vibration

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Leaks and losses	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

3.20 **EMP 18 – GREENHOUSE GAS EMISSIONS**

3.20.1 Introduction

The Greenhouse Gas Emissions Management Plan is designed to reduce greenhouse gas (GHG) and other emissions associated with Project construction activities. Management and monitoring of these emissions is required to reduce potential impacts to the environment and community.

3.20.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.20.3 Targets

The targets of this Management Plan are to:

- Capture all GHG emission data for the Project.
- Minimise GHG emissions where practicable for construction activities.

3.20.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to water management as outlined in the RACI presented in Table 3.20.1.

Table 3.20.1: Roles & Responsibilities - Greenhouse Gas Emissions

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Conduct environmental / energy efficiency design review	I	R	I	R
Develop GHG emissions management plans	C/A	R	I	R
Introduce GHG emissions management strategies to the workforce	I	R	C/A	I
Monitor GHG emissions across the project	I	R	C/A	I
Record and report GHG emissions management and training of personnel	I	C/A	C/A	R

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.20.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include GHG management and awareness.
2. Review energy efficiency as part of environmental design review to ensure energy efficient design and identify improvement opportunities.

3.20.6 Control Procedures

GHG emissions can be minimized and managed using relatively standard mitigation measures. These measures include:

- Recycling on site, including glass, cardboard and metal recycling facilities as far as practicable;
- Collection and appropriate disposal of all air conditioning refrigerant gases where practicable; and
- Metering and sub-metering (where appropriate) for diesel consumption (including vehicle and electricity generation).

3.20.7 Monitoring & Inspection

Contractors shall record and report land cleared, fuel usage, electricity generated, area rehabilitated, blasting and the quantity of material recycled on a monthly basis.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.20.8 Performance Indicators

Measurement of the performance of GHG management shall be as follows:

- Reporting of non-conformance with the relevant ECPs; and
- Reporting of non-conformance with the monitoring and inspection plan.

3.20.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.20.2.

Table 3.20.2: Auditing & Reporting - Greenhouse Gas Emissions

Performance Indicator	Reporting Schedule	Auditing Schedule
Relative improvement in energy / fuel usage	• Monthly by Project Manager	• Quarterly by Environment Manager
Relative improvement in recycling	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager

3.21 **EMP 19 – OPERATION OF CONCRETE BATCH PLANT**

3.21.1 Introduction

The Operation of Concrete Batch Plant Management Plan is designed to minimise effect of concrete batching on the surrounding environment during the construction, operation and closure phases of the Letpadaung Project. The plan describes the proposed measures that shall be used to protect people and the environment in close proximity to the Project from any adverse impacts related to concrete production.

3.21.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.21.3 Targets

The targets of this Management Plan are to:

- Protect workers and local communities from adverse impacts due to concrete batching by the Letpadaung Project;
- Minimise the impact of concrete batching operations on the surrounding environment; and
- Ensure that all waste created during concrete batching or cement product manufacturing is appropriately managed.

3.21.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to noise as outlined in the RACI presented in Table 3.21.1.

Table 3.21.1: Roles & Responsibilities - Operation of Concrete Batch Plant

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop a concrete batching management plan	C/A	R	R	C/A
Introduce concrete batching management strategies to the workforce	I	R	R	C/A
Monitor effectiveness of management across the project	I	R	R	C/A
Record and report concrete batching plus related training of personnel	I	R	R	I
Develop a tracking system for incidents related to concrete batching	R	C/A	R	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.21.5 Management Actions

1. No visible dust shall leave the concrete batch plant premises.
2. All water used in the concrete manufacturing process will be directed to settling ponds / silt traps (High Density Polyethylene (HDPE) lined as a minimum) to allow particulate matter to be removed.
3. Concrete trucks will be washed out in a HDPE lined bund, which must be cleaned out on a regular basis to prevent overflow of wastewater / concrete waste.

4. Wastewater will be reused in the batching process or for washout where possible, and excess wastewater will be disposed of to an evaporation pond.
5. No untreated water used in concrete batching shall be discharged from the premises.
6. Drainage shall be constructed to exclude stormwater from the premises.
7. Generation of concrete waste will be minimised where possible, and consideration will be given to the reuse of waste concrete and use of alternative materials.
8. All waste material disposed of to landfill will be recorded by Contractors and reported to the Client in the Environment Report.

3.21.6 Control Procedures

Dust Suppression

1. All attempts shall be made to ensure that no visible dust leaves the concrete batch plant premises.
2. Vehicle access roads shall be sprayed with water as required to prevent dust generation.
3. Aggregate and sand stockpiles shall be covered, kept damp or otherwise treated so as to minimise airborne dust.
4. Dust suppression shall be carried out in accordance with the relevant EMP.

Water Resources

1. Wastewater will be reused in the batching process or for washout where possible, and excess wastewater will be disposed of to an evaporation pond or the site sewage treatment facility.
2. No untreated water used in concrete batching will be discharged from the premises into the surrounding drainage or environment.
3. All water used in the concrete manufacturing process will be directed to settling ponds / silt traps which require to be lined with HDPE (High Density Polyethylene) as a minimum.
4. Drainage in the vicinity of the Batch Plant shall be constructed to ensure stormwater run-off is directed away from the premises and cannot become contaminated from the concrete manufacturing process.
5. Concrete trucks / tools will be washed out as required in a HDPE lined bund, which must be cleaned out on a regular basis to prevent overflow of wastewater / concrete waste.

3.21.7 Monitoring & Inspection

Monitoring and inspection procedures shall be as follows:

- The MWMCL Project Manager shall report on a monthly basis to the MWMCL Environment Manager on the implementation of this Management Plan including:
 - Construction of concrete waste storage facilities including HDPE lined waste facilities
 - Use of recycling facilities
- The MWMCL Project Manager shall inspect the concrete batch plant and shall maintain appropriate records. The inspection shall include:
 - Physical walk-over and inspection of the condition of all areas
 - Review of waste documentation
 - Housekeeping
 - Dust generation and suppression during operation
 - Condition of Concrete Trucks and maintenance documentation
 - Condition of waste transfer and storage areas
 - Condition of recycling / reuse activities (if undertaken)
 - Compliance with applicable regulatory and corporate requirements
- Inspection records will comprise the following:
 - Designated waste storage locations marked on a plan
 - Each waste storage area will be numbered to facilitate inspections
 - Any spills, leaks, poor containment, lack of labelling or other issues will be recorded and reported to the relevant department for corrective action
 - Corrective actions will be documented on completion.

3.21.8 Performance Indicators

Measurement of the performance of concrete batch plant management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;

- Reporting of leaks and losses;
- Reporting of spill responses; and
- Recording of training.

3.21.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.21.2.

Table 3.21.2: Auditing & Reporting - Operation of Concrete Batch Plant

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Waste inventory / disposal	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Leaks and losses	• Monthly by Project Manager	• Quarterly by Environment Manager
Spill responses	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.22 **EMP 20 – DEMOBILISATION AND REHABILITATION**

3.22.1 Introduction

The Demobilisation and Rehabilitation Management Plan is designed to ensure the minimisation of impacts related to demobilisation and rehabilitation to the Project area during the construction, operations and closure phases of the Letpadaung Project. The plan establishes guidelines for management, control procedures, monitoring and reporting.

3.22.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities;
- Define requirements and procedures to guide the Project Management Team and other project contractors;
- Define mitigation measures;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.22.3 Targets

The targets of this Management Plan are to:

- All disturbed areas rehabilitated to a standard that achieves a safe, stable landform which supports self-sustaining native vegetation, is free draining and non-polluting and visually compatible with the surrounding landscape;
- To ensure that environmental rehabilitation achieves an acceptable standard compatible with the intended land use and consistent with the conditions of approvals and other requirements;
- Progressively rehabilitate disturbed areas as they become available;
- No stockpile requires re-handling prior to use and negligible loss of soil/growth medium through erosion;
- Rehabilitation meets completion criteria and bonds relinquished;
- Ensure demobilisation occurs in a manner that aligns with the Project's Environmental Performance Standards; and
- Ensure information necessary for the management of environmental risk is communicated to the next user of the site.

3.22.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to noise as outlined in the RACI in Table 3.22.1.

Table 3.22.1: Roles & Responsibilities – Demobilisation and Rehabilitation

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop demobilisation and rehabilitation management plans	I	R	R	C/A
Introduce demobilisation and rehabilitation management strategies to the workforce	I	R	R	I
Monitor demobilisation and rehabilitation management across the project	I	R	R	C/A
Record and report demobilisation and rehabilitation plus related training of personnel	I	R	C/A	C/A
Develop a tracking system for incidents related to demobilisation and rehabilitation	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.22.5 Management Actions

1. All temporarily disturbed areas shall be rehabilitated upon completion of the works in any given area and prior to demobilisation.

2. Disturbed areas are to be progressively rehabilitated by MWMCL as they become available.
3. All waste, surplus construction materials and other non-hazardous materials will be collected and reused or recycled where possible, or otherwise disposed of to landfill.
4. All sites are to be clean and free of temporary infrastructure and litter/waste upon demobilisation.

3.22.6 Control Procedures

Removal of Temporary Infrastructure

1. All temporary facilities will be removed prior to demobilisation unless otherwise agreed in writing.
2. All above ground services shall be disconnected, removed and appropriately disposed of.
3. All redundant piping and cabling buried within 1 metre below ground level shall be removed and appropriately disposed of. Redundant piping and cabling that is buried 1 metre or more below ground level can be left in situ if disconnected.
4. Boreholes are to be decommissioned by cutting the casing 500mm below ground level, plugging and backfilling. Backfilling should be mounted over the bore hole to allow for consolidation. Sumps are to be backfilled with drill cuttings and covered with clean material. Drill pads are to have topsoil spread over and the area ripped.

General Rehabilitation

1. Landforms at disturbed areas shall be reformed to maintain contours of surrounding areas, unless otherwise advised by MWMCL. This includes progressive battering of overburden slopes and ensuring landforms are free draining and erosion resistant, where practicable.
2. Compacted surfaces no longer required post construction shall be deep ripped to 500mm and re-contoured to restore normal drainage patterns.
3. Topsoil/Growth medium removed and stored from the site shall be re-spread to a depth of 300mm or at a depth advised by the Site Environmental Team. Topsoil/Growth medium stripped from weed-contaminated areas will only be re-spread in weed contaminated areas.
4. Stored vegetation, where available, shall be re-spread over topsoil.
5. Non-compacted areas shall be re-spread with topsoil and vegetation and shallow ripped.

6. Where possible, clay or other dispersive materials will be buried or covered prior to the re-spreading of topsoil.
7. Rehabilitated areas shall be indicated by signage and access shall be restricted.
8. Rehabilitated areas shall be surveyed and reported on a monthly basis. Rehabilitation records shall be maintained.

Borrow Pits

1. Borrow pits and associated drainage structures shall be backfilled using unsuitable spoil or similar and surfaces battered to a slope of 1V:5H or less.
2. Borrow pits shall be left free draining at all times, unless authorised by the Site Environmental Team.
3. Rehabilitation of borrow pits shall comply with the borrow pit management plan and MWMCL requirements.

Access Tracks

1. Following the completion of construction, all tracks created not required post construction shall be rehabilitated as described above.
2. Earth windrows shall be placed across disused access tracks which cross the contour to reduce the rate of runoff and discourage use.

3.22.7 Monitoring & Inspection

Rehabilitation monitoring procedures shall be as follows:

- A Rehabilitation Plan should be developed to show a map and inventory of rehabilitated areas;
- Rehabilitated areas are to be monitored by the Site Environmental Team to assess for introduction of invasive species until handover of project site to MWMCL; and
- Prior to demobilisation of contractors, the Site Environmental Team and MWMCL Environmental Manager (if required) will inspect and verify compliance with this CEMP prior to handover.

3.22.8 Performance Indicators

Measurement of the performance of rehabilitation and demobilisation management shall be as follows:

- Reporting of non-conformance with the relevant ECPs.
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents; and

- Recording of training.

3.22.9 Auditing & Reporting

All Contractor work areas shall be subject to a demobilisation audit by the Site Environmental Team on practical completion of works in any given area. The scope of the demobilisation audit includes ensuring that disturbed areas are free of litter and debris, disturbed areas rehabilitated, and all infrastructure removed from site. Any demarcation of avoidance sites shall be removed post construction.

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 3.22.2.

Table 3.22.2: Auditing & Reporting for Demobilisation and Rehabilitation

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Annually by Environment Manager

3.23 **EMP 21 – REPORTING AND RECORD KEEPING**

3.23.1 Introduction

The Reporting and Record Keeping Management Plan is designed to ensure the effective reporting and recording of information during the construction, operation and closure phases of the Letpadaung Project. The plan describes the required information to be recorded and the process of reporting that information and the frequency that reporting should take place.

3.23.2 Objectives

The objectives of this Management Plan are to:

- Establish Environmental Control Procedures (ECPs) for construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define targets;
- Define roles and responsibilities;
- Define monitoring and reporting procedures.

3.23.3 Targets

The targets of this Management Plan are to:

- Ensure effective recording of information on the Project;
- Ensure that Project environmental reporting requirements are met;
- Maintain an up-to-date register on-site of all licences and permits required as part of the environmental management procedures specified in this document; and
- Outline the frequency of reporting required on the Project.

3.23.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to noise as outlined in the RACI presented in Table 3.23.1.

Table 3.23.1: Roles & Responsibilities - Reporting and Record Keeping

Activity Description	Senior Management Team	Project Manager	Contractors Team	MWMCL Environment Team
Develop reporting and record keeping management plans	C/A	R	R	C/A
Introduce reporting and record keeping management strategies to the relevant personnel	I	R	C/A	I
Monitor reporting and record keeping across the project	R	C/A	I	R
Record and report essential information at the required frequency	I	R	C/A	R
Develop a tracking system for incidents related to reporting and record keeping	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.23.5 Management Actions

1. A register of legislative, Client and other environmental obligations will be maintained by the MWMCL Environmental Team and the Contractors. This will include all Works Approvals, Registrations, Licences and Permits.
2. Reporting templates are to be created to ensure correct and effective information is reported in a standardised approach.
3. Contractors are required to report to MWMCL on the Environmental aspects of their work and should include details of any assumptions, calculations or omissions to ensure the information provided is accurate and meaningful.

4. Information on environmental monitoring and reporting requirements and procedures is set out in each specific Environmental Management Plan.

3.23.6 Control Procedures

A standardised reporting format will be developed and agreed with MWMCL. The Contractor should maintain sufficient documentation to describe the core elements of the site construction plans. Those plans and documentation will likely be integrated with other systems implemented by the Contractor and will not necessarily be located in a single manual. Such documentation will include:

- Training records;
- Environmental related incidents and injuries;
- Environmental spills and issues;
- Permit and authorisation database;
- Organisational charts; and
- Contractor's own Environmental Management Plans.

Environmental records will be kept, including:

- Controlled waste disposal receipts;
- Waste disposal on-site and at landfills;
- Fuel, Oils and Lubricant use, including tax invoices;
- Environmental incidents and corrective actions;
- Training and inductions conducted;
- Inspection and audit findings;
- Topsoil movement;
- Vegetation clearing;
- Borrow material extraction;
- Water use;
- Electricity use; and
- Other, including demobilisation of contractors, rehabilitation and shutdowns.

Reporting will be consistent with the continuous improvements goals for environmental management of the Project. Regular reporting shall be undertaken via the monthly Environmental Report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;

- Any material deviations or non-compliances to this Environmental and Social Management Plan;
- Planned activities during the next reporting period;
- A summary of environmental and social issues that have occurred; and
- Any other issues if concern.

3.23.7 Monitoring & Inspection

Monitoring and inspection procedures shall be as follows:

- The MWMCL Project Manager shall report on a monthly basis to the MWMCL Environment Manager on the implementation of this Management Plan including:
 - Effectiveness of reporting including required information.
 - Compliance against required licences, permits and registers.

3.23.8 Performance Indicators

- Completion of environmental reporting as per this EMP.
- Submittal of environmental reporting at the required frequency.

3.23.9 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.23.2.

Table 3.23.2: Auditing & Reporting - Reporting and Record Keeping

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager

Contractors must submit the reports contained in Table 3.23.3 to the MWMCL Environment Manager at the following frequency:

Table 3.23.3: Contractors Reports

Report	Information Required	Frequency
Contractor's Environment Report	As stated above in Control Procedures	Monthly

3.24 **EMP 22 – ORE HANDLING AND PLACEMENT**

3.24.1 Introduction

The *Ore Handling and Placement Management Plan* is designed to ensure the effective handling and placement of ore onto the Heap Leach Pad (HLP) during the construction and early mining phases of the project. The plan contains the methods that shall be used to prevent adverse effects occurring during early mining and monitoring plans to assess potential effects and determine the effectiveness of mitigation.

In the early stages of the project, as the open pit is developed, it is expected that some ore will be encountered. To avoid double handling it is proposed that the first few cells of an HLP be constructed so that ore can immediately be placed on the pad, ready for processing once the process infrastructure is constructed.

The development of the pit will involve removal of the overburden mine waste; and crushing, transporting and stacking of ore onto the HLP base. This management plan applies to the design and development of the HLP infrastructure and the handling / placement of the ore onto the pad in the early stages of the heap development. Once the mine is fully operational the intent is that the ore will be transported to the HLP via conveyor and placed using a stacker. In the early development of the pit it is likely that some ore may have to be transported and dumped on the HLP base by truck.

For the HLP design and early development the following will need to be considered:

- Layout;
- Foundation conditions;
- Stability Analysis; and
- HLP management.

HLPs will need to be designed appropriately to be physically stable against failure during adverse weather, earthquakes and general operating conditions. HLPs, unless adequately designed, also have the potential to generate acid runoff / seepage.

3.24.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;

- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.24.3 Targets

The targets of this Management Plan are to:

- Protect local communities, livestock, wildlife and vegetation from adverse impacts due to run-off or seepage of ore during the transportation and handling process;
- Design, construct and install appropriate HLPs; and
- Implement ore management procedures.

3.24.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI presented in Table 3.24.1.

Table 3.24.1: Roles & Responsibilities – Ore Handling, Placement and HLP Design

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate HLP designs	I	R	C/A	C/A
Construct and install appropriate HLPs	I	R	C/A	C/A
Develop HLP management plans	I	R	I	C/A
Introduce HLP management strategies to the workforce	I	R	I	I
Monitor HLP management	I	R	C/A	C/A
Record and report HLP incidents and training of personnel	I	R	C/A	I
Develop a tracking system for incidents related to HLPs	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.24.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include HLP and ore management and awareness.
2. HLPs will be appropriately designed, constructed and installed.
3. Personnel working with HLPs will be trained to ensure safe handling, transfer, and placement.
4. Damage to HLP containment structures, liners, drains and ponds will be inspected immediately and repairs undertaken.

3.24.6 Control Procedures

Layout

In relation to layout the following procedures will be adopted:

- During operations, all upstream surface drainage will be diverted around the HLP. Surface run-off from the HLPs will be captured in a system of channels diverted to a downstream stormwater pond.
- The ore taken during the pit excavation will be dumped into 6 m high lifts across the natural ground surface after water collection measures and visual/noise buffers have been completed.
- Adequate planning will be dedicated to proximity of inhabitants to HLPs to reduce the risk of health problems associated acid mist. Local villages will be resettled if they fall within the safe buffer distance.

Geotechnical Site Investigation

A geotechnical site investigation programme shall be undertaken on the site proposed to be used for HLPs. The investigation programme shall include:

- A Test pitting programme beneath proposed pad footprints. Samples from test pits shall undergo testing in a geotechnical laboratory for their physical

properties. Representative samples of HDPE geomembrane shall be obtained and adequate laboratory testing on plastic / soil subgrade composites shall be performed to determine the liner / soil adhesion properties.

- A groundwater study should be undertaken to characterise the hydrogeology conditions beneath and downstream of the pad to better understand the environmental impacts of the development and its potential impact on downstream groundwater users.
- Adequate sampling and testing (geotechnical and geochemical) shall be performed to prove-up sufficient quantities of construction materials that meet the design specification and are fit for purpose.
- Further ore permeability testing to confirm the need for inter-lift liners and whether the current base underdrainage requirements are adequate.

Stability Analysis

In relation to stability analysis the following procedures will be adopted:

- Heap Leach Pads shall be placed on relatively level ground with good geotechnical foundation conditions;
- The HLP slopes shall be designed to be geotechnically stable under static and seismic loading conditions during operations and after closure.
- Consideration shall also be given to basal deformation of the HDPE liner associated with slope instability that could lead to tearing.
- The results of the stability analysis shall be used to evaluate pad foundation preparation, liner design / specification, and heap batter slopes (during operations and closure).
- A site specific earthquake assessment shall be performed.

Ore Handling and Stacking

In relation to ore handling the following procedures will be adopted:

- Ore will be initially hauled by truck and placed directly onto the leach pad and stacked in 6 m high lifts advancing from the eastern toe of the pad up the hillside maintaining a 6 m lift height.
- After truck stacking has created sufficient width (to form a working platform) a conveyor/stacker set-up will be used.

Heap Leach Pad Water Management

In relation to water management the following procedures will be adopted:

- Careful surface water management for the HLPs will be necessary to prevent release of contaminated drainage from the site;
- During operations, all upstream, clean water, surface drainage will be diverted around the HLP and back into downstream natural surface drainages.
- During operations, all surface run-off from the HLPs will be captured in a system of channels diverted to a stormwater pond, and not released to the environment.
- The collection ponds shall be sized to store design storm volumes;
- During the operating life of the mine, collected water will be stored for use as process water; and
- A series of monitoring systems will be installed, including underdrainage and piezometers in the leach pad, and groundwater monitoring bores around the facility.

Heap Leach Pad Closure / Rehabilitation

In relation to heap leach pad closure / rehabilitation the following procedures will be adopted:

- An overall HLP drainage plan will be designed for closure;
- HLP closure design will include control measures to minimize infiltration and water movement through the pads containing PAF and allow for vegetation to establish itself;
- HLPs should be rehabilitated progressively (after decommissioning) to efficiently manage topsoil storage and improve mine site aesthetics. This includes washing of the leached ore and capping / revegetation of the heap.

3.24.7 Monitoring & Inspection

The main performance concern for the HLPs will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary. Following closure, water management systems will be inspected quarterly, and any required maintenance carried out until abandonment. Stability analysis carried out at the commencement of the project shall ensure that there are no stability concerns with the HLPs. As mentioned earlier, piezometers and groundwater monitoring bores will be utilised to monitor water pressure within the heap and any potential downstream seepage impacts. Acid rock drainage and metal leaching from

ore and seepage will be monitored on a monthly basis post mining. The need for treatment of ARD drainage will be assessed from water quality samples collected during the closure phase. The physical stability of HLPs and the water diversion system will be monitored annually by an independent geotechnical engineer and a report prepared for MWMCL which will be forwarded to the relevant government regulatory body. Weekly visual inspections of these facilities will be conducted by mine personnel and observations logged for inspection by the independent geotechnical engineer, and government regulators upon request. Responsibility for the construction phase monitoring detailed above shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan.
- The Environment Manager shall inspect the condition of the HLPs after every major rain event and shall maintain appropriate records. The inspection shall include:
 - A physical walk-over and evaluation of the condition of all areas;
 - Assessment of condition of access roads between the pit and HLPs; and
 - Compliance with applicable regulatory and corporate requirements.

During construction the Project Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the Environmental Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.24.8 Training

Specialist training shall be provided to plant operators and key personnel involved in activities which involve ore handling / placement and HLP management.

3.24.9 Performance Indicators

Measurement of the performance of ore handling and HLP management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;

- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of spill responses; and
- Recording of training.

3.24.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 3.24.2.

Table 3.24.2: Auditing & Reporting – Ore Handling and HLP Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
HLP ore stacking plans	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Uncontrolled releases of contaminated water	• Monthly by Project Manager	• Quarterly by Environment Manager
Spill responses	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

3.25 **EMP 23 – BLASTING AND EXPLOSIVES**

3.25.1 Introduction

The Blasting and Explosives Management Plan is designed to ensure safe, effective storage, management and handling of all explosive materials used on the Project. The plan contains methods that will be used to prevent adverse effects occurring during construction, operations and closure, and monitoring plans, to assess potential effects, and determine the effectiveness of mitigation.

3.25.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction, operations and closure activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

3.25.3 Targets

The targets of this Management Plan are to:

- Protect workers, local communities, livestock, wildlife and vegetation from adverse impacts such as dust, noise, vibration and fly rock during blasting.
- Ensure appropriate explosive transport, storage and handling is implemented.
- Implement blast and explosive management procedures.

3.25.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to blasting and explosives as outlined in the RACI in Table 3.25.1.

Table 3.25.1: Roles & Responsibilities – Blasting and Explosives Management

Activity Description	MWMCL Senior Project Team	MWMCL Project Manager	Contractors Team	MWMCL Environment Team
Develop appropriate explosive storage facility designs	I	R	I	C/A
Construct and install appropriate explosives facilities	I	R	C/A	I
Develop explosives management and safe handling plans	I	C/A	I	R
Develop blast design and plan	I	R	C/A	I
Ensure daily blast security and safety	I	R	R	C
Issue blast notices	C/A	R	C	C/A
Hold point release request for blasting	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.25.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include blasting and explosives management and awareness.
2. Explosive storage facilities will be appropriately designed and constructed.

3. Personnel working with explosives will be trained to ensure safe handling and transport.
4. Damage to explosives will be inspected immediately and appropriate action taken.
5. Blast design shall cover all aspects of potential environmental and community impacts.
6. Personnel working during the blasting procedure will be trained to ensure safe practices are implemented and security is ensured.

3.25.6 Control Procedures

General Procedures

The following general procedures will be adopted:

- Appropriate Personal Protective Equipment (PPE) will be made available to personnel involved in explosives handling operations; all relevant personnel will be trained in the use and maintenance of protective equipment;
- All project personnel will be trained in the use of fire extinguishers;
- Storage and handling areas will be located away from offices and domestic facilities;
- Explosives storage areas will be protected from rainfall and direct sunlight;
- Materials will be clearly labelled, segregated, protected from general access and stored on pallets to prevent the contamination of runoff;
- Suitable fire-fighting equipment will be located close to explosives storage and blasting detonation areas;
- Surface runoff/storm water drainage from explosives storage areas will be directed through a perimeter drainage system;
- Oil-filled electrical appliances will be maintained in good and fire-resistant condition;
- The overall volume of explosive materials purchased and present on site will be minimised through careful stock control and materials inventory;
- All suppliers to the Project will provide MWMCL with:
 - All pertinent data necessary to ensure adequate protection of the environment, health and safety;
 - Instructions in the use, operation, storage, transportation, handling and disposal of the supplied materials;
 - Appropriate shipping certification; and

- Labelling in compliance with any Explosives Information System prepared for the Project; and
- Explosives shall be packed, documented and marked strictly in accordance with statutory requirements or the laws and regulations of all parties having jurisdiction over the goods.

Blasting

Best practice for blasting will ensure that ground vibration, overpressure, flyrock, fume, dust and odour are all minimised through correct procedures and safeguards.

The following procedures will be implemented:

- Conducting a pre-blast environmental assessment with consideration given to wind speed, direction and shear and the strength of temperature inversions prior to each blast.
- Obtaining an approval to carry out blast works.
- Use of initiation systems that minimise vibration;
- Use of adequate stemming lengths to ensure maximum confinement of explosive charges minimising flyrock and overpressure;
- Use of suitable quality stemming material - being either drill cuttings, rock sourced from site or imported gravel, when necessary;
- Ensuring adequate burden is present on all faces. In some instances face surveying (laser profiling) techniques may be employed to measure overburden between the blast face and blast-holes to ensure sufficient burden is present to prevent blowouts and blast anomalies;
- Adherence to blast loading and initiation designs where practicable;
- Use of monitoring data to establish and refine predictive tools to estimate likely overpressure and vibration levels during the design process of subsequent blasts; and
- Evaluating new technology and alternative blasting methodologies that become available for their potential to lessen environmental impacts from blasting, in the context of safe, efficient mining operations.
- Minimising the potential for delayed firing of shots which have been loaded into wet holes within the constraints of prevailing weather conditions;
- Conducting a pre-blast environmental assessment with consideration given to wind speed, direction and shear and the strength of temperature inversions prior to each blast. Blasts will be fired in suitable weather conditions that minimise the

potential for blast generated dust and/or blast fume to be blown towards neighbouring residential areas;

Transportation of Explosives

- Non-compatible materials will be transported by separate shipment;
- Fire extinguisher and fire prevention materials shall be adequate and appropriate for the material being transported;
- Containers will be appropriate for the material being shipped;
- Containers will be properly secured;
- Containers and trucks will be properly marked, labelled and placarded;
- Manifests will be maintained in accordance with Myanmar regulations;
- Spill response materials will be adequate and appropriate for materials being transported; and
- Driver teams will be adequately trained and equipped for spill first response, containment and communication.

Storage and Handling

- All blasting activity will be performed by a specialist contractor who will be responsible for blasting design, explosives calculations, delivering blasting agents to the blast-holes, placing powder or emulsion in the holes, charging the holes, placing detonators and boosters, filling the holes with stemming material and tie-in patterns;
- The blasting contractor will provide the explosives, boosters, detonators, transport it to site and store it until required in the explosive magazines, which the contractor will supply. The contractor will also supply mixing and delivery trucks;
- Explosive magazines will be constructed away from receptors at designated limits in accordance with Myanmar legislation;
- A plan will be produced of explosives storage locations;
- Storage areas will be designed to adequately and safely store a sufficient quantity of explosives required for the project;
- The storage area will be properly designed to contain and prevent contamination of the environment, particularly soil and groundwater;
- Floor, curbing, walls and roofs will be designed to adequately protect the storage area from weather where necessary;

- Fire prevention systems will be designed to be appropriate and adequate to the material being stored;
- Only containers that are in good condition will be used;
- Drums, containers, and storage areas will be properly labelled, marked, placarded, and secured;
- Sufficient storage space between containers will be allowed for safe access and handling of containers; and
- No smoking, fire prevention and management practices will be developed.

3.25.7 Monitoring & Inspection

All explosives will be subject to strict inventory control from the time they enter the site. The MWMCL Supply Department will maintain an inventory of all explosives purchased, delivered, stored and used at the mine site. This inventory will be updated on a monthly basis. Logs will be kept as required for inspection by the regulatory agencies. The MWMCL Construction and Environmental Managers will conduct routine inspections of all explosives storage areas, and worksite areas to look for any damages and ensure compliance with the procedures. Where necessary, Corrective Actions will be recommended. The MWMCL Supply Department will collect and maintain records on explosives in consultation with the Project Manager, for the following:

- Reconciled bulk inventory;
- Weekly use summaries;
- Weekly reconciliation for each storage area;
- Any alteration to the system;
- Reports of loss of explosives materials;
- Reports of damage to property or injury to personnel;
- Reports of loss / injury / damage responses; and
- Records of training.

Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period;
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.25.8 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with basic training in the management and handling of explosives. Additional, specialist training shall be provided to plant operators and key personnel involved in activities which involve frequent contact with, and use of, explosives. Blasting and explosives require special handling and training procedures. All employees will be provided with training so that they know how to obtain appropriate information on special handling procedures required, i.e. precautions required and protective equipment required. Employees who are tasked with receiving, off-loading and storing explosives will receive explosives handling training. This training will be directed at ensuring that appropriate employees know how explosives are to be packaged, handled, and labelled during transport and during storage.

3.25.9 Performance Indicators

Measurement of the performance of explosives management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Recording of explosive inventories and use;
- Reporting of any incidents or accidents;
- Reporting of explosives materials losses;
- Reporting of property damage responses; and
- Recording of training.

3.25.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 3.25.2.

Table 3.25.2: Auditing & Reporting - Blasting and Explosives Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	Monthly by Project Manager	Quarterly by Environment Manager
Explosives materials inventory	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Explosives materials losses	Monthly by Project Manager	Quarterly by Environment Manager
Property damage responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

ANNEX A
BLAST MANAGEMENT PLAN



Blast Management Plan

SECTION 1 – Summary

Contractor	Blast Details	MWMCL Reference:
		Contractor Reference:
	Project Name:	Blast Date:
	Requestor's Name:	Contractor / Position:
	Location of Blast:	
	Purpose of Blast:	
	Safety considerations:	
	Environmental considerations:	

SECTION 2 – Personnel

Contractor	Shot firer
	Name and licensing details:
	Company: Position:
	Address:
	Contact details:

SECTION 3 – Blast Design

Contractor	Type of ground:
	Number/diameter of holes:
	Net explosive quantity per hole: Burden:
	Spacing and depth of hole:
	Type/height of stemming:
	Delay per hole: Number of rows:
	Orientation (YES/NO): Decking (YES/NO):
	Blast mat/cover over site (YES/NO):

SECTION 4 – Explosives/Charging

Contractor	Type of explosive:
	Detonating cord:
	Quantity of detonators:
	Quantity of packaged type:
	Quantity of bulk type:
	Total quantity of explosives used:

	Effective charge mass per delay and power factor:	
	Drilling procedures (YES/NO):	
	Loading and charging procedures (YES/NO):	
	Storage and handling procedures (YES/NO):	
SECTION 5 – Blast area permits and licenses		
Contractor	Blast location:	
	Exclusion zone (m):	
	Nearest structure:	
	Nearest personnel:	Nearest public access:
	Blast permits/licenses (YES/NO):	
	Details of permits/licenses:	
	Supporting documents listed:	
SECTION 6 – Blast risk management		
Client	Identified Risk	Risk Controls
	Unauthorised access to blast area:	Restrict access to authorised persons; secure site with guarded gate
	Unauthorised access to explosives store/portable magazine:	Secure stores and restrict access to site
	Inadequate training and competency for staff:	• Ensure shotfirers are licensed. • Train personnel in explosives products and blast design. • Develop and implement procedures to check training and competency
	Competency of contractors:	• Review competency and training. • Ensure drillers are competent and have required experience. • Set minimum standards. • State requirements in contracts.
	Blasting procedure:	• Develop and maintain safe blasting procedures. • Involve competent people in development.

	Inconsistent performance of explosives:	• Use a reliable supplier. • Test explosives. • Develop procedures for use of explosives. • Ensure shotfirers are licensed, competent and experienced.
	Unreliable firing methods:	• Use reliable products. • Test safety fuses, if used, and other equipment. • Ensure equipment is maintained by competent people. • Develop procedures for checking firing method.
	Hot ground causing premature firing:	• Use appropriate firing method and types of explosives. • Test in hot conditions. • Check ground before designing the blast.
	Damage to structures:	• Evaluate the effect of ground vibration and air blast overpressure on structures or ground conditions. • Revise blasting procedure to minimise damage.
	Risk of flyrock:	• Calculate quantity of explosives, stemming and capping. • Conduct laser profiling. • Conduct bore hole tracking. • Provide appropriate supervision. • Check blast pattern is as designed. • Set up exclusion zones. • Use blast mats. • Use correct stemming material including size.

SECTION 7 – Security arrangements

Client	Requirements	Details
	Security procedures for the site and the blast:	Matters to consider: • manning of all entrances and exits • closed circuit TV • use of sentries and preventing access inside the exclusion zone • documented sentry procedures provided to each sentry • location of explosives storage keys • warning signs • procedures for emergency services vehicles.
	Communication system/s between people involved or in the vicinity of the blast:	Matters to consider: • two-way communication • siren system • communication to neighbours in a built up area • back up communications system • emergency services contact details.
	Advanced warning (YES/NO):	
	Audible warning (YES/NO):	
	Signs YES/NO):	
	Traffic management (YES/NO):	
	'ALL CLEAR' signal (YES/NO):	

3.26 **EMP 24 – EMERGENCY PREPAREDNESS**

3.26.1 Introduction

The Emergency Preparedness & Response Plan is designed to ensure the protection of human health and the environment in the areas surrounding the Project footprint during the construction, operations and closure phases of the Project. The Emergency Preparedness & Response Plan outlines the responsibilities of MWMCL, its contractors and employees at the Letpadaung site. It provides a reference document that can be used for emergencies and outlines the steps to be taken if incidents occur during the construction and operation of the mine and processing facilities.

The Emergency Preparedness and Response Plan provides an environmental accident prevention, emergency control, and management plan for the Project. The Plan outlines procedures, organization, and instructions such that project personnel understand and effectively implement environmental protection procedures for both routine activities and unplanned events associated with proposed work. This plan is linked to the *Occupational Health & Safety Plan* for the Project which will be developed prior to construction. The scope of this plan is limited to procedures that are to be followed in the event of any of the following:

- An on-site chemical spill:
- WRD or HLP slope land slide / rockfall; or
- Potential WRD or HLP slope instability due to earthquake shaking.

Incidents such as fire, explosion, flood, earthquake (with the exception of that leading to WRD or HLP instability), contagious disease pandemic, heat wave, wind storm, dust storm, aircraft crash, vehicle crash, road obstruction, interruption of utilities services, or civil unrest shall be covered in the general site wide emergency response plan.

In response to an unplanned disaster, the prime concerns are to:

- Protect Project personnel, the community, and assets;
- Ensure that the Project continues to operate with no effect on schedule; and
- Ensure that stakeholders, and staff do not lose confidence in the Project and its ability to continue.

Detailed hazardous materials procedures are set out in the Hazardous Materials Management Plan. Detailed handling of petroleum and oil is addressed in the Hydrocarbons Management Plan, and transportation procedures in the Transportation Management Plan.

The Plan sets out:

- A clear chain of command for all emergency activities;
- Accountability for the performance of the spill response;
- Well-defined task and operational hazards/risk assessment; and
- Reporting and record keeping requirements to track progress.

The document provides information to assist and inform all personnel on site so that they can respond to any site emergencies that have the potential to adversely affect the natural environment and/or the safety of personnel.

Objectives

The general objectives of this Management Plan are to:

- Protect people, wildlife and the environment from environmental incidents and emergencies;
- Ensure that the project can continue to carry out key safety, maintenance, support and administrative functions following an emergency or serious incident; and
- Ensure that any interruption at the project site does not result in a significant loss to its overall performance.

To achieve the above general objectives, the specific objectives of the plan are to:

- Identify the designated personnel and responsibilities for dealing with emergencies on-site;
- Provide information to rescue, recovery and clean-up crews, project personnel, and government agencies in the event of a spill;
- Promote the safe and effective recovery of spilled materials;
- Comply with the MWMCL environmental policy;
- Comply with Myanmar regulations pertaining to the preparation of contingency plans and reporting requirements; and
- Minimize the environmental impacts of incidents and accidents on water and/or land.

This Plan will address the organization of the Letpadaung Project emergency response measures. Alerting and notification procedures and cleanup strategies are outlined along with the duties and responsibilities of key emergency response personnel.

3.26.2 Targets

The targets of this Management Plan are to:

- Detail requirements for coordination of resources to ensure effective control and clean-up after an accident or emergency situation
- Establish a framework to be used for personnel during and after an emergency situation;
- Direct personnel to emergency recovery plans for the recovery of site operations and the external environment from the effects of the emergency situation;
- Provide defined process and accountabilities for emergency response;
- Ensure the processes incorporate periodic testing, reviewing and improvement of the specific response plans according to the training schedule.

3.26.3 Roles & Responsibilities

Figure 3.26.1 sets out basic roles and responsibilities with regard to emergency response. A designated person (MWMCL H&S Manager) will be identified for first response and their contact details made available through worksites, offices, the mine, the plant and on Emergency Response Cards. Details of the relevant emergency services will also be provided.

The project team is ultimately responsible for the following key tasks, roles and actions relating to emergency preparedness and response as outlined in the RACI in Table 3.26.1.

Table 3.26.1: Roles & Responsibilities – Emergency Preparedness and Response

Activity Description	MWMCL Senior Project Team	MWMCL Emergency Response Team	Contractors Team	MWMCL Environment Team
Developing emergency preparedness and response manuals	R	C/A	I	C/A
Implementing emergency preparedness and response manual	I	R	I	I
Testing and improving emergency preparedness and response manual	C/A	R	I	C/A
Introduce emergency preparedness and response strategies to the workforce	I	R	C/A	I
Monitor emergency preparedness across the project	I	R	I	C/A
Implementing training of personnel	C/A	R	I	C/A
Arranging drills and practice	C/A	R	C/A	I
Develop a record system of emergencies	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Environment Manager who shall report on progress to the MWMCL General Manager.

3.26.4 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include emergency preparedness controls.
2. Emergency preparedness and response plans are to be developed, implemented, tested, reviewed and improved regularly.
3. All personnel will be properly trained to ensure appropriate management in an emergency situation.
4. A debrief and investigation by management after any emergency response.
5. Any damages to fuel storage or transfer infrastructure or WRD/HLP slope failures will be inspected immediately and repairs undertaken.

3.26.5 General Procedures

The Emergency Response Plan allows for the fact that emergency events can occur and develop rapidly, requiring personnel to act without waiting for further guidance. The following shall be considered in the implementation of any emergency response:

- Health or epidemic alert;
- Liaison with the local health authorities;
- Equipment requirements to assist in an emergency situation;
- Training requirements;
- Personnel needs – resources;
- Public interface;
- Environmental impact;
- Social impact; and
- Reputation of stakeholders and the Project.

On discovery of an incident, the On-Scene Coordinator will undertake an initial assessment of the emergency and collect the following key information:

- The nature of the incident;
- What hazards are involved;
- Who is in charge;
- Location of the incident;
- The physical situation;
- Type of substances involved; and

- Injuries to people,

3.26.6 Control Procedures

Potential Slope Failure Identification

For the purposes of this control procedure WRD/HLP slope failure includes large scale landslides or rockfalls that have the potential to cause loss of life, suspension of mining operations, company reputational damage, or significant damage to the environment. The WRD/HLPs have been designed to accommodate rehabilitation at closure, whilst remaining stable throughout all phases of mining. Furthermore WRD/HLP stability will be monitored at critical locations, in accordance with the procedures described in the Waste Rock EMP. Personnel working within the WRD/HLP areas will be trained in the correct method and approach to be used for the placement of material to meet the required slope and bench dimensions. In addition, they will be provided with an appropriate operating manual and trained to recognise problem situations before they become critical. On this basis it is expected that the risk of large scale slope failure will be small.

In the event of a large scale slope failure, the following steps should be taken:

- Cease dumping mine waste or ore in the area of the slope failure;
- Immediately on determining that a slip failure or rock fall has occurred, check on the location and safety of any personnel/community known to be in the area. If it is possible that someone has been caught in the fall path, inform the emergency services and follow their recommendations;
- Report the incident to the relevant authorities;
- Inspect the failure area to determine the extent and the damage it has caused.
- Inspect the slope to determine the size and extent of the landslide / rock-fall and the benches which have been damaged;
- Fix any damage to infrastructure, access roads, etc. as quickly as possible;
- Arrange for the failure to be inspected by a competent geotechnical engineer and a repair plan to be developed;
- Once the failure is deemed stable, remediation works shall commence;
- The failure should be repaired and all damage to the environment made good;
- The conditions before the failure should be determined and the operating procedure modified so that the same situation does not occur again; and
- Resume dumping of mine waste in the area when safe to do so.

Spill Response for Hydrocarbons and Hazardous Materials

The following response procedure will be implemented following a spill:

- Determine safety and protective equipment for working in or around the spill:
 - Provide first aid to injured persons
 - Monitor vapour levels
 - Prioritise the safety action plan
- Describe the basics of the spill (Where, When and How):
 - Identify the tank volume
 - Note the duration of spill from tank or line
 - Note any potential fire hazards
 - Note any other physical hazards
 - Determine if the spill can be stopped
 - Determine if the spill can be contained at the source or downstream
- Describe the spill if occurring in the water environment:
 - Note the destination of spilled product downstream
 - Identify eddies, pools or culverts to use in diverting the spill
 - Note the depth and the velocity of the water
 - Note soils, vegetation, fish spawning areas, bird habitat, and wildlife
 - Identify any downstream areas and the rate of spread of the main slick
 - Visually inspect the foreshore to identify the extent of contamination
 - Note where the product is pooling along shore
 - Note any marsh areas that must be protected
- Describe the spill if occurring on a land environment:
 - Mark the extent (perimeter) of the spill area
 - Dig test pits to determine the depth of the spill in the ground
 - Dig recovery ditches to contain the spill
 - Monitor the ditches and pits to ensure the collection system are effective

- Use sorbent pads to remove free product and excavate the contaminated soil
- Sample the soil to determine the extent of contamination
- Pump the product from the containment area or obtain approval from the environmental regulators to burn the product
- All spills shall be reported to the Environment Manager.

Earthquake Response

The site is located in an area of seismic hazard. The WRD/HLPs have been designed to stringent stability criteria, however the stability and integrity of the slopes and benches should be inspected immediately after any significant seismic event by a suitably qualified geotechnical engineer to identify a potential slope failure or rockfall.

Contingency procedures to be adopted in the event of an earthquake are dependent on the intensity of the earthquake event at the site and are outlined below:

a) Major earthquake event (Modified Mercalli Intensity VI or greater)

- | | |
|--------------|--|
| Recognition: | Difficulty standing. Hanging objects quiver, masonry cracks, waves on ponds, some minor injuries |
| Response | <ul style="list-style-type: none"> i) Immediately terminate dumping on the WRD/HLPs. ii) Immediately inspect of slopes and benches. iii) Arrange for immediate inspection and report of WRD/HLPs by a suitably qualified geotechnical engineer. v) Dumping can be recommenced if no major slip failures or instability is noted. vi) Survey pins are to be read immediately after the event and all instrumentation to be read daily. vii) A detailed daily inspection of the WRD/HLPs is to be undertaken until completion of the geotechnical engineer's report. |

b) Minor earthquake event (Modified Mercalli Intensity V or less)

Recognition Felt outdoors as well as indoors, liquid disturbed, small objects displaced, doors swing open or closed, pictures move.

- Response i) If required due to rock fall or cracking, stop dumping, in the area of failure, until a solution is sought by a suitably qualified geotechnical engineer.
- ii) Inspect benches and slopes for obvious deformation or movement.
- iii) Monitor all instrumentation immediately after the event and weekly thereafter until readings return to normal.
- ii) If any damage is observed, immediately arrange for an inspection by a suitably qualified geotechnical engineer.

3.26.7 Control Procedures – Hazardous Materials and Hydrocarbons Spill

Hazardous Materials Spill Preparedness

MWMCL is committed to a prevention strategy of ongoing maintenance, inventory control, staff training, and vigilance of all aspects of the work. It will be the responsibility of the environmental and safety staff to know where all hazardous materials are located on the work site. The construction and operation of the mine and processing facilities for the project will involve a number of chemical reagents, explosives and hydrocarbons. Many of these will be stored on site in large quantities. Products such as fuel oil will have structures sufficient to contain the product. However, there will be fuelling of mobile equipment and piping to supply power generators on site. All mobile equipment carrying hazardous materials will have regularly maintained spill kits. In addition significant quantities of ammonium nitrate will be stored in a dry solid form.

As a general rule, all locations where hazardous materials are stored should be constructed to contain 110% of the largest individual container within the storage area and 25% of the total volume of materials stored in that location. Within a storage facility, individual types of chemical/hazardous material should be separated and contained such that spillage of one chemical will be contained within its storage partition and unable to mix with other chemicals, should spillage of two different type of chemical occur.

The following activities and procedures will be standard practice on the site:

- **Inventory control:** All hazardous materials will be subject to strict inventory control from the time they enter the site. Logs will be kept as required for inspection by the regulatory agencies;
- All hazardous materials used on site will have a **Material Safety Data Sheets** (MSDS) accompanying the product. These MSDS will be available in English and, where possible, also be available in Chinese and Burmese;
- **Storage:** All hazardous goods will be stored in a manner that is required for the individual product as set out in the manufactures (MSDS);
- **Daily inventory Balance:** All liquid products kept on site will be checked on a daily basis and a balance sheet of inflow and outflow maintained;
- **Disposal:** All hazardous materials will be disposed of in strict compliance with the laws and regulations of Myanmar and international good practices and their MSDS;
- **Staff Reminders:** Pre-Job meetings/safety meetings will contain a component to constantly remind employees to look out for ways to improve environmental and safety performances; and
- **Transportation:** regularly maintained spill kits in trucks and barges carrying hazardous materials will be available along with suitable communications equipment for haulage contractors in Myanmar.

A Health & Safety / Emergency Response Card will be prepared and provided to all workers, to be carried at all times. This will set out:

- Key policies and procedures;
- What to do in an emergency; and
- Key contacts and telephone numbers.

Design Provisions for Spill Prevention

The following provisions will be built into the Project design to minimise the potential for spills:

- All pipeline materials will be selected, carefully, with respect to corrosion potential and material transfer;
- Appropriate and adequate signage of hazardous materials pipelines and tankage and marking will be placed where potential spills are anticipated;

- All storage facilities for hydrocarbons, cyanide, reagents and other potentially-hazardous materials will be provided with suitable secondary containment and spill detection devices;
- In accordance with manufacturers design protocols, shut-off and diversion valves will be installed on all pipelines and processing facilities to enable selected pipeline segments or facilities to be separated into emergency intervals;
- Where a pipeline crosses a permanent or ephemeral water course, closing valves will be present immediately outside of the flood zone at each side of the crossing;
- There will be no below ground bulk storage of hydrocarbons;
- Above ground tanks will be equipped with volume-measuring devices, which serve as an indicator for losses occurring within the tanks and the internal pipeline system;
- Operators of these control systems will be appropriately trained in order to be able to identify and to react to indicators for spillages;
- Visual inspections of tanks, pipelines and associated equipment will be carried out at least weekly and any non-conformances reported to the Environment Manager; records of all inspections will be kept by the Environment Department and inspections will include the tanks, bunding, foundation and supports; and
- Visible leaks which result in a loss of chemicals from tank seams, gaskets, rivets or bolts will be promptly reported and addressed.

Spill Response Planning

The Spill Response Plan includes the following provisions:

- A qualified individual will be assigned with responsibility for spill prevention and response i.e. to co-ordinate and lead the team;
- The Plan will be reviewed by qualified and experienced professionals familiar with the facilities, to confirm that the Plan has been prepared in accordance with best practice;
- Details of the Plan will be discussed with local communities through the ongoing programme of community consultation and led by the Community Relations Officer;
- The Plan will be discussed with the local emergency services and, as appropriate, annual reviews will be undertaken. This is particularly important in

the early stages of the Project as the site is developed and import requirements for raw materials, including chemicals, are variable;

- Clearly marked spill response equipment (spill containment and clean-up kits) will be located at strategic points which will be moved as required to be near potential spill risk areas as the Project passes through the different Phases.
- Sufficient equipment will be maintained to ensure that contingency stocks are available in the event of a major spill requiring emergency response;
- Responsibilities are assigned for maintaining and regularly updating the inventory of the available equipment for spill response;
- All response procedures include clear responsibilities for immediate actions to be carried out by the operator detecting the spill, and will provide advice on any actions, which may only be carried out by the Emergency Response Team (ERT);
- Material Data Safety Sheets (MSDSs) will be maintained on site for all potentially hazardous materials; staff will be familiar with both the content and location of the MSDSs; and
- The location and phone numbers for the ERT, fire service and other appropriate emergency services will be clearly visible in all operational areas.

Spill Response for Hazardous Materials

In the case of small spills, which can be mitigated with readily available clean-up equipment, operators will be responsible for initiating immediate clean-up action and for reporting the spill and the completed actions.

After identification and reporting of a significant spill, the ERT will be deployed immediately in order to eliminate the source of the spill and to perform emergency response measures for preventing further migration of hydrocarbons and other pollutants into soil and/or water.

The following response procedure will be implemented following a spill:

- Determine safety and protective equipment for working in or around the spill:
 - Provide first aid to injured persons
 - Monitor vapour levels
 - Prioritise the safety action plan
- Describe the basics of the spill (Where, When and How):
 - Identify the tank volume

- Note the duration of spill from tank or line
- Note any potential fire hazards
- Note any other physical hazards
- Determine if the spill can be stopped
- Determine if the spill can be contained at the source or downstream
- Contact your Supervisor or the MWMCL ERT
- Describe the spill if occurring in the water environment:
 - Note the destination of spilled product downstream.
 - Identify eddies, pools or culverts to use in diverting the spill.
 - Note the depth and the velocity of the water.
 - Note soils, vegetation, fish spawning areas, bird habitat, and wildlife.
 - Identify any downstream areas and the rate of spread of the main slick.
 - Visually inspect the foreshore to identify the extent of contamination.
 - Note where the product is pooling along shore.
 - Note any marsh areas that must be protected.
- Describe the spill if occurring on a land environment:
 - Mark the extent (perimeter) of the spill area
 - Dig test pits to determine the depth of the spill in the ground
 - Dig recovery ditches to contain the spill
 - Monitor the ditches and pits to ensure the collection system is effective
 - Use sorbent pads to remove free product and excavate the contaminated soil
 - Sample the soil to determine the extent of contamination
 - Pump the product from the containment area or obtain approval from the environmental regulators to burn the product

All spills shall be reported to the Environment Manager.

3.26.8 Control Procedures – Post Emergency

On-site Clean-up

Once the emergency has been declared to be over, the typical ERT's actions will include:

- Documentation of the incident;
- Initiation of the emergency incident investigation, reporting, and record keeping;
- Initiation of cleanup which will be the responsibility of the Safety and Environment Department who shall also develop a clean-up plan with the involvement of the ERT;
- Immediately provide for treating, storing or disposing of recovered waste, contaminated soil or surface water, or any other material that results from the incident;
- Follow-up communication with outside emergency response personnel including notification to any outside agencies or emergency response personnel which were notified during the emergency that operations are about to resume; and
- Ensure that all emergency equipment is cleaned or replaced, and is fit for use before operations are resumed.

The ERT are responsible only for *response* during the emergency, i.e., stopping and containing spills, medical services, firefighting, or conducting rescue operation. The clean-up and decontamination after the emergency has been declared over is the responsibility of Safety and Environment Department.

General Decontamination Approach

In the event of an emergency situation involving hazardous materials, employees involved in the incident, emergency response personnel, emergency response equipment, buildings, process equipment, containment pads, and floors all may come in contact with hazardous materials. Employees, emergency response personnel, and equipment must be decontaminated of all chemicals and dust prior to returning to normal operations. As part of the clean-up effort, the ERT will ensure that all emergency response, mobile equipment and/or processing equipment involved in the emergency response or clean-up activities will be cleaned and any necessary service performed before re-use or storage. This is essential, as the emergency response equipment must be in a ready condition before placing back into storage. Similarly, processing equipment will be decontaminated before being placed back into normal operation. The equipment cleaning will typically consist of a rinse down of the

equipment with a mildly alkaline solution. However, Material Safety Data Sheets should be consulted to provide guidance on decontamination. The equipment will be scrubbed as necessary to remove any solids. The Emergency Co-ordinator and the clean-up plan must ensure that the resulting washing liquids are handled and disposed of properly. Care should be taken to perform decontamination within permanent or temporary containment systems to prevent further soil and/or surface water contamination. Monitoring & Inspection

A key part of preparedness for emergencies is to ensure that all preparations and emergency equipment are in place and functioning as intended. There are two aspects to this:

- Routine site inspections; and
- Training updates.

Emergency monitoring procedures shall be as follows:

- The ERT leader shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan during the construction phase, including:
 - Training undertaken (numbers of staff, courses etc);
 - PPE quantities and locations;
- The Environment Manager shall inspect the Project on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Training;
 - PPE;
 - Site conditions;
 - Observations of management practices;
 - Rehearsals and exercises.
 - Compliance with applicable regulatory and corporate requirements.
 - The Environment Manager shall prepare and update the Spill and Emergency Response Plan on a periodic basis.

Reporting, by the ERT Manager, shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the MWMCL Environmental Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any non-compliances to this Management Plan;
- Planned activities during the next reporting period; and

- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

3.26.9 Training

All employees of MWMCL and project Contractors shall be provided with training in spill and emergency response. Specialist emergency response training will be provided to those members of the Emergency Response Team.

Orientation and Training

All employees, contractors and visitors will be introduced and instructed on the policies and procedures established with this plan.

Safety and environmental concerns and awareness will also be discussed at every safety meeting and at the start-up of any new operations that may affect the environment. If an incident happens all employees will be informed and re-instructed and retrained as deemed necessary.

The training for spill response will be part of the worker orientation at the site. All personnel will be made aware of the products present on site through the orientation program and the availability of Material Safety Data Sheets (MSDS) in prominent locations. Supervisors who will fill the role of Spill Response Coordinator, the Spill response Supervisor and the Clean-up Crew will receive a more detailed training allowing them to respond quickly and safely to any spill on the site. Specified emergency response teams will receive additional training as well.

All employees on site will have valid WHMIS certificates and will be familiar with MSDS. Each employee will be made aware of the locations of storage facilities and the locations of spill containment and recovery equipment.

Drills and Practice will include planned and unplanned mock drills.

Drills and Practices

Personnel at the site will undertake periodic testing of the emergency response procedures. These tests will be undertaken on a twice-yearly basis. These intervals will be more frequent if there is a high turnover of employees at the site. The outcome of each exercise will be recorded, and reviewed for areas of improvement by the responsible person for the respective area.

3.26.10 Performance Indicators

Measurement of the performance of emergency response management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Reporting of any incidents or accidents;
- Reporting of any land or water body spill contamination response; and
- Recording of training.

3.26.11 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Emergency Response Team and Environmental Departments in accordance with the schedule presented in Table 3.26.2

Table 3.26.2: Auditing & Reporting – Emergency Preparedness

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	• Monthly by Project Manager	• Quarterly by Environment Manager
Non-conformance with monitoring and inspection plan	• Monthly by Project Manager	• Quarterly by Environment Manager
Incidents or accidents	• Monthly by Project Manager	• Quarterly by Environment Manager
Emergency responses	• Monthly by Project Manager	• Quarterly by Environment Manager
Training	• Monthly by Project Manager	• Quarterly by Environment Manager

During any emergency incident, documentation of the emergency begins with the initial report of the emergency by the first responder. Key persons keeping a log of the incident include the Security personnel taking the call or the Leader of the ERT, immediately begins a log of the incident and of the emergency response at the scene. All of these documents, as well as others generated throughout the emergency, become part of the emergency record. In addition, emergencies must be investigated and documented, and corrective actions taken to ensure that such emergencies can be prevented in the future. Once the emergency is declared over by the ERT, the incident investigation process begins, under the direction of the Leader of the ERT, with the purpose of:

- Determining the root cause of the emergency;

- Determining if appropriate emergency response was taken;
- Determining if the Emergency Response Plan, emergency response organisation, and emergency procedures were adequate or need to be modified;
- Determining corrective and preventative actions to prevent recurrence; and
- Documenting the incident and corrective actions.

3.27 **EMP 25 – MONITORING PROCEDURE**

3.27.1 General

Monitoring is a key tool to enable mitigation and management measures to be adjusted to respond to inevitable changing conditions and the unexpected. Mitigation and management of a project before it is constructed depend on assessment of potential impacts and public and government concerns expressed through consultation and the approval process. It is almost impossible to fully and accurately predict all environmental impacts which might arise from a project at this early stage. Even the best impact assessment may fail to identify and mitigate all negative impacts which a project could have on the natural and social environment. In addition, no project is implemented in a static environment. Other changes in other conditions could lead to negative environmental impacts arising from a project which it would have been impossible to predict at the time of assessment. For these reasons, monitoring and evaluation of a project's environmental impact following approval and implementation is an important part of the overall project cycle.

General procedures regarding monitoring are included in each of the environmental management plans. Specific information pertaining to monitoring type, frequency, and locations is included herein. A plan showing the proposed monitoring regime and the sampling point locations is shown on Figure 3.27.1.

3.27.2 Clearing and Ground Disturbance

Monitoring of clearing and ground disturbance shall be as follows:

- The Site Environmental Team will inspect operational areas during and after clearing activities to ensure only authorised clearing is being undertaken;
- Cleared areas shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS database; and
- Unauthorised clearing and non-compliance with Clearing Permits shall be reported as an incident through the Incident Reporting process.

3.27.3 Weed Hygiene

Monitoring of weed hygiene shall be as follows:

- Inspection for evidence of invasive flora shall be performed on a monthly basis; and
- The type of invasive flora, its extent, herbicide treatment, and location shall be recorded in a database and layout plan or uploaded onto a GIS database.

3.27.4 Heritage

Monitoring of heritage matters shall be as follows:

- Inspection of known heritage sites shall be performed on a monthly basis; and
- Details of the known heritage sites including type, extent and location shall be recorded in a database and layout plan or uploaded onto a GIS database.

Details of chance finds including extent, level of disturbance, and location shall be recorded in a database and layout plan or uploaded onto a GIS database.

3.27.5 Air Quality

Monitoring of changes in ambient air quality will be done to ensure that air quality at the boundary of the Project area does not undergo any adverse changes over the life of the project. It will require establishing representative sampling locations to assess the potential effects of acid deposition, fugitive dust emissions and the mobilization of metals / elements through changes in soil chemistry during construction and mine operations. An air quality risk assessment plan shall be prepared which will:

- Identify zones (or areas) of different severity levels with respect to their vulnerability to potential impacts of air emissions;
- Help identify emissions or sources of greatest risk to beneficial uses of the environment;
- Provide for assessment of the environmental and health impacts of air emissions and establishment of air quality management priorities;
- Serve as a basis for selecting locations for dust and gaseous emission monitoring and for establishing mitigation measures.
- An air quality emergency mitigation plan shall also be prepared which will:
- Outline procedures for coordinating activities with local authorities and local health institutions to develop an Emergency Abatement plan;
- Specify arrangements and procedures for having local communities report adverse health effects experienced as a result of release of dust and gaseous emissions into the environment;
- Establish air pollution alert procedures and protocols; implementation strategy for an emergency abatement plan if the concentration of air quality indicator is predicted to exceed the standard limit.

Sampling will be undertaken as outlined below.

Table 3.27.1: Ambient air quality sampling requirements

Parameter	Sampling Frequency	Sampling Duration
TSP	Weekly	24 hrs
PM10	Daily	24 hrs
PM2.5	Daily	24 hrs
SO ₂	Monthly	30 days
NOx	Monthly	30 days

Appropriate sampling equipment will be selected based on accuracy, ease of use, durability in the field and cost. Sampling locations will be determined using the output of a dispersion model (to identify areas of maximum concentration). In addition, certain measurements will be collected at nearby sensitive receptors including occupied dwellings and ecologically-sensitive areas.

Emissions monitoring for stack emissions from power plants will be undertaken as summarised in Table 3.27.2.

Table 3.27.2: Emissions monitoring for stack emissions from power plants

Pollutant	Sampling Frequency
Dust	Weekly
SO ₂	Weekly
NOx	Weekly

As shown on Figure 3.27.1, dust sampling is proposed at six points around the site, including those areas adjacent to the larger villages.

3.27.6 Hydrocarbons

The MWMCL Supply Department will maintain an inventory of all chemicals purchased, delivered, stored and used at the project site. This inventory will be updated on a monthly basis.

3.27.7 Non-Hazardous Waste

The MWMCL Project Manager shall record on a monthly basis the following:

- Construction of waste storage facilities;
- Use of recycling facilities;
- Vermin and litter control; and
- Status of wastes inventory.

The MWMCL Environment Manager shall prepare and update the Waste Inventory as the mine develops.

Inspection records will comprise the following:

- Designated waste storage locations marked on a plan;
- Each waste storage area will be numbered to facilitate inspections;
- Any spills, leaks, poor containment, lack of labelling or other issues will be recorded and reported to the relevant department for corrective action; and
- Corrective actions will be documented on completion.

3.27.8 Hazardous Materials

All hazardous materials will be subject to strict inventory control from the time they enter the site. The MWMCL Supply Department will maintain an inventory of all hazardous substances purchased, delivered, stored and used at the mine site. This inventory will be updated on a monthly basis. Logs will be kept as required for inspection by the regulatory agencies. The MWMCL Project Manager will conduct routine inspections of all hazardous substances storage areas, and worksite areas to look for spills, leaks, overflows and compliance with the procedures. Where necessary, Corrective Actions will be recommended. The MWMCL Environmental Manager will monitor all activities to do with explosives use and storage. The MWMCL Supply Department will collect and maintain records on hazardous substances in consultation with the Project Manager, for the following:

- Reconciled bulk inventory;
- Weekly use summaries;
- Weekly reconciliation for each storage area;
- Overfill alarm tests;
- Pressure tests (if applicable);
- Inspections and maintenance checks of storage tank system, piping and delivery system;
- Any alteration to the system;
- Reports of leaks or losses;
- Reports of spill responses; and
- Records of training.

3.27.9 Waste Rock

The main performance concern for the WRDs will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary.

Physical stability of WRD slopes shall be assessed by regular pickups of survey pins installed at critical locations on dump batter slopes.

Acid rock drainage and metal leaching from waste rock and seepage will be monitored on a monthly basis during operations and continue post mining. A field assessment of waste rock net acid production potential shall be made on a flitch by flitch basis using the hydrogen peroxide oxidation method. In addition, the need for treatment of ARD drainage will be assessed from water quality samples collected during the operations and closure phases. The physical stability of WRDs and the water diversion system will be monitored annually by an independent geotechnical engineer and a report prepared for MWMCL which will be forwarded to the relevant government regulatory body. Weekly visual inspections of these facilities will be conducted by mine personnel and observations logged for inspection by the independent geotechnical engineer, and government regulators upon request.

The Environment Manager shall inspect the condition of the WRDs after every major rain and earthquake event and shall maintain appropriate records. The inspection shall include:

- A physical walk-over and evaluation of the condition of all areas;
- A pickup of survey pins for critical WRD slopes;
- Assessment of condition of access roads between the pit and WRDs; and
- Compliance with applicable regulatory and corporate requirements.

3.27.10 Soil Conservation and Land Management

Topsoil monitoring procedures shall be as follows:

- A monthly report during the construction phase will include:
 - Quantities of topsoil removed
 - Storage locations, quantities and type of topsoil
 - Storage procedures and methods used
- A Topsoil Storage Plan should be developed to show a map and inventory of topsoil stockpiles.

In addition to topsoil monitoring, changes in soil conditions shall be monitored to ensure that the soils in the area do not undergo any adverse changes over the life of the project. It will require establishing representative sampling locations to assess the potential effects of acid deposition, fugitive dust emissions and the mobilization of metals / elements through changes in soil chemistry during construction and mine operations.

Monitoring of land improvement shall be as follows:

- Areas of afforestation, tree planting, and cultivation shall be surveyed and their extents and plant type shall be recorded in a database and layout plan or uploaded onto a GIS database; and
- The health of afforested and cultivated areas shall be monitored. Plant deaths or health deterioration shall be noted and remediation measures recommended.

3.27.11 Acid Rock Drainage

Monitoring of acid rock drainage (ARD) from the following potential sources is required over the life (and after closure) of the mine:

- The open pit;
- The waste rock dumps (WRDs);
- The low grade ore stockpiles; and
- The heap leach pads (HLPs).

From an acid rock drainage (ARD) perspective the main performance concern for the WRDs, HLPs and ore stockpiles will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary. Following closure, water management systems will be inspected quarterly, and any required maintenance carried out until abandonment. Acid rock drainage and metal leaching from waste rock and seepage will be monitored on a monthly basis during operations and continue post mining. The need for treatment of acid rock drainage will be assessed from water quality samples collected during the operations and closure phases

The ARD monitoring, inspection and record keeping requirements for the Project is detailed in the following management plans:

- Open pit: The *Water and Groundwater* EMP.
- WRDs and low grade ore stockpiles: The *Waste Rock and Water and Groundwater* EMPs.

- HLPs: The *Ore Handling and Placement* and *Water and Groundwater* EMPs.

Responsibility for the construction phase monitoring detailed above shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan.
- The Environment Manager shall inspect the condition of the WRDs, ore stockpiles and HLPs after every major rain event and shall maintain appropriate records. The inspection shall include:
 - A physical walk-over and evaluation of the condition of all areas; and
 - Compliance with applicable regulatory and corporate requirements.

3.27.12 Construction Materials and Earthworks

The inspection checklist and schedule for earthworks, construction materials, and borrow pits shall be as follows:

- New borrow pits shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS type database.
- Verification that the borrow pits and earthworks are not encroaching into buffer zones for “No Go Areas”, priority flora, heritage sites, watercourses, or public / private roads.
- Areas cleared for development of borrow pits / quarries / stockpiles and areas rehabilitated shall be reported to the EHS Manager on a monthly basis.
- The relevant MWMCL Construction Supervisor shall inspect and arrange maintenance for erosion and sediment control structures (associated with borrow pits, stockpiles and earthworks) during the wet season.
- A post-rehab survey pickup will be completed to verify the borrow pit as free draining.
- Regular inspections of active borrow pits by the MWMCL Environment Manager, including for weed infestations, erosion and compliance with the borrow pit plan.
- Photographic record of pit development will be maintained. Photographs will be taken:
 - After pegging, before clearing;
 - At least once during operation; and
 - At completion of rehabilitation;

- Photograph points will be recorded by GPS and used for ongoing monitoring and rehabilitation purposes.
- Verification that all earthworks areas are being monitored for dust, noise, and erosion / sediment control EMP compliance;
- Verification that all imported natural materials are tested for geochemical suitability.

3.27.13 Access Tracks and Roads

The inspection checklist and schedule for tracks and roads shall be as follows:

- New tracks and roads shall be surveyed and their extents shall be recorded in a database and layout plan or uploaded onto a GIS type database;
- Verification that the tracks are not encroaching into buffer zones for “No Go Areas”, priority flora, heritage sites, watercourses, or public / private roads;
- Areas cleared for development of roads, access tracks and areas rehabilitated shall be recorded on a monthly basis;
- Unapproved access tracks shall be reported and investigated by the MWMCL Construction Supervisor; and
- Photograph points will be recorded by GPS and used for ongoing monitoring and rehabilitation purposes.

3.27.14 Soil Erosion and Sediment Control

Letpadaung has a distinct wet and dry season. The soils monitoring programme will include two rounds of samples per year during construction (February and September) to determine if any seasonal variations occur. Thereafter, annual monitoring will take place once per year, preferably at the end of the dry season (early March). Monitoring will be conducted with test pits located downwind and down gradient from mine facilities such as waste rock pile, open pit, plant site and leach pad; and upwind and upstream from these facilities at designated control points. The suite of analyses for the monitoring programme will include:

- Soil chemistry:
 - pH;
 - Anion exchange capacity;
 - Electrical conductivity;
 - Metals (full suite using ICP-MS); and
 - Toluene-extractable organics;

- Soil structure:
 - Clay fraction (<0.002 mm);
 - Particle size distribution;
 - Water retention;
 - Permeability; and
 - Total suspended solids.

Sampling frequency and parameters analysed will be reassessed based on results from air quality and surface water monitoring results but are likely to be more frequent during the rainy season to correspond with rains. Erosion monitoring shall comprise the following:

- Recording and reporting on a monthly the following parameters:
 - Quantities of vegetation removed
 - Storage locations, quantities and type of topsoil and overburden
 - Storage procedures and methods used
- Inspecting the condition of areas on a monthly basis and maintaining appropriate records. The inspection shall include:
 - Areas prone to erosion
 - Evidence of erosion
 - Condition of access roads
 - Condition of cleared areas
 - Condition of perimeter drains (if installed) and associated settlement ponds (if installed)
 - Compliance with applicable regulatory and corporate requirements.

3.27.15 Surface Water/ and Groundwater

Groundwater quantity and quality will be measured both on and off the site. A detailed groundwater level and quality monitoring network will be established over the region to monitor the impacts of production from water wells and from pit dewatering activities. The monitoring will include points in the shallow alluvial aquifers used by the local populace and in the deeper bedrock aquifers. The exact location of monitoring will depend on the location of the production water wells. Monitoring will commence before mining starts and will continue post mining. Water quality samples will be collected

quarterly throughout the life of the mine. Automated water level monitoring will be established to collect data on a regular basis to observe long term trends.

Water resources monitoring procedures shall be as follows:

- Monitoring, on a monthly basis, of the following:
 - Collection of climate data in accordance with Table 3.27.3.

Table 3.27.3: Climate parameters to be recorded at site weather stations

Parameter	Sampling Frequency
Temperature (°C)	Twice daily (minimum and maximum)
Relative humidity (%)	Daily
Wind speed (m/s)	Every 1 to 3 hrs
Wind direction (deg.)	Every 1 to 3 hrs
Precipitation (mm)	As frequently as possible (use electronic tipping bucket)
Daily solar radiation (Wh/m ²)	Daily
Pressure (mb)	Daily
Pan evaporation (mm)	Daily

- Development of a numerical model to obtain long-term prediction of the effects due to groundwater withdrawal/dewatering
- The effect of groundwater withdrawal/dewatering and its implications for other environmental resources, including habitat diversity, surface water, vegetation and soil saturation
- Maintenance of river and compliance point discharge measurements. These measurements should be carried out frequently during all flood events. Attempts should be made to collect manual flow measurements for the entire duration of the wet season
- An inventory of all groundwater users, identifying any potential conflicts and proposed resolutions
- Inspection and sampling of different areas of the site (according to sub-catchment and land use) on a monthly basis and shall be carried out. The inspection and sampling records shall include:
 - Groundwater monitoring (quality and quantity)
 - Evidence of any reduction of water resources
 - Surface water monitoring (quality and quantity;

- Records and evaluations of flood events
- Condition of wells
- Efficiency of wells.

Sampling will be undertaken as outlined below.

Table 3.27.4: Water sampling requirements

Type of sample	Parameters	Sampling Frequency
Groundwater - Field	groundwater level, pH, electrical conductivity and temperature	Monthly
Groundwater - Laboratory	alkalinity, nitrates, phosphates, sulphates, chlorides, COD, TDS, TSS, and metals. , and initially total coliform bacteria	Monthly
Surface Water - Field	groundwater level, pH, electrical conductivity and temperature	Monthly
Surface Water - Laboratory	alkalinity, nitrates, phosphates, sulphates, chlorides, COD, TDS, TSS, and metals. , and initially total coliform bacteria	Monthly

As shown on Figure 3.27.1, surface water sampling is proposed at four points around the site, including the catchment upstream of the project area and the environmental compliance points.

3.27.16 Sewage and Wastewater

Down gradient monitoring wells will be installed 50 m from the outer perimeter of the leach field at three sites on each of the distal sides of the field from the septic tanks. Shallow groundwater quality will be monitored when present on a monthly basis for parameters including:

- Faecal bacteria;
- Phosphates;
- Nitrates;
- BOD;
- Metals;
- Oil and grease (largely removed by grease traps where required); and

- Total suspended solids.

WHO drinking water criteria (listed above) will be used as guidelines for acceptable quality. Should an increasing trend in any of the parameters become apparent, monitoring will be increased to weekly until the source of the increase is determined and management actions result in a decrease in the subject pollutant.

The Environment Manager will inspect the condition of the project area on a monthly basis and will maintain appropriate records. The inspection will include:

- The efficient performance of the sewage treatment plant;
- The quality of effluent;
- The integrity of storm water drains.

3.27.17 Fire

Monitoring of fire shall be as follows:

- Fires within and around the project footprint shall be reported immediately as well as the likely cause and the circumstances; and
- House-keeping and vehicle inspections (as part of general site inspections) shall be undertaken and documented. Any areas of concern or non-compliances shall be recorded.

3.27.18 Noise and Vibration

Monitoring of changes in noise and vibration levels within the operational areas will be done to ensure that levels do not increase significantly over the life of the Project and do not breach thresholds limits. It will be done at the same locations and will require establishing representative sampling locations to assess the potential effects of noise and vibration levels across the site. Any complaints from the community should be documented and managed through to resolution. In the event that public complaints arise, steps should be taken to investigate the root cause without delay and remedial action should be taken to correct the deficiency. Actions should ensure that similar incidents do not recur and should be reported as part of the performance reporting process.

MWMCL should conduct ongoing liaison with the adjoining communities. In the event that noise mitigation measures implemented do not reduce noise to acceptable levels at receiving locations, the addition of noise treatments to those receiving locations should be investigated.

The monitoring programme will:

- Provide clear, hands-on direction how to minimize noise and vibration and explain rationale;
- Provide clearly regulatory requirements and corporate standards for environmental performance pertaining to noise and vibration control;
- Form the link between operations, safety and environmental programs;
- Provide monitoring results that will be regularly reviewed to ensure the noise and vibration management systems are operating as designed;
- Identify the reporting requirements to document and communicate the monitoring results; and
- Ensure that all environment, health and safety (EH&S) risks are addressed.
- A Noise Modelling and Assessment Plan should be prepared to achieve the following:
 - Assess noise and vibration impact of the open pit mine.
 - Plot noise contours and predict noise emissions which helps to determine “Noise Zone Description”.

The ambient noise monitoring program during both, the construction and operation stages should include one full day (day and night) measurements semi-annually (during wet and dry seasons) to determine noise parameters such as the equivalent continuous noise level (Leq) in decibels (dBA), the A-weighted sound pressure level that is exceeded for 10%, 50% and 90% of the time over which a given sound is measured (L10, L50 and L90) and frequency noise analysis.

A five day vibration and air blast monitoring programme should be undertaken to ensure the desired vibration (ppv not greater than 5 mm/s and 115dB(A) at Sensitive Sites) can be achieved and, if not, blast techniques amended to achieve that result. Blast monitoring beyond the initial monitoring period should result in 95% of the rolling average results achieving those targets.

No blasting shall occur outside the 0900hr – 1700hr period each day.

Noise monitoring will be assessed against World Bank Guidelines. Noise impacts should not exceed the level presented in Table 3.27.5 below, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site.

Table 3.27.5: Noise Level Guidelines

Receptor	One Hour LAeq (dBA)	
	Daytime 07:00 – 22:00	Night time 22:00 – 07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

The following items are to be included in a noise and vibration monitoring report:

- The type of monitoring test conducted (that is, the construction stage or operation);
- The noise and vibration limits (daytime & night time) for the facility;
- Description of the nearest affected receivers;
- The monitoring locations;
- The noise and vibration instrumentation used;
- The weather conditions during noise survey;
- The time and duration of monitoring, including dates;
- The results of noise and vibration monitoring at each monitoring location; and
- A statement outlining the Project's compliance or non-compliance with the limit.

Where noise and vibration exceedances are found; the reason for non-compliance should be stated; and the strategies to be used to manage the noise and vibration exceedance.

3.27.19 Greenhouse Gas Emissions

The monitoring of GHG emissions is becoming a standard requirement under international good practice. MWMCL will conduct annual monitoring of GHG emissions. It is likely that GHG monitoring during operations will involve inventories being developed using mass balance, stoichiometric calculations and internationally accepted "factors". Key data that will be collected on a semi-continuous basis to support the inventory will include:

- Area of land cleared / revegetated;
- Diesel consumption by mining vehicles;
- Explosives use;
- Extent of electricity import and export;
- Power generation/fuel type (emissions);

- Employee road and air miles;
- Road miles by MWMCL and contractors for importing plant / materials; and
- Road miles by MWMCL for exporting copper.

This data will be used to prepare an annual GHG emissions inventory and to track emissions over the course of project development.

3.27.20 Operation of Concrete Batch Plant

Inspection records will comprise the following:

- Designated waste storage locations marked on a plan;
- Each waste storage area will be numbered to facilitate inspections;
- Any spills, leaks, poor containment, lack of labelling or other issues will be recorded and reported to the relevant department for corrective action; and
- Corrective actions will be documented on completion.

3.27.21 Demobilisation and Rehabilitation

Rehabilitation monitoring procedures shall be as follows:

- A Rehabilitation Plan should be developed to show a map and inventory of rehabilitated areas; and
- Rehabilitated areas are to be monitored by the Site Environmental Team to assess for introduction of invasive species until the level of revegetation required to control the weeds has been achieved.

3.27.22 Ore Transport and Handling

The main performance concern for the HLPs will be maintenance of the water management facilities. During mining operations, runoff collection ditches and ponds will be inspected after every major rain event, and maintenance carried out as necessary. Following closure, water management systems will be inspected quarterly, and any required maintenance carried out until abandonment. Stability analysis carried out at the commencement of the project shall ensure that there are no stability concerns with the HLPs. As mentioned earlier, piezometers and groundwater monitoring bores will be utilised to monitor water pressure within the heap and any potential downstream seepage impacts. Acid rock drainage and metal leaching from ore and seepage will be monitored on a monthly basis post mining. The need for treatment of ARD drainage will be assessed from water quality samples collected during the closure phase. The physical stability of HLPs and the water diversion system will be monitored annually by an independent geotechnical engineer and a report prepared for MWMCL which will be forwarded to the relevant government regulatory

body. Weekly visual inspections of these facilities will be conducted by mine personnel and observations logged for inspection by the independent geotechnical engineer, and government regulators upon request. Responsibility for the construction phase monitoring detailed above shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan.
- The Environment Manager shall inspect the condition of the HLPs after every major rain event and shall maintain appropriate records. The inspection shall include:
 - A physical walk-over and evaluation of the condition of all areas;
 - Assessment of condition of access roads between the pit and HLPs; and
 - Compliance with applicable regulatory and corporate requirements.

3.27.23 Blasting and Explosives

All explosives will be subject to strict inventory control from the time they enter the site. The MWMCL Supply Department will maintain an inventory of all explosives purchased, delivered, stored and used at the mine site. This inventory will be updated on a monthly basis. Logs will be kept as required for inspection by the regulatory agencies. The MWMCL Construction and Environmental Managers will conduct routine inspections of all explosives storage areas, and worksite areas to look for any damages and ensure compliance with the procedures. Where necessary, Corrective Actions will be recommended. The MWMCL Supply Department will collect and maintain records on explosives in consultation with the Project Manager, for the following:

- Reconciled bulk inventory;
- Weekly use summaries;
- Weekly reconciliation for each storage area;
- Any alteration to the system;
- Reports of loss of explosives materials;
- Reports of damage to property or injury to personnel;
- Reports of loss / injury / damage responses; and
- Records of training.

4. SOCIAL MANAGEMENT PLANS

In response to potential social and community impacts, MWMCL has developed a series of management procedures which are designed to eliminate adverse impacts and, where this is not possible, to reduce adverse impacts to an acceptable level.

For each relevant social aspect associated with the construction activities, the procedures detail the:

- Scope;
- Objectives;
- Targets;
- Roles and Responsibilities;
- Management Actions; and
- Monitoring and Reporting.

It is obligatory for all contractors and subcontractors to the Project to follow these procedures and to report on their implementation.

4.1 SMP 01 – CULTURAL HERITAGE

4.1.1 Introduction

The Cultural Heritage Management Plan is designed to ensure that the Project has minimal impact on the cultural resources of the Project area, through the implementation of effective mitigation and monitoring measures through construction, operation and closure. The plan contains the methods to map, document and excavate known cultural resources and includes the procedures to deal with “chance finds”.

Cultural heritage encompasses a wide range of resources, including archaeological deposits and remains, historical monuments, sites and buildings, historical and culturally-significant landscapes, places of worship, cemeteries and graveyards, places associated with local folklore, mythology and traditions and the location of historical and cultural festivals, events and rituals.

A small number of archaeological sites were identified during field surveys conducted for the Project, and can be summarised as follows:

- A Buddhist pagoda adjacent to Letpadaung hill.

This plan describes the management of cultural resources associated with all phases of the Project, with a focus on construction when the most disturbances are likely to occur. The plan considers potentially adverse impacts related to:

- Site preparation and infrastructure;
- The construction of water retention features and diversion channels;
- Waste rock storage and waste management;
- Topsoil storage and replacement;
- Increased human presence;
- Mining and quarrying; and
- Site rehabilitation and reclamation.

The plan is a flexible document that shall be reviewed on a regular basis. This plan applies to MWMCL as well as Contractor personnel. The MWMCL ConstrucProject Manager shall make sure that this plan is available to their own staff and subcontractors and that all procedures/actions included within the plan are recognised, adopted and applied by them prior to commencing construction works.

Cultural heritage impacts will occur predominantly in the construction phase, because land clearance and other intrusive activities are required to prepare the site and build

Project facilities. Although construction will be phased, it is understood that the maximum extent of the facility footprint would be determined in the first year.

The Project footprint should be surveyed and cleared of archaeological/cultural sites prior to intrusive construction works. This work will involve further field investigation of known sites, and excavation and retrieval activities to relocate and protect artefacts from destruction as a result of Project activities.

4.1.2 Objectives

The objectives of this Management Plan are to:

- Establish effective plans and procedures for managing archaeological sites and cultural assets in the Letpadaung area, including potential chance finds during construction and operations activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.1.3 Targets

The targets of this Management Plan are to:

- Protect sites of cultural heritage significance from adverse impacts due to construction activities; and
- Implement cultural heritage management procedures.

4.1.4 Roles & Responsibilities

The Project team is ultimately responsible for the following key tasks, roles and actions relating to cultural heritage as outlined in the RACI in Table 4.1.1

Table 4.1.1: Roles & Responsibilities – Culture Heritage Management

Activity Description	MWMCL Senior Management Team	Project Manager	Contractors Team	MWMCL Environment / Community Team
Develop a cultural heritage site map & establish stakeholders	C/A	C/A	I	R
Develop Cultural Heritage Management Plans and integrate with Construction Plan	C/A	C/A	I	R
Introduce cultural heritage concepts to the work force	C/A	C/A	R	R
Monitor cultural heritage management across the Project	I	C/A	C/A	R
Record and report cultural heritage management plus related training of personnel	I	C/A	R	R
Develop a tracking system for incidents / complaints related to cultural heritage	I	C/A	I	R

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

The Project Manager shall be responsible for the integration of these procedures and requirements into their construction procedures and plans.

The Community Relations Manager shall be responsible for monitoring activities at locations deemed to require special attention in terms of cultural heritage/archaeological management. The Community Relations Manager will oversee any routine construction operations that require additional subsurface activities that may uncover new artefacts.

Close consultation with the National Museum will be maintained regarding specific assessment for each archaeological site to ensure it is protected adequately.

4.1.5 Management Actions

Actions expected from management are as follows:

1. Social / community induction and toolbox meetings will include cultural heritage management and awareness.
2. Construction personnel will be trained to ensure proper management of construction activities around cultural heritage sites and how to deal with chance finds.
3. Chance finds or disturbance to cultural heritage sites will be reported to the Community Relations Manager within 24 hours.
4. Site specific protection/retrieval plans will be developed for each known site potentially impacted by Project activities.
5. Subsurface evaluative testing will be conducted at potentially threatened sites prior to construction activities to determine if buried cultural deposits are present.
6. All testing and collection will be done under an approved plan and conducted by experienced archaeologists/work teams recognised by the National Museum of Myanmar.
7. Scientific and cultural analysis and interpretation of the archaeological data collected during mitigation is an integral part of the process and will be undertaken in a timely fashion.
8. MWMCL will work with both archaeologists familiar with the area and local communities on issues related to site interpretation of cultural resources.

4.1.6 Identified Archaeological Sites

A number of sites have been identified during assessments done to date. The location of the archaeological sites within the Project area as well as the wider area of influence, are shown in Figure 4.1.1.

Comprehensive details of each of the archaeological sites that have been identified in the Project area will be included in the Social and Environmental Impact Assessment for the Letpadaung Project.

4.1.7 Cultural Heritage Activities Conducted (and Planned)

- Field investigations and analysis of known archaeological sites and graves; and
- Outcomes of discussions with the local community concerning cultural heritage sites in the area.

4.1.8 Control Procedures

MWMCL have developed a range of cultural heritage management procedures to ensure that unanticipated discoveries of archaeological sites are mapped, documented and protected as much as possible during construction, operations and closure activities.

Preparing Archaeological Work Specifications

Future archaeological work to be undertaken for the Project shall be preceded by the preparation of a work specification that outlines what work will be undertaken. The following procedures shall be followed:

- An Archaeological Work Specification Form (see Forms below) shall be used by each archaeologist/work team;
- Each individual specification shall be submitted for approval by the Community Relations Manager prior to the commencement of each archaeological mitigation measure;
- The specification will be presented sufficiently in advance of archaeological mitigation commencing to allow time for amendments to be made by Community Relations Manager, if required;
- Archaeological work specifications shall be developed in cooperation with construction teams that may be impacted by their implementation; and
- MWMCL will keep contractors informed of cultural heritage work that will be conducted for the Project.

Chance Finds Procedure

Construction works have the potential to impact archaeological resources directly through land clearance and the disturbance of above or below-ground sites and indirectly, through ground vibration, the deposition of airborne dust, traffic movements and waste disposal.

This procedure provides guidance to MWMCL employees and contractors on how to deal with chance finds arising through the following:

- Land clearance and topsoil stripping activities;
- Excavation activities;
- Construction of bridges and stream crossings;
- Well construction;
- Basement, foundation and concrete housing/HDPE liner construction; and

- Preparation and construction of Project access roads.

For land clearance activities, the following procedures should be adopted:

- All personnel involved in land clearance and excavation should take responsibility for managing archaeological protection, and should be trained in these aspects;
- MWMCL employees should respect the cultural and social significance of any such finds during the life of mine and should be strictly prohibited from interfering with or disturbing any such deposits;
- Should any archaeological artefacts (such as relics, bricks, bones, ceramics or graves) be encountered:
 - Activities should halt immediately and the site should be isolated and clearly marked;
 - The Community Relations Manager should be informed immediately; and
 - The Community Relations Manager should liaise with the relevant ministry to determine the need for further investigation / appropriate action.

Any subsequent investigation or excavation works should be conducted by a suitably-qualified archaeologist undertaken under the guidance of the relevant national and regional authorities and as follows:

- All necessary permits and licences for archaeological investigation should be obtained;
- Any archaeological finds should be discussed with the local community to establish local significance (even in the absence of legal protection status);
- Topographic mapping should be carried out, to identify the likely spatial extent of deposits;
- The exact area for excavation should then be selected according to the density and physical distribution of archaeological material;
- Trial pits should be dug by hand excavation at the conventional 5cm levels to register archaeological elements together with the physical characteristics of the strata;
- The excavation process and the different archaeological material (ceramics, stones, charcoal, seeds, bones, etc.) should be registered in detail using photographs and field diaries;

- Any material found in the pits should be treated (washed and tagged) and later classified in accordance with accepted criteria;
- Samples of material should be sent to specialised laboratories for carbon-dating (e.g. using the C14 method), together with samples of organic remains and soil, which should be analysed for the identification of pollen; and
- An analysis of the spatial distribution of the material recovered at each of the levels surveyed should be carried out.

Archaeological Excavation/Retrieval

If archaeological excavation or retrieval processes are required for chance finds/new discoveries of cultural sites within the Project area then following additional procedures should be followed:

- An archaeological work specification (see Forms below) for the item to be retrieved and relocated must be completed;
- All staff must be suitably qualified and experienced for their roles within the work specification;
- Excavation/retrieval and relocation works should be monitored by representatives of the local communities / traditional owners of the area and at least one archaeologist (e.g. the archaeology/cultural resources monitor);
- Consideration should be given to supplementing excavation work with non-destructive means of investigation such as geophysical survey, remote sensing, geochemical survey and/or field scanning;
- Immediately after the retrieval and relocation works have been completed the location, where the objects have been repositioned, will be recorded as new sites within the Cultural Heritage Data Base;
- Full and proper records (written, graphic, electronic and photographic as appropriate) will be made for all work, using pro forma records and sheets appropriate to the work;
- The recording system used will be one that is appropriate to the requirements of the Project, and will be agreed to by relevant parties including the body that is to receive the archive;
- The recording system and data standards will be compatible with those of all other fieldwork related to archaeological mitigation for the project; and
- A post- excavation assessment report should be produced following completion of the on-site excavation.

Recording Sites which cannot be relocated

Some items (e.g. ethnographic stone pits) cannot be salvaged and relocated. Procedures for recording sites which cannot be relocated will involve the following:

- Upon consultation and mutual agreement with all relevant parties (e.g. local communities, authorities and the National Museum), these items will be destroyed *in situ*;
- Prior to destruction the items will be recorded to document the physical extent of the item and the physical environment in which the item is located; and
- Photographs shall also be taken, including a context photograph.

Unless other arrangements are made with local communities and authorities, MWMCL will consider storing any additional artefacts or materials retrieved from the Project area, at a dedicated local museum.

4.1.9 Cultural Heritage Data and Documentation

Cultural Heritage Records System

The Environment Department is responsible for maintaining a record of archaeological sites and related activities. Records will contain information on cultural heritage/archaeological sites, materials and items within the Project area, activities conducted to manage known sites, as well as chance finds. Such data will likely include:

- Archaeological sites and the status of their protection/retrieval/relocation;
- Details of “watching briefs”/monitoring conducted;
- Results of field evaluations, excavations and relocations conducted;
- Identification and evaluation of unexpected/chance finds;
- Consultation with local communities and the National Museum;
- Complaints and actions taken; and
- Condition and operation of demarcation and protection measures.

The National Museum is responsible for maintaining detailed archaeological records for specific artefacts discovered and activities undertaken by museum archaeologists/staff.

Forms

The Community Relations Department will maintain an inventory of all archaeological monitoring activities and cultural heritage management documentation arising on site. The Project Manager will be required to ensure a similar process is followed for construction activities. A selection of example forms is provided below.

For all archaeological works to be undertaken as part of the Project, an Archaeological Work Specification Form should be completed. A pro-forma Archaeological Work Specification Form is provided in Annex A of the *Cultural Heritage* EMP.

4.1.10 Monitoring & Inspection

Cultural heritage monitoring procedures shall be as follows:

- The Project Manager shall report on a monthly basis to the Community Relations Manager on the implementation of this Management Plan during the construction phase, including:
 - "Watching briefs" participated in at specific areas/construction sites;
 - The erection and maintenance of demarcation fencing around sites;
 - The protection of sites by careful siting of access routes or facilities;
 - Induction training including cultural heritage awareness given to staff and planned training;
 - Cultural heritage-related complaints and actions taken; and
 - Cases of damage to, or disruption of, cultural heritage properties and actions taken.

The Community Relations Manager will conduct routine inspections of site activities in consultation with the Project Manager to assess the potential for chance finds at work sites and any other cultural heritage issues that may arise.

The Community Relations Manager will conduct an inspection of any cultural heritage field activities and documentation that are implemented as a result of a chance find or other event that results in archaeological field work. The inspection shall include:

- Details of all work specifications prepared and implemented;
- Monitoring/"watching briefs" conducted at specific construction and other sites;
- Consultation with local communities related to cultural resources;
- Communication and cooperation with the Construction Department and the National Museum;
- Review of how the Cultural Heritage Database is being maintained;
- Information dissemination regarding cultural heritage;
- Performance of the Construction Department in managing cultural resources at specific construction sites;
- Cultural heritage-related complaints and actions taken; and
- Cases of damage to, or disruption of, cultural heritage properties and actions taken.

The Community Relations Manager shall be responsible for record-keeping.

4.1.11 Training

All employees of MWMCL and Project Contractors shall be provided with basic training in management of cultural heritage issues. Additional, specialist training shall be provided to community relations and environmental staff and key personnel involved in construction, operations and closure activities which may require an high level of appreciation of cultural heritage issues.

4.1.12 Performance Indicators

Measurement of the performance of cultural heritage management shall be as follows:

- Reporting of non-conformance with the relevant ECPs.
- Reporting of non-conformance with the Monitoring and Inspection Plan;
- Maintenance of the Cultural Heritage Database;
- Effective and timely information dissemination regarding cultural heritage;
- Reporting of any cultural heritage-related complaints and actions taken; and
- Recording of training.

4.1.13 Auditing & Reporting

Regular reporting shall be undertaken via a monthly report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to the Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Auditing and reporting of performance with respect to compliance with the CEMP shall be performed by the MWMCL Community Relations Department in accordance with the schedule in Table 4.1.2.

Table 4.1.2: Auditing & Reporting – Culture Heritage Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / Monitoring Plan	Monthly by Community Relations Manager	Quarterly by Environment Manager
Incidents or Complaints	Monthly by Community Relations Manager	Quarterly by Environment Manager
Cultural heritage database maintenance	Monthly by Community Relations Manager	Quarterly by Environment Manager
Information dissemination	Monthly by Community Relations Manager	Quarterly by Environment Manager
Training	Monthly by Community Relations Manager	Quarterly by Environment Manager

ANNEX A

ARCHAEOLOGICAL WORK SPECIFICATION FORM



ARCHAEOLOGICAL WORK SPECIFICATION FORM

SITE NAME:			
Permit Number (if applicable)			
Sector Number/Location Identification			
Item/Site Number			
Item/Site Coordinates			
General and Specific Aims of the Fieldwork			
Site Type Geographical and Topographical Background Archaeological and Historical Background			
Detailed Site/Item Description			
Metres Below Ground Level			
Summary of Relevant Legislation			
Recommended Salvage Process/Field Methodology			
Salvage/Retrieval Ranking			
Collection and Disposal Strategy for Artefacts/Ecofacts			
Access			
Condition			
Occupational Health & Safety Risk and Requirements			
Degree of Difficulty	Contingency Procedures		
Staffing	Timetable (extent & duration of the archaeological work)		
Site Plan/Map Attached	Reporting/Publication/Archive Arrangements		
COMMENTS AND REQUIRED ACTIONS			

4.2 **SMP 02 – STAKEHOLDER ENGAGEMENT**

4.2.1 Introduction

The Letpadaung Project has voluntarily undertaken the intent to be consistent with the World Bank/International Finance Corporation (WB/IFC) Policies, Procedures, and Guidelines regarding the development of an ESIA. The World Bank Group's Environmental Assessment Policy (OP 4.01, January 1999) provides that Stakeholders, or project-affected groups and local non-governmental organizations (NGOs) should be consulted about the project's potential environmental and social impacts during the ESIA process.

This Stakeholder Engagement Plan's purpose is to consider local views when designing the environmental and social management plans of the ESIA, as well as in the project structure. The Stakeholder Engagement Plan will ensure the minimisation of impacts related to social aspects of the area during the construction, operations and closure phases of the Letpadaung Project. The plan describes the proposed measures that will be taken to engage and monitor the impacts that the Project has on its Stakeholders, and the methodology of engagement through direct communication and consideration will be undertaken.

4.2.2 Stakeholder Engagement Principles

The principles of Stakeholder Engagement are defined as: Paying particular attention to any gaps between Stakeholder expectations, Project commitments, Project performance, and Stakeholder awareness during the process of identification of potential new issues, as well as the assessment of the manageability of issues.

The Stakeholder Engagement Principles will enable those involved in the project to understand:

- The key issues for each Stakeholder group through Stakeholder dialogue;
- The historical background;
- What is important to those who are involved and/or affected;
- Stakeholders' priorities; and
- Stakeholders' concern.

4.2.3 Specific Objectives

The objectives of this Engagement (Management) Plan are to:

- Define Stakeholder Engagement for the Letpadaung Project;

- Establish Community and Social Development (CSD) Procedures for pre-construction, construction, operations and closure activities to guide the Project Management Team and other project contractors;
- Define Stakeholders of the Letpadaung Project;
- Define Complaint & Grievance Procedures;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.2.4 Approach to Stakeholder Engagement

The primary goal of Stakeholder Engagement for early works and full scale production is to engage key Stakeholders in the decision-making process for accepting determined sites, and to reach consensus with key Stakeholders on the most appropriate sites with respect to environmental, social, and health issues for the Letpadaung Project. The approach will be to develop a Public Consultation and Disclosure Plan (PCDP) for the Letpadaung Project, and to implement a Community and Social Development Team to action its objectives.

The CSD Team will:

- Introduce the Letpadaung Project;
- Demonstrate the Letpadaung Project's commitment to the ESIA;
- Lay the foundation for future Stakeholder participation;
- Identify key issues, concerns, and expectations for future phases of the project; and
- Manage Stakeholder expectations.

The early works site selection PCDP is split into two rounds of consultation. The key objectives of the first round of consultations are for the CSD to:

- Share Letpadaung Project information;
- Discuss Early Works locations and impact mitigations; and
- Collect feedback on the Early Works from Stakeholders.

The key objectives of the second round of consultations are to:

- Explain in clear and sufficient detail the nature of the project;
- Confirm or validate the information gathered in the previous consultation rounds and survey work;
- Deliver further information on the potential environmental, social, and health impacts of the project;

- Explore the key issues and concerns of Stakeholders regarding potential project impacts that are relevant for Early Works completed; and
- Based on the information gathered and studied, discuss the next stages of development for the Project.

4.2.5 Project Stakeholders

Table 4.2.1: Preliminary List of Stakeholder Groups

Primary Stakeholders	Secondary Stakeholders
• Project participants (management and employees) • Community leaders • Local community members, including vulnerable subgroups (e.g. disabled peoples, ethnic minorities, women, and children) • Actual and potential suppliers and contractors • Fuel suppliers • Local businesses and co-operatives (e.g. fishing) • Local churches/monasteries and civic organizations • Local government	• Myanmar National Government • Sagaing Divisional Government • MOECAP • Ministry of Mines • International and national environmental, social, health, and human rights groups • Universities and other academic groups • Actual and potential customers • Other upstream companies • Trade associations, industrial bodies, and other opinion formers • Labour unions • Political parties • International financial community • International, national, regional, and local media

4.2.6 Methods of Engagement

The Letpadaung Project has an established program of Stakeholder involvement from work completed during the early works phase. The goal during the next phase of operations is to build upon the work already undertaken, and to develop a strategy that provides opportunities for all Stakeholders to contribute to the development.

It is important to understand who key Stakeholders are and their interest in each issue, as well as the risks and opportunities associated with them. This understanding will help define the following methodologies for engagement.

4.2.6.1 Stakeholder Issue Analysis

Utilising the CSD Team, Stakeholder Issue Analysis will be completed through questionnaires, public consultation/forums, interviews, as well as through the creation of Stakeholder awareness of their true, and future stakes.

The range of issues identified and analysed includes political, socioeconomic, ethical, and environmental issues associated directly with the project and with the wider strategic context of the project.

This CSD Team activity places particular attention on any gaps between Stakeholder expectations, project commitments, project performance, and Stakeholder awareness during the process of identification of potential new issues and assessment of the manageability of issues.

The issue analysis will enable those involved in the project to understand:

- The key issues for each Stakeholder group through Stakeholder dialogue;
- The historical background;
- What is important to those who are involved and/or affected;
- Stakeholders' priorities; and
- Stakeholders' concern.

4.2.6.2 Consultation Methodology

- Public awareness meetings and focus groups;
- Face-to-face discussions with local people and national and international NGOs;
- An environmental, social, and health exhibition featuring posters, brochures (non-technical summary reports), and safety video on site; and
- Dissemination of the Scoping Study and Terms of Reference Supporting Document and non-technical summary to libraries and other public venues.

4.2.6.3 Evaluation of Effectiveness

The effectiveness of the individual initiatives and the overall PCDP and CSD program for each phase will be assessed.

The key measures of the PCDP and CSD's effectiveness are:

- Adequate and timely disclosure of information to project-affected Stakeholders;
- Adequate provision of opportunities for Stakeholders to voice their opinions, expectations, and concerns; and
- Demonstrable evidence that Stakeholder opinions, expectations, and concerns have been taken into account in the ESIA and project decision-making processes.

4.2.7 Stakeholder Engagement Procedures

The preferred methods for consultations during early works phase will be face-to-face meetings and workshops.

Two rounds of consultations will be conducted during the Early Works phase of the CSD Team engagement:

- The first round, conducted from May10 until June 10, 2013; and
- The second round, conducted until July 10th, 2013.

4.2.7.1 Preparation and Disclosure of Project Information

Information for disclosure and material support of the consultations will be prepared before the dialogue begins. Table 4.2.2 lists the material prepared and used for the Early Works selection (first round) and Table 4.2.3 (second round).

Table 4.2.2: Consultation Materials (First Round)

Document	Audience	Description	Languages
Slide Presentation	Decision makers, local representatives, information holders	Introduces the project, the ESIA, and site selection	English, (Myanmar)
Question and answer sheet	Letpadaung project, appointed local and international consultants	Set responses to key questions	Myanmar/English
List of questions and scripts	CSD Team	Lists of questions and scripts for use during consultation meetings	Myanmar/English
Consultation tracking database	appointed local and international consultants	For entering key information from consultation meeting	English/Myanmar
Meeting minute proforma	appointed local and international consultants	For writing up meeting notes	Myanmar/English

Table 4.2.3: Consultation Materials (Second Round)

Tool	Description
Pictorial Presentation	Large A1 format pictorial presentation including photographs and diagrams of the following issues: • Reasons for the construction and uses • Previous consultation undertaken during initial visit • Work completed to date, including social and environmental studies • Health and safety
Map & symbols - participative meeting tool	Large A0 format image of the study areas and surrounding land. This includes the map to depict known settlements and cultural sites, and stick-on symbols placed on the map by participants to indicate where particular activities or sites are located. Symbols depict activities such as fishing, agriculture areas, recreation areas, cultural sites, etc.
Power Point Presentation	Detailed presentation of project and potential impacts, translated into Myanmar. This provides in-depth information on certain aspects (e.g. visual layouts of project and diagrams of potential water quality impacts), and will be used mainly in meetings where literacy and existing understanding of issues were already high.
Question & Answers (Q & A)	A List of standard Questions and Answers was developed with Letpadaung Project and used as a guide and prompt for all meetings. Questions will range from project and potential impacts to wider development issues. The questions were translated into Myanmar.

4.2.8 Performance to Date

In May, we had numbers of consultation meetings in the 26 villages. During meeting, we introduced the objective of CSD team, the phase 1 construction activities and the household questionnaires. On the other hand, we listened to their feelings on the mine project and their requests.

Mainly they asked for providing feedbacks on their requests such as equal job opportunities, basic infrastructures for increasing their village assets and land compensation issues.

The following table shows the list of the villages and the date we had initial community consultation. The pamphlet that was posted and distributed into each village is provided in Annexure A.

Table 4.2.4: Record of Consultation Dates

Sr. No.	Date Visited	Village Name	Area
1,2	2-May	Zee Taw & Sei Te'	LPD
3	8-May	Shwe Hlay	LPD
4	8-May	Don Taw	SK
5	9-May	Kyaut Phyu Taing	LPD
6	10-May	Leiti	LPD
7,8	12-May	Wat Hmay & Kan Taw	LPD
9	11-May	Phaung Katar (N)	LPD
10	15-May	Kyaw village	LPD
11	18-May	Phaung Kar (N)	LPD
12	18-May	Kan Kone	SK
13	18-May	Taung Palu	LPD
14	25-May	Moe Gye Pyin (N)	LPD
15	25-May	Moe Gye Pyin (S)	LPD
16	26-May	Shwe Pan Khaing	SK
17	25-May	Phaung Kar (S)	LPD
18	25-May	Wadan	SK
19	26-May	Palung	LPD
20	30-May	Gon Taw	SK
21	30-May	Phaung Kar (M)	LPD
22	5-Jun	Shwe Pan Khaing (New)	SK
23	6-Jun	Teipinkan	SK
24	6-Jun	Thedawgyi	SK
25	6-Jun	Yaykyibin	SK
26	7-Jun	Ywar Thar	SK

Note: LPD = Leptadaung Project areaSK = S&K Project area

Many of their requests had been taken into action and some of them will be implemented in the 2014 CSD Plan. Continuous consultations are still going on whenever necessary. The CSD team will do community consultation in every village to explain which of their requests had been addressed, which are in next plan and which cannot be provided and we will note and report their responses.

4.2.9 Complaints Management

The Letpadaung Project developed a formal grievance process as a part of the development of the CSD Team. MWMCL Management will manage this process. Its primary objective will be to ensure that people affected by the project can present their grievances to the Project's CSD Team for consideration and correction if appropriate.

The local community Stakeholders will be informed of the intention to implement the grievance mechanism, and the procedure will be communicated and disclosed accordingly. The grievance process will also ensure all complaints from local communities are addressed in an appropriate and timely manner, with corrective actions being implemented if appropriate and the complainant being informed of the outcome. It will be applicable to all complaints from communities affected by the Letpadaung Project.

The CSD Project Manager will be responsible for organising written complaints and coordinating responses to all complaints. These responses to complaints will be in writing.

Table 4.2.5: Roles & Responsibilities – Stakeholder Engagement (Management) Plan

Activity Description	CSD Team	CSD Project Manager	Public Relations Manager	MWMCL General Manager
Develop a Stakeholder Engagement Plan	I	C	A	R
Identify, Develop and Implement a CSD Team	I	C	R	A
Introduce PCDP Principles and CSD Team strategies to the management workforce	I	C	A	R
Plan Stakeholder Strategic Engagement Modules	I	C	A	R
Identify Stakeholders	I	C	R	A
Engage Stakeholders	C	A	R	I
Develop a Monitoring and Recording System for Stakeholder Engagement	I	C	A	R
Develop a Complaint System for Stakeholders	A	R	C	I

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the Project Environment Manager who shall report on progress to the Project General Manager.

4.2.10 Training

All employees related to Stakeholder Engagement and the CSD Team directly shall be provided with training in the management and handling of environmentally and socially impacted persons. Additional, specialist training shall be provided to key advisors and personnel involved in activities which involve frequent contact with social and environmental activities.

4.2.11 Monitoring & Reporting

All activities involving Monitoring and Reporting on the Stakeholder Engagement will be the responsibility of the CSD Team Project Manager and the Public Relations Officer. They will report directly to The DGM and the Managing Director of MWMCL.

Annexure A

ENGAGE

COMMUNICATE

PARTICIPATE

WORKING TOGETHER

ACHIEVING A COMMON GOAL

BUILDING OUR FUTURE

HELPING EACH OTHER

GROWING FOR A BETTER TOMORROW

**THE LETPADAUNG MINING PROJECT
&
OUR COMMUNITY & SOCIAL DEVELOPMENT PLANNING
CSD TEAM**

INTRODUCING THE CSD TEAM

It is our pleasure to introduce to you the CSD Team consisting of 40 members that will begin consultations with the villages surrounding the S&K&L Projects.

FIRST CONTACT

One representative from each of the neighboring 30 villages have been hand selected by the communities to create this team who will engage in direct communications with our village friends. We will first come to your villages by invitation, and we are very happy that you will accept us to come and speak to you about the future of your village, our mining company and how we will grow together towards a better tomorrow.

WE WILL COME IN A SMALL GROUP OF 5 OR 6 PERSONS

Our CSD Team wants to make contact with you to hear what you really have to say from your heart, and not from the mouths of those people who do not live in your village. We want to speak to all of you... women, children and men both young and old. We want to open the channels of communication between us so that we understand how we can help each other through the times ahead of us all.

The Letpadaung Project will move forward. There is no question about this truth. As a community we must now understand how it will affect us all, and what we must do to make certain that the environment, the people of all the communities and the businesses in our areas continue to grow after the mine has completed operations years from today.

TODAY WE MUST SPEAK TO EACH OTHER ABOUT TOMORROW

The future ahead of us is very promising in many ways. With the mine will come job opportunities, business opportunities, education, infrastructure, funding to government facilities and community projects so very needed such as water, electricity, medicine and so much more. There is nothing to fear.

4.3 **SMP 03 – HUMAN RESOURCES, TRAINING AND EMPLOYMENT**

4.3.1 Introduction

The Human Resources (HR), Training and Employment Management Plan is designed to ensure that local employment, one of the main benefits of the Project, is maximised and enhanced through effective procedures for recruitment, employment and training of personnel during the construction, operations and closure phases of the Project.

The plan contains the methods that shall be used to maximise local/national employment together with procedures to ensure that recruitment, employment and training is conducted in a fair and transparent manner.

Local employment is the main socio-economic benefit that the Project can directly bring to people living in the villages nearest to the mine. The wider Myanmar population is also likely to be able to access employment opportunities. During the Project assessment process, the following employment estimates were made:

- Approximately 2000 workers will be required for the construction of the mine and ancillary facilities. The majority of the construction workforce is expected to be skilled Burmese from Mandalay and Yangon; although the Project intends to hire suitable locals for positions to the extent they are available. It is estimated that 80% of construction workers will be Myanmar nationals.
- At the peak of the Project operations, jobs will be created for approximately 1500 people. By mid-way through the operations phase (after 5 years), the direct workforce is also expected to comprise 10% expatriates and 90% Myanmar nationals.

There is a high expectation of local employment in the local villages as well as within the wider Saigaing region and the country as a whole. Implementation of this plan is central to managing employment expectations as it sets out specific actions for the Project to ensure that opportunities for local employment are maximised, and that there is a fair distribution of jobs. This is vital to maintaining a good relationship between the Project, nearby villages and other stakeholders.

The plan describes the management of human resources, employment and training processes associated with all phases of the Project. The plan deals with hiring and training of local/national Myanmar personnel to support development of the Letpadaung mine and ancillary facilities and describes requirements from the assessment of new recruits through to the certification that relevant training has been completed. The plan considers potentially adverse as well as positive impacts related to:

- Direct employment;
- Wide distribution of employment opportunities;
- Recruitment process;
- Employment expectations;
- Working conditions;
- Enhanced local skills; and
- Indirect employment opportunities (e.g. local procurement and supply).

This plan is a flexible document that shall be reviewed on a periodic basis and amended where necessary changes are identified. The plan applies to MWMCL as well as Contractor personnel. The MWMCL Project Manager shall make sure that this plan is available to their own staff and Contractors and that all procedures/actions included within the plan are recognized, adopted and applied by them prior to commencing construction.

MWMCL shall also promote appropriate on-site procedures and practices for subcontractors as far as are practicable (e.g. employee conduct, health, safety and environmental practices).

Opportunities for employment (both direct and indirect) will occur in all phases of the Project. Benefits are expected to be greatest during operations, when positions will be longer term and will be predominantly filled by Myanmar nationals.

Employment and associated skills training and development are likely to be one of the most significant benefits of the Project. The potential positive effect is increased wage employment for skilled and semi-skilled Myanmar nationals. There will also be a limited number of employment opportunities for unskilled (and predominantly local) people.

Development of a competent and skilled Myanmar workforce for the Project will be a challenge for MWMCL and its contractors. Myanmar currently has no modern mining sector and a largely unknown, and limited, pool of available, appropriately skilled labour from which MWMCL can draw.

At the same time, Saigaing has a high rate of illiteracy and high school dropout rates. In general, the quality of educational facilities is limited and there are very few technical training programmes.

Construction Phase

The construction workforce is expected to peak at approximate 2000 people but will fluctuate depending on the activities being conducted on site. Employment during

construction will be a predominantly short- term assignments for the majority of staff, with only a limited number of employees retained for the entire construction period. The construction phase will last approximately 2-3 years.

4.3.2 Objectives

The objectives of this Management Plan are to:

- Establish effective plans and procedures for local/national recruitment, employment and training;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.3.3 Targets

The targets of this Management Plan are to:

- Maximise employment and training opportunities for local communities and Myanmar nationals during construction;
- Improve the skills of the local population;
- Ensure that recruitment, employment and training is conducted in a fair and transparent manner; and
- Implement human resources, training, and employment management procedures.

4.3.4 Roles & Responsibilities

The Project team is ultimately responsible for the following key tasks, roles and actions relating to cultural heritage as outlined in the RACI in Table 4.3.1.

Table 4.3.1: Roles & Responsibilities – HR, Training & Employment Management

Activity Description	MWMCL Senior Management Team	MWMCL HR	MWMCL Project Manager	Contractors Team	MWMCL Environment / Community Team
Complete project labour needs and local wage analysis	I	R	C/A	C/A	C/A
Determine recruitment and employment targets	I	R	C/A	C/A	C/A
Set-up and maintain employment database	I	R	C/A	I	C/A
Establish and maintain recruitment offices	I	C/A	C/A	I	R
Employ adequate employment officers to support construction phase	C/A	R	C/A	R	C/A
Develop plans for transport, accommodation, and feeding local employees	I	C/A	R	R	C/A
Establish adequate training rooms, facilities and materials	C/A	R	C/A	I	C/A
Introduce HR and employment codes of conduct, and training policies to the work force	C/A	R	C/A	R	C/A
Monitor HR, employment, and training management across the Project	I	C/A	R	C/A	R
Record and report HR and employment management plus related training of personnel	I	R	C/A	C/A	C/A
Develop a tracking system for incidents / grievances related to HR, employment, and training	I	R	C/A	C/A	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

The Project Manager shall be responsible for the integration of these procedures and requirements into their construction procedures and plans.

The Community Relations Manager's team shall be responsible for aspects related to interaction with local/regional communities related to employment and for relevant environmental and social training and other functions.

MWMCL HR Manager shall be responsible for coordinating employment related activities at the local level and act as the focal point for local/national people seeking employment with the Project.

4.3.5 Management Actions

Actions expected from management are as follows:

1. Construction and Community Relations Managers and Employment Officers will be trained to ensure proper HR, training and employment management during construction.
2. Adequate MWMCL Contractor Employment Officers will be employed to support the construction phase.
3. Adequate rooms, facilities and materials training will be provided to support the construction phase.
4. Non-compliance with HR and employment codes of conduct, and training policies will be reported to the HR Manager within 24 hours.

4.3.6 Approach to Recruitment, Employment and Training

Overview

The MWMCL approach to recruitment, employment and training involves ensuring that the Project is compliant with Myanmar labour laws. In the interests of maintaining good relationships with the Myanmar government and local communities it makes good strategic sense for foreign mining companies to use Myanmar employees when it is reasonable to do so. At the same time, MWMCL recognises the need to have experienced mining staff. The Human Resources, Training and Employment Plan addresses the need for some expatriates and the steps to be taken to maximise employment of Myanmar nationals. The main elements of the MWMCL approach are:

- Utilisation of skilled and experienced mining industry expatriates as required. Expatriates will only be brought in to fill positions for: (a) skilled and experienced operators for specific mining and processing plant and machinery, not available

in-country; (b) skilled and experienced mine trained supervisors in mining, processing and engineering; and (c) high level mining industry professionals;

- Hiring of experienced Myanmar nationals with transferable skills, for example from the construction industry – Identified Myanmar nationals will be trained to enable them to perform their job to the standards required for an international mining project;
- Training of Myanmar employees will commence during the construction phase and intensify during and following production start-up;
- Training shall be provided to ensure that all recruits have the necessary skill and knowledge levels defined for each position;
- Replacement during the operations period of many expatriates following building of training and experience levels among Myanmar employees;
- Recruitment procedures will be transparent, public and open to all and shall be publicised in advance, including distribution of information to affected communities and regional stakeholders;
- The Project shall manage some form of recruitment office in each of the regions (or local centres) as appropriate through construction and operations;
- Unwarranted influxes of individuals into the Project area will be minimised through proactive policies and procedures to reduce in-migration in search of employment; and
- Employment conditions will meet national laws and international standards and there shall be no discrimination on the grounds of religion, ethnicity, gender or other factors.

Categories of Employment

The following definitions for employee categories apply to this plan:

- Skilled worker: Skilled workers will include experienced staff in categories such as “professionals” (e.g. geologists engineers), “artisans” (e.g. electricians, instrument fitters, technicians, welders, riggers), “supervisors”, and “operators” (e.g. of crane or truck);
- Semi-skilled worker: Semi-skilled workers will include experienced drivers, steel men, electrical helpers, security guards, cooks etc.; and
- Unskilled worker: Unskilled workers may include concreters, cleaners, waiters, loaders, sand fillers etc.

Preferential Local/Regional Employment

Recruitment for unskilled workers is to be held at the local level. Priority is to be given to residents of directly affected villages where these are defined as follows.

- First preference is given to a member of every family that has been resettled; and
- Second preference is given to: residents of villages in the immediate vicinity of the project site that are affected by the Project.

Those resident in directly affected settlements are again to have priority for semi-skilled employment, followed by those living in villages in the immediate vicinity of the Project site.

Skilled workers are to be recruited on a nationwide basis in line with national employment targets for the Letpadaung Project.

4.3.7 Control Procedures

MWMCL has developed a number of policies in relation to recruitment and employee working conditions. These will be summarised in a Human Resources (HR) Manual. Key recruitment and other HR procedures are described below.

Identifying Labour Needs

Forecasting labour needs in a systematic and consistent fashion will be important to ensuring that sufficient time is allowed to find suitable local/regional candidates, particularly for unskilled positions, which should be readily able to be filled by local residents. The general procedure for identifying labour needs shall include:

- Relevant MWMCL Departments will create Employment Forecasts for the relevant positions required for their teams (Annex E of SMP-03);
- Departments shall draw up detailed job descriptions (identifying whether they are categorised as skilled, semi-skilled or unskilled), employment numbers and durations of employment; and
- MWMCL shall conduct an audit of current skills available in the local area and compare it with skills requirements.

Recruitment Offices

Recruitment offices are an important part of ensuring that recruitment and employment procedures and processes are accessible for local/national people, particularly those located in villages nearby to the mine site. Designated recruitment places are also a key mitigation measure for managing in-migration issues related to job seekers. A

recruitment office will be established within the following locations (as a minimum) during construction:

- Yangon (at the Head Office);
- Monywa (Regional Office);
- Ngaungbingyi;
- Resettlement Villages; and
- Salingyi Township

The requirement for recruitment offices will be reviewed prior to the operations phase to determine which centres need to remain or be relocated. The procedure for establishing and operating a recruitment office shall include:

- The office should be established at a suitable location within reasonable proximity from the persons being targeted for recruitment, e.g. town centre or on main bus route;
- There shall be suitable infrastructure and equipment such that the office can process employment applications;
- Each office is to be adequately staffed (e.g. by an Employment Officer) for the period between the job advertisement and the closing date for all positions;
- Relevant details are to be provided to allow job seekers to communicate with the relevant company during employment periods, e.g. a 'hotline' number, poster(s) with details of the Employment Officer and so on; and
- Recruitment offices will form the central point for local/regional recruitment activities, and shall be the only locations where recruitment activities may take place.

Identification of Candidates and Application Process

Application for Employment for Unskilled Workers

It is expected that local/regional candidates from the nearest communities, as well as the wider Saigaing Region, can fill the majority of unskilled positions.

Stage 1: Identification of Candidates

Procedures for identifying potential candidates for unskilled positions will include:

- Departments will complete a "Job Requisition Form" (see Annex A of SMP-03) which is to be submitted to the MWMCL Human Resources Manager;
- All recruitment requests will be reviewed by MWMCL prior to advertisements being developed and posted in relevant locations;

- Advertisements will be prepared by the relevant department and reviewed by MWMCL and the local labour office/local administrator who will provide appropriate approval for the advert to be posted (Annex F of SMP-03 shows an example advertisement);
- Advertisements are to be first placed in the local villages (e.g. labour office in Ngaungbingyi) and then expanded to other villages as required (and then the Saigaing region and nationwide);
- Screen applications and prepare a “Short-List Form” (see Annex B of SMP-03) of interested persons according to relevant criteria, including: residential location based on preferential hiring policies, ability to meet other job requirements, and working experience;
- Record candidates in the employment database (short-listed and non-selected candidates to be filed separately for potential future employment);
- Contact short-listed candidates and arrange interviews and other testing / screening that is required;
- Complete a Potential Candidate Interview Form (see Annex D of SMP-03) for each interviewee and inform candidates of the relevant employment conditions;
- Relevant Line Managers (and as appropriate an Employment Officer or other personnel management representative) should conduct interviews and make the final selection;
- The final selection must be documented on the interview form and all records forwarded to the Human Resources Department;
- Residents of directly affected villages and then followed by the Salingyi Township will receive priority for semi-skilled and skilled employment;
- If there is a shortage of semi-skilled or skilled workers within the priority areas, the Project shall select personnel from other the national population; and
- An explanation and evidence to be provided to the MWMCL Human Resources Department where employment targets cannot be met (e.g. where an expatriate is required).

Stage 2: Application for Employment

Procedures for managing applications for unskilled positions will include:

- For unskilled employment, local residents are to submit an application form to the Employment Officer directly or through the relevant recruitment office, or village representative (e.g. Local Administrator – if appropriate);

- Where required, applicants will receive assistance with application forms by Employment Officers or the village representative;
- Following assessment of application forms by the relevant Employment Officer, the application forms are to be forwarded to MWMCL Human Resources Department;
- For each village, the Employment Officer will identify the most suitable village representative (e.g. Local Administrator) for a coordinating role – this selection is to be based on MWMCL perceptions/experience of who is most trusted and respected in the settlement as well as who is most willing and able to carry out this responsibility;
- Each applicant is to receive a registered receipt of their application. This receipt is to indicate that the registration is free of charge and can be used to audit the Employment Officer or relevant village representative;
- If required, applicants may be asked to present an appropriately authorised document showing location of residence;
- After the application deadline, the list of applicants is to be prepared by the Employment Officer and posted in public places for a minimum of three days;
- The list shall also be reviewed by the Human Resources Department and a relevant village representative; and
- An applicant may notify the Employment Officer within these three days if he/she is not on the posted list with their receipt to be provided as evidence. No late applications will be accepted.

This mechanism shall be designed to create a fair and transparent system that will ensure that each applicant has been registered.

Stage 3: Selection of Candidates

Procedures for selecting candidates for unskilled positions will include:

- Screen applications and prepare a “Short-List Form” (see Annex B of SMP-03) of interested persons according to relevant criteria, including: residential location based on preferential hiring policies, ability to meet other job requirements, and working experience;
- Prepare a main list and a standby list for each position or group of positions from the screened candidates;
- Record candidates in the employment database (short-listed and non-selected candidates to be filed separately for potential future employment);

- Post lists at the recruitment offices and other relevant locations in the villages and local administration offices;
- Interviewing of applicants will be conducted by MWMCL in the Store Front Information Centres, designated recruitment office or other appropriate venue such as at site;
- No applicant (from a directly affected settlement) will be required to travel for more than one hour on public transport;
- If a settlement does not have access to public transport or if there are cases where the journey by public transport will exceed one hour, then the Project will provide transportation for the applicants concerned;
- Following the selection of applicants, the MWMCL line manager is to notify the selected personnel and forward their names/details to the Human Resources Department; and
- An explanation and evidence to be provided to the MWMCL Human Resources Department where employment targets cannot be met (e.g. where a non-local person is employed in an unskilled position).

Random Selection

The selection process for unskilled positions may require random selection. General conditions and procedures would include:

- Where the number of screened candidates greatly exceeds the required number of vacancies random selection may be required to get a short-list; and
- The random selection process shall be carefully executed in coordination with relevant local/regional authorities and respected village representatives.

Disadvantaged Candidates

As part of the application process, the Project will consider a process for identifying disadvantaged candidates. This would likely include procedures such as:

- Applicants would be required to fill out an evaluation form that assesses the extent to which an applicant is disadvantaged;
- Employment Officers would actively take part in this process to ensure consistency and to verify that the most disadvantaged sections of the population are identified;
- Any process for evaluating vulnerable/disadvantaged persons must be completed in coordination with relevant local authorities and village representatives; and

- The Project would then be required to select employees from the identified disadvantaged group with approval from relevant local authorities and village representatives.

The purpose of this process would be to ensure that the most vulnerable members of the local communities have support in accessing employment opportunities with the Project. It would also aim to ensure that they are not further marginalised by processes that would normally be difficult for them to participate in.

Age Verification

In Myanmar the minimum working age is 18 years. MWMCL also intends to comply with international standards which require a minimum age of 18 years for any high risk work. Procedures for verifying the age of relevant candidates will be implemented by MWMCL and will include some or all of the following:

- Relevant applicants will be asked to present an appropriately authorised document showing proof of their age;
- Where relevant documentation is not available MWMCL will work with relevant local authorities and community leaders/families to try to verify an applicant's age;
- MWMCL will inform applicants where age verification is required and keep them informed of progress of such activities; and
- Where minimum age cannot be satisfactorily verified, MWMCL will not proceed with the application process.

Information Provision/Advertisements

In Myanmar advertisements are legal papers which should be controlled by the employer and the relevant local/regional authorities. All advertisements must have an appropriate “seal” from the relevant authorities and be posted in designated areas. The advertisement process will require at least the following:

- MWMCL will make sure that advertisements are prepared at least one month prior to the positions needing to be filled;
- Ensure that there is effective coverage of advertisements in local and national media, as well as in other accessible locations (e.g. Monywa office and public places);
- In addition to advertisements, MWMCL will distribute recruitment leaflets and posters in directly affected villages, and Sagaing centres, e.g. at public places such as bus stops, markets and coffee shops;

- Other non-written avenues for advertising recruitment may also be adopted;
- All information disclosure regarding employment opportunities and processes to be provided in relevant languages, with particular attention to local dialects for villages near the mine site; and
- Ensure that information / adverts regarding employment do not raise unrealistic expectations with, the extent and duration of employment to be accurately communicated so such that the limitations to employment opportunities are known.

An example Advertisement/Vacancy Announcement is included in Annex F of SMP-03. MWMCL shall keep the Department of Mines informed about all upcoming vacancy announcements related to the Project.

Prohibition of Hiring at Work Site

The Letpadaung Project has adopted the policy not to hire at work sites or construction camps during construction. MWMCL will recruit only from designated recruitment offices and not via informal requests or approaches from community members, either at camps or at work sites.

The procedure to ensure that adequate information is provided about prohibition of hiring at work sites is as follows:

- Appropriate signs will be installed at all work sites, camps, entrance gates, and where practical, at locations within local/regional centres themselves (e.g. on job adverts);
- Information disclosed will make it clear that individuals appearing at the job site that have not been previously screened by MWMCL elsewhere WILL NOT BE HIRED;
- Only once an individual has been formally hired, will administration and other complementary activities such as personnel badging, and training of employees hired locally, be implemented.

This procedure will be reviewed prior to operations at which time it may be appropriate to conduct on-site recruitment. However, this review will take into consideration past lessons learnt and any current issues related to in-migration of job seekers.

Selected Candidates

Once candidates are selected by the relevant MWMCL Department, they are to be provided with written contracts that state:

- Job description;
- Hours;
- Working conditions;
- Wage level (normal and overtime);
- Rules including Code of Conduct and Alcohol and Substance Abuse policy; and
- Disciplinary procedures.

The contents of this work contract will be clearly explained to each worker. An example Employment Contract is shown in Annex G of SMP-03. For temporary employees this contract will be a modified and simpler version but will still contain the requirements mandated under the Myanmar Labour Law.

All permanent and temporary employees (e.g. daily labourers) are required to sign the employment contract relevant to the work being undertaken.

Exclusion of Workers on National Service

National Military Service is obligatory for any Myanmar citizen. The use of National Service personnel for commercial Project work constitutes “forced labour” under both the Mining Agreement between the Government of Myanmar and MWMCL and the principal International Labour Organisation definitions of and conventions on forced labour.

MWMCL shall ensure that National Service personnel on extended service are not used by MWMCL or its contractors, and demobilisation certificates shall be required to be kept on file for all Myanmar workers. Conditions to this effect shall be included in contracts with all contractors.

4.3.8 Employment Conditions

The Human Resources Department is responsible for ensuring that all specific employee terms and conditions are adequately identified, documented and made clear to all employees (e.g. details on probation periods, holidays, overtime, sick leave, absences, visitors, visas and travel).

In addition to those conditions set out in the employment contract, MWMCL has a Staff Handbook that it provides to all employees before they commence employment with

the Project. The handbook provides further detail and guidance about working conditions.

Wages

All wages paid for the Project shall be in accordance with Myanmar legislation. The following procedures will be employed to ensure wage related issues are properly managed:

- The calculation and payment of wages for all MWMCL and their staff/contractors shall be consistent with the Myanmar Labour Law;
- MWMCL and their staff/contractors will pay at least the minimum wage for national workers in accordance with the Myanmar Labour Law;
- MWMCL shall establish appropriate salary scales for all positions required during the Project for construction and operations;
- Wages will be calculated using time sheets that will be filled by timekeepers at sites and then approved by the relevant manager (e.g. Project Manager);
- Payment will be on a regular basis (e.g. monthly basis). Where practical, a local bank will be engaged to handle employee salary payments through their local branches in the nearby villages so as to avoid large amounts of cash being handled at construction or other sites;
- MWMCL shall investigate opportunities to support employees (e.g. particularly Daily Labourers who are generally paid in cash) to effectively managing their wages;
- In the event of termination of employment, employees will be paid in accordance with the Letpadaung Project termination payment policy which will be in accordance with the Myanmar Labour Law;
- MWMCL will present an information session in each area when initial wage payments are made in order to explain clearly worker pay statements (i.e., gross pay, deductions, net pay), answer any questions, and record any grievances;
- Payroll assessments shall be undertaken on MWMCL contractors to ensure that workers are being paid wages consistent with project pay structures and agreed levels and that contractors are not unreasonably withholding pay from workers (to avoid perceptions of wage inequity); and
- A log of wage-related grievances shall be maintained, and all grievances will be addressed in accordance with the MWMCL employee grievance process.

Working Hours

- Working hours will be in compliance with the Myanmar Labour Law;
- Work hours for the Letpadaung Project are 10 hours per day (with a 2 hour break) for 6 days per week. The standard work hours for employees at the Letpadaung Project will therefore be 48 hour per week;
- Overtime and related conditions are to follow Myanmar Labour Law, including strict provision for the maximum number of hours that can be worked in any one period; and
- MWMCL and contractors will consult with employees where alternative working schedules are required to complete construction or other activities in a timely manner.

Termination

All worker terminations will be performed strictly according to Myanmar Labour Law and shall include the following procedures:

- At the time of hiring, the likely period of employment and the conditions for hiring and layoff will be clearly explained to the new recruits and recorded in the employment contract;
- During regular meetings held with worker representatives, personnel management will share information on the Project's schedule and potential forthcoming layoffs (particularly for temporary construction jobs);
- It is the intent of Letpadaung Project not to lay off large numbers of workers on the same day and Contractors will be required to apply this policy;
- The Project is responsible for returning workers to the place where they were recruited or to their domicile (the place of hire will be specified and transport service or cost will be covered).

Housing and Feeding Project Workers

The Letpadaung Project will clearly explain its housing and meal provision policies to all workers at the time of recruitment. In particular, each worker will be clearly told at the time of his/her hiring what (if any) housing and/or meals will be provided by their employer (e.g. MWMCL or Contractor as relevant).

Housing and Feeding of Non-Local Permanent Employees

During Project construction activities, the Contractor's expatriate and non-local National workers will be housed in temporary construction camps.

National and expatriate workers residing in Contractor's camps will be provided with all meals in camp. The Contractor will ensure that there is a sufficient supply of food and potable water for all residents of the camps.

During Project operations, the majority of MWMCL expatriate and non-local National workers will also be housed in camps at the site. Other accommodation/housing facilities may be developed with local authorities at a later stage, but the details for such arrangements have not yet been confirmed.

Housing and Feeding of Non-Local Temporary Employees

During both construction and operations, non-local temporary employees, such as those persons who take up a short-term contract with the Project, will be provided with meals at the camp. They will be accommodated in company provided camp accommodation.

Housing and Feeding of Local Project Workers/Daily Labourers

All local National workers will return to their own homes each night and will not be housed in worker camps. In addition, MWMCL shall supply such workers with potable water at the work sites.

Transportation

MWMCL will provide daily bus transportation of local workers from their home villages to pre-established work locations and back to their home-villages. Employees may be paid for travel time at the discretion of the Company where the travel time is deemed to be excessive.

Clothing for Workers

Clothing for Full-Time Project Workers

All full-time workers (i.e., those who will have an employment period that exceeds 14 days) will be issued a basic uniform and appropriate Personal Protective Equipment (PPE).

Specific craft/field workers will be issued additional appropriate clothing and PPE as required. Replacements of worn items may be obtained upon return of the original item; lost items will be replaced but the cost (less any adjustments for normal wear and tear) will be deducted from the worker's salary. Worker's would be notified in advance of any intended deduction.

Employees will be allowed to keep the basic outfit of work clothes (safety shoes, socks, overalls) at the end of their employment with the Project.

Clothing for Temporary Project Workers

Temporary workers will be provided with the same basic set of work clothes as provided to full-time workers for use on the work sites, and appropriate PPE to perform their job. Such workers must return these work clothes at the end of their period of employment. Otherwise they will be charged for the cost of the item adjusted for normal wear and tear. The employee will be notified before the sum will be deducted from their salary.

Laundry

MWMCL will provide laundry facilities in its camp for all clothing it distributes to its workers. Private cloths will be laundered by the residents of the camp. Workers living in camps will follow arrangements set by camp management.

Workers living in local housing will be provided with one uniform to wear and a second to wear when the first is being laundered at their home.

4.3.9 Labour Relations

The Letpadaung Project shall seek to work in good faith with trade unions and other bodies that employees collectively choose to represent them, within the appropriate local legal framework. The Letpadaung Project shall not seek to prevent by any means whatsoever the formation of trade unions or any other legally established worker group. To maintain strong positive relationships with trade unions, the Letpadaung Project will act as follows:

- MWMCL and other responsible parties to consult on relevant labour-related regulations and inspections required by governmental authorities. This may include rates of pay, premium payments, election of worker representatives, signing of work contracts, working hours, labour laws, overtime etc.;
- Provide facilities to labour union representatives to conduct their labour relations activities at all sites, in accordance with the requirements of current labour conventions and regulations;
- Comply with the Myanmar Labour Law and any other regulations concerning relations with authorized labour organisations;
- Line management to communicate with trade unions through meetings, as required, and deal with all problems or issues regarding employment. Line management and the trade union representative in accordance with site-specific issues will identify frequency of those meetings in accordance with site-specific issues;

- Record and discuss the meetings with MWMCL senior management; and
- All issues to be dealt with and responded to in a verbal or written manner, with appropriate records maintained.

Plans To Handle Work Stoppages/Strikes/Demonstrations

Although it is unlikely to occur, it is legal to strike / conduct stop work demonstrations. In case of a stoppage of work or strike MWMCL will:

- Ensure relevant managers, Contractors and other parties are informed;
- Arrange meeting with designated labour representatives in order to determine the cause of work stoppage;
- Discuss potential solution and if possible, reach and document resolution;
- Discuss agreed solution with MWMCL (and Contractor where relevant) management and, if necessary with labour officials from Government;
- Any agreement to return to work to be signed by the parties involved in the dispute, and, as appropriate, Ministry officials;
- In the event of a continuing dispute / work stoppage, the relevant requirements of the Labour Law are to be exercised, using intervention and arbitration by lawyers; and
- Prohibit immediate layoffs after a work stoppage or strike and follow appropriate requirements of the Labour Law.

4.3.10 Employee Related Grievances

The Letpadaung Project shall establish a grievance process for employees. The Human Resources Department will be responsible for this process. Contractors shall develop their own equivalent procedure or adopt that of MWMCL.

Grievances related to employment and training shall be managed through the following general mechanism:

- The relevant Line Manager will inform Human Resources Department about employment related grievances raised from his / her employees;
- Upon receiving a complaint, the department receiving the complaint shall ensure that a Complaint Action Form is completed. Afterwards, a Complaints Log should be forwarded to relevant department managers and should be appropriately dealt with and responded to;
- The timelines for possible actions will be determined upon the nature of the grievance;

- Line Managers remain responsible for tracking the complaint and ensuring that it is dealt with. The Complaints Investigation Reports will be generated and submitted to the Human Resources Department; and
- The Human Resources Department is responsible for all grievances related to employment/working conditions/training.

In addition to the employee grievance process, MWMCL has a “Suggestion Box” at the site for employees to register their suggestions and ideas for employee arrangements on site.

Training Process

Myanmar workers will be employed and trained during the construction phase, with a view to preparing some of them for operations. The training of Project workers, both Myanmar nationals and semi-skilled or unskilled locals, will largely involve health and safety and other worksite inductions and a mix of on-the-job and separate formalised training. Table 4.3.2 shows the general training process to be employed by the Project.

Table 4.3.2: Letpadaung Project Training Process

Training Category	Training Content
Work Ethic Training & HSEC Induction	Compulsory for all workers Conducted by MWMCL in construction and in operations in relevant languages (team work, work rules, respect, etc.) Safety awareness explaining MWMCL's site safety process.
Skills/Craft Training	Theoretical input required for relevant discipline. OR Practical skills in each discipline imparted in the training institute's various workshops.
On the Job Training	Training institute/facility instructors will coordinate this phase with relevant MWMCL department. Trainee shall maintain the Log Book detailing the work carried out during the “On the Job Training” which is to be signed off by their supervisor on a daily basis.

The following general mechanisms will be employed to ensure that training is properly delivered:

- The training programme will seek to enhance the skill levels of national employees to maximise opportunities to gain employment in skilled and semi-skilled roles;

- Specific training requirements for workers will be determined during the final selection process and recorded on the Job Interview Form (see Forms below);
- Training will be delivered in local Myanmar language unless other language training provided.
- All training is the responsibility of the relevant department and is to be implemented in accordance with other relevant systems and procedures (as long as they do not contradict the details contained in SMP 03);
- Competency assessment shall be in place for all relevant training modules to not only assess initial training needs but to also assess the effectiveness of the training itself;
- No employees are to start work until minimum training requirements have been satisfied for their position;
- It is the responsibility of the relevant department/line manager to identify additional training requirements and notify the Human Resources Department; and
- Contractors shall keep MWMCL up to date regarding training arrangements and shall seek approval for the training programmes the company plans to implement.

Training Facilities

The Letpadaung Project will continue to operate the training centre (or centres) currently set up for the S&K operation and increase/add facilities within the local area as required to meet training commitments to the community. The general measures will be employed to establish appropriate training facilities:

- Training facilities will be provided with relevant audio-visual aids books, graphics and multi-lingual support to enable training to be given effectively to all levels of personnel;
- The Project will consider opportunities to utilise existing facilities wherever feasible to help maximise use of Myanmar resources;
- The use or establishment of any training facilities will be coordinated with relevant local, regional and national authorities, as well as other potential partners such as training institutes and private companies; and
- Qualified and experienced training personnel will be sought to manage training programmes and facilities and where this involves expatriate trainers, skills transfer will be prioritised.

Health, Safety, Environmental and Community (HSEC) Training

All employees will receive general health, safety, environmental, and social awareness training that emphasizes each employee's responsibility for complying with relevant laws, regulations, and commitments as well as MWMCL policies and standards.

In addition, employees will receive safety training in hazard recognition, first aid, and cardiopulmonary resuscitation (CPR), emergency response procedures, job-specific health hazards and safe operating procedures etc.

Induction training will be provided for all new employees. Experienced personnel will provide periodic specialized training in specific job tasks as needed on a case-by-case basis. In some instances, it may be necessary to retain specialty consultants to provide certain specialized training.

Contractors and consultants who work at the Project will be required to adhere to all of the health, safety, environment, and community policies and procedures that MWMCL has committed to throughout their tenure with the Project.

All personnel will carry ID and certification on site, i.e. a Safety Passport (with photograph), or equivalent, scheme will be operated. Only persons who are in possession of certification will be permitted on site.

As a minimum, an environmental awareness briefing will be provided as part of the HSEC induction given to all personnel employed on the project. In addition, a series of toolbox talks on environmental awareness will be delivered as part of the follow-on programme from the initial induction briefing.

Training for expatriates and non-local Myanmar nationals will include awareness of national sensitivities. Training for non-local staff and third country nationals will include awareness of local cultural sensitivities. Updates on specific local issues, such as important religious or cultural dates and taboos will be provided regularly to employees at the site.

4.3.11 Employment Data and Documentation

Personnel Database & Records System

The Human Resources Department is responsible for maintaining a record of all personnel employed. An example Human Resources Checklist for each employee is shown in Annex H of SMP-03.

The database will contain information on the employee, covering his / her terms of employment, and will be updated to track changes as they occur. Such data will include:

- Project Worker Status (Local/National/Expatriate);
- Pre-Employment Screening Data (Job Application, Health-Related Data, Skills Testing, Interview Records, Information Verification, etc.);
- Employment Date;
- Job Classification and Wage History;
- Certifications;
- National Service Demobilisation Certificates;
- Hours Worked;
- Job Performance Evaluations and Skill Advancement/Promotion History;
- Termination Data; and
- Training Records.

Forms

The Human Resources Department maintains an inventory of all recruitment processes and employment documentation arising on site. Project Contractors are also required to ensure a similar process is followed for construction activities. A selection of example forms is provided below.

Job Requisition (JR) Form

The relevant department requiring employees will prepare recruitment request documentation arising from positions required on site. Project Contractors will be required to ensure a similar process is followed for construction activities. The Letpadaung Job Requisition Form must be completed and authorized before any job is advertised or any job offer made. MWMCL will not recognise any offer made to a candidate unless it has first been approved by the Human Resources Manager and the General Manager.

The process for completing the form is as follows:

1. Form to be completed by relevant Manager or department head.
2. Approved Job Description to be attached.
3. Form to be sent to Human Resources.
4. Form to be sent to General Manager for approval.

A pro-forma Job Requisition Form is provided in Annex A of SMP-03.

Job Application Short-list

The relevant Department will prepare a short-list arising from applications for a position or positions. Contractors will be required to ensure a similar process is followed for construction activities. A pro-forma Short-list Form is provided in Annex B of SMP-03.

Candidate Application Form

For all positions a Candidate Application Form should be completed (with assistance from Employment Officer if appropriate). An example of a Candidate Application Form is provided in Annex C of SMP-03.

Candidate Evaluation Form

For semi-skilled and skilled positions an interview will be conducted with each short listed candidate individually using a Candidate Evaluation Form to assess and record relevant personal/professional attributes. The interviewing department is required to complete the form and submit to the Human Resources Department. An example of a Candidate Evaluation Form is provided in Annex D of SMP-03.

4.3.12 Monitoring & Inspection

It is important to monitor employment and training to ensure that employment targets are met and that efforts to enhance local and national skills and employment opportunities are maximised. Human resources, employment and training monitoring procedures shall be as follows:

- The Human Resources Manager shall maintain records on the following:
 - Recruitment conducted
 - Recruitment and employment targets
 - How the Employment Database is being maintained
 - Training conducted/given to staff and planned
 - Interviews and random selection processes
 - Job descriptions and selection criteria
 - Information dissemination regarding employment, including vacancy announcements
 - Operation of recruitment offices
 - Equities and inequities in recruitment process (e.g. gender, ethnicity, age)
 - Employee grievances and actions taken
 - Cases of corruption and disciplinary actions taken
 - Working conditions and related issue

- The Human Resources Manager shall inspect recruitment offices and MWMCL / Contractor documentation on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Records of recruitment processes
 - Records of employees hired
 - Records of hours worked
 - Records of wages paid (and against project pay structures as a cross reference)
 - Records of National Service Demobilisation Certificates
 - Records of grievances and of disciplinary actions taken
 - Condition of workers on site and worker camp areas
 - Records of training given to staff
 - Condition and operation of recruitment offices
 - Other spot checks of relevant practices and documentation
 - Compliance with applicable regulatory and corporate requirements.

Contractors will report on a monthly basis to the Human Resources Manager on the implementation of this Management Plan during the construction phase.

The Human Resources Manager shall be responsible for record-keeping.

4.3.13 Training

The Project Manager and Community Relations team will be provided with basic training in HR, training and employment issues. Additional, specialist training will be provided to Training Officers who will be responsible for coordinating employment related activities at the local level.

4.3.14 Performance Indicators

Measurement of the performance of HR, training and employment management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the monitoring and inspection plan;
- Recruitment and employment targets met;
- How the Employment Database is being maintained;
- Training conducted/given to staff and planned training;
- Information dissemination regarding employment, including vacancy announcements;
- Operation of recruitment offices;

- Equities and inequities in recruitment process (e.g. gender, ethnicity, age);
- Employee grievances and actions taken;
- Cases of corruption and disciplinary actions taken; and
- Working conditions and related issues.

4.3.15 Auditing & Reporting

Regular reporting shall be undertaken via a monthly report that shall be prepared by the HR Manager and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to the Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL HR Department in accordance with the schedule in Table 4.3.3.

Table 4.3.3: Auditing & Reporting for HR, Training and Employment

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / Monitoring Plan	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Incidents or grievances	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Employment database maintenance	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Information dissemination	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Training	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Operation of recruitment offices	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Equities and inequities in recruitment process	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Cases of corruption and disciplinary actions	• Monthly by HR Manager	• Quarterly by Community Relations Manager
Working conditions and related issues	• Monthly by HR Manager	• Quarterly by Community Relations Manager

Annexure A

	JOB REQUISITION (JR) FORM		
Job Title:		Department:	
Job Grade: <i>(Human Resources to complete)</i>		Salary per month: <i>(Human Resources to complete)</i>	
Job Location:			
Duration Of Contract:		Commencement Date:	
• Indefinite Period	YES/NO		
• Definite Period	YES/NO		
• Intermittent Periodical Work	YES/NO		
Job Description Attached?	YES/NO		
Probation Period:			
From:		To:	
Work Days/Shift:		Working Hours:	
Other comments:			

RECOMMENDATION:

DEPARTMENT MANAGER	
SIGNATURE:	DATE:

APPROVALS:

HUMAN RESOURCES MANAGER:	
SIGNATURE	DATE:

GENERAL MANAGER:			
SIGNATURE		DATE:	

Process for completing form:

1. Form to be completed by relevant Manager or department head.
2. Approved Job Description to be attached.
3. Form to be sent to Human Resources.
4. Form to be sent to General Manager for approval.

Annexure B



JOB APPLICATION SHORTLIST

Position Applied:

	Name	Age	Education	National Service	Related Experience	Other Experience	Remark	Contac / Telephone
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Annexure C

 MYANMAR WANBAO	CANDIDATE APPLICATION FORM (for all positions)		
Closing date for application:			
Personal Details			
LAST NAME			
FIRST NAME			
AGE		Gender	
Contact Details			
City / Village			
Telephone number (if available)			
Address			
Ethnic Origin	Kachin	Burmar	
(this information is requested for information only and is not a requirement. Selection for employment will in no way depend on ethnic origin. If you do not give this information, it will not affect your application.)	Kaya	Rakhine	
	Kayin	Shan	
	Chin		
	Mon		
Education and Work Experience			
Qualifications			
Education			
Work Experience		Manual Labourer House Keeper Cook Guard Office / clerical Other	
POSITION(S) APPLYING FOR:			

Annexure D



POTENTIAL CANDIDATE INTERVIEW FORM

Candidate Name _____

Interviewer Name _____

Open position _____

Interview Date _____

N.B: Please keep specific requirements of Position in process and rate only those items that relate to that Position Requirement

Interview Questers:

- 1 Introduce the Candidate with the Interviewers. By Chair person
- 2 Request the Candidate to briefly explain about himself
- 3 Invite the Candidate to describe the Basic Functions of the POSITION
- 4 Request the Candidate to explain the main documents or Materials that have to be used in executing the Job in the POSITION
- 5 Ask Candidate's National service status _____
- 6 Ask Candidate Salary Expectation _____

PERFORMANCE INDICATORS (Scales: 0 2 3 4 5 6 7 8 9 10)

Educational background _____

Work Experience _____

Substance in the Subject matter _____

Communication Skill and Reliability _____

Computer Skill _____

TOTAL _____

Interviewer Final Comment

Interviewer Signature _____

Date _____

Annexure E



RECRUITMENT FORECAST SCHEDULE

Key Dates	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sept-09	Nov-09	Dec-09
ACTIVITY/SITE												
TRADE												
Tracked Excavator Operator		5	5	5	5	5	5	5	5			40
Crane Operator				2		2						2
Grader Operator		2	4	2	2							10
Welder		2	2	2	4	4	4	2				20
Structural Steel Plater		2	2	2	2	2	2	2				14
Electrician		2	2	2	2	2	2	2				14
Heavy Duty Drivers		6	6	6	4	4	2	2				10
Auto Mechanic		2	2	2	2	2	2	2				14
Auto Electrical		2	2	2	2	2	2	2				14
Plumber		2	2	2	2	2	2	2				14
Mason		2	2	2	2	2	2	2				14
Carpenter		2	2	2	2	2	2	2				14
Total	0	44	52	53	53	53	38	32	5	0	0	168
SEMI SKILLED												
Unloading & Transport		60										60
Banksman		20										20
U/Ground service crew						10		10				20
Hand Excavations						20						20
Fencing			20		20		20					60
Front End Power Brush					10			10				20
Grinder					10							10
Pre-heat					4							4
Total	0	100	40	80	64	50	20	20	0	0	0	234
UNSKILLED												
Labourers		20	10	30	30	30	30	30	30	30	30	80
Reinstatement						10	10	10	10	10	10	50
Total	0	28	14	34	34	44	44	44	40	40	40	166
TOTALS	0	172	106	167	151	147	102	96	49	40	40	568

Annexure F

EXAMPLE RECRUITMENT ANNOUNCEMENT



**COMPANY INVITES ELIGIBLE APPLICANTS TO APPLY FOR
THE FOLLOWING VACANT POSITIONS**

Information and Requirements for all Positions

Place of Work:	Letpadaung (unless indicated otherwise)
Type of Contract:	Definite period
Salary:	As per MWMCL salary scale
Additional:	1) Provide evidence of completion or exemption of national service 2) Applicants currently employed must hold release paper from former employer
Reference:	Applicants must write three references with current address.
Address:	1: Human Resources, Myanmar Wanbao, Myanmar OR 2: Letpadaung Project Site
Application:	Attach all testimonial documents (photocopy only)

Application papers and documents will not be returned back to sender

Position Title CARPENTER**Major Duties and Responsibilities**

- Studies blueprints, specification sheet, and drawings to determine style and type of window or wall panel required.
- Examines wood surfaces for defects.
- Measures and marks location using tape measures, template, and marker.
- Cuts sidings and mouldings, section of weatherboard using hand tools and power tools.
- Trims overlapping edges of wood, weatherboard, using portable power saw and hand tools.
- Installs prefabricated windows and doors, insulation, wall ceiling and floor panels or sidings, using adhesives, hoists hand tools and power tools.
- Aligns and fastens materials together using hand tools and power tools to form building.
- Repairs and replaces defective locks, hinges, cranks, and pieces of wood using glue, hand tools and power tools.

Required Qualifications

- Long experience in construction carpentry.
- Knowledge to use power tools, hand tools and tape measures.
- Good physical fitness to keep body balance and stay uprights in high ground.
- Ability to read blueprints.
- Experience in prefabricated houses fittings.
- English is the working language

Position Title: LABOURERS**Major duties and responsibilities**

- Apply protective coverings such as masking tape to articles or areas that could be damaged or stained by work processes.
- Clean work areas and equipment and fill cracks or breaks in surfaces of plaster articles or areas with putty or epoxy compound
- Erect scaffolding and do support duties to masons carpenters painters etc.
- Mix plasters
- Supply or hold tools and materials, smooth surfaces to be painted, using sanding and buffing tools and equipment
- Remove articles such as cabinets, metal furniture, and paint containers from stripping tanks after prescribed periods of time.

Required qualifications

- Strong and physically fit.
- Ability to listen and follow instructions.
- Experience as a helper in one or all the construction trades.

Annexure G



CANDIDATE APPLICATION FORM (for all positions)

This Contract Is Made Between Myanmar Wanbao, Hereafter Called The "Employer" And Mr. / Mrs. _____, ER. ID. ----- Address ----- Hereafter Called The "Employee".

The Employee And The Employer Hereby Agree To Enter Into A Contract Of Employment Based On The Following Terms And Conditions:

1. **JOB TITLE:** The Position Of The Employee Will Be _____
2. **DUTY STATION:** The Location Of Work Place Of The Employee Will In In _____ Though The Employee May Be Required To Travel To Other Company Locations From Time To Time. Travel Or Transfer Will Be Done With Accordance Of Company Policy And The Labour Law Of Myanmar.
3. **DATE OF HIRE:** _____
4. **CONTRACT TYPE:** _____
5. **PROBATION PERIOD:** _____
6. **SALARY:**
 1. The Monthly Gross Salary Will Be _____
 2. Salary Is Paid At The End Of Each Month
 3. Salary Will Be Paid In Local Currency I.E. Kyat
 4. The Amount Of Monthly Salary Is Determined In Accordance With The Internal Company Salary Scale In Force.
 5. Salary Reviews Will Normally Take Place On First Of January Of Each Year, But Can Be Delayed At The Discretion Of The Company.
7. **BENEFITS:**
 - Housing Allowance _____
 - Accommodation _____
 - Transport _____
 - Food Allowance _____
 - Medical Allowance _____

If You Suffer A Non-Workplace Related Illness The Company Will Reimburse 100% Of The Cost Of Medical Treatment Up To Maximum Of _____ Per Year.

8. **WORKING DAYS:** Six Days Per Week For 48 Hrs Per Week

9. ANNUAL LEAVE

- a. You Are Entitled For 14 Working Days For The First Year Of Service And An Additional One Day Per Every Year Of Service Thereafter Up To A Maximum Of 35 Days.
- b. The Company Requires Annual Leave To Be Taken Not Later Than Two Years. At a time of Mutual Agreement.
- c. Annual Leave May Be Taken Later Than Two Years Or Settled By Payment.
- d. If You Fail To Take Annual Leave Within Two Years Of Entitlement You Will Forfeit Your Entitlement.

10. ADDITIONAL CONDITIONS:

- a. Any Matter Not Specifically Mentioned In This Employment Contract And/Or In The Staff Regulations Policy And Procedures Shall Be Covered By The Provisions Of The Relevant Labour Laws Of Myanmar.
- b. You Agree In Accepting This Position Perform Such Duties As The Company May Designate From Time To Time, And Devote Your Full Time And Best Efforts To The Business Of The Company.
- c. You Agree To Hold All The Company Information In Confidence And You Will Not Disclose, Use, Copy, Publish, Distribute Or Summarize Any Confidential Information, Except, (A) As Necessary To Carry Out Your Assigned Responsibilities As The Company Employee, Or (B) As Specifically Authorized In Writing By The Company
- d. You Shall Have An On-Going Responsibility To Treat As Confidential All Confidential Information Provided To You By Company And All Information Developed By You On Behalf Of The Company Even After Termination.

- e. You Confirm That You Have Been Released From National Service And That You Hold A Demobilisation Certificate That Will Be Provided To The Company Before Your Employment Is Confirmed.
- f. This Contract Cancels And Replaces All Previous Verbal Or Written Agreements Concluded Before The Below Date.

Approved and signed on behalf of the Company by:

TBA

Manager, Human Resources

Date _____

TBA

General Manager

Date _____

EMPLOYEE ACCEPTANCE,

I _____ have fully understood the Terms and Conditions of this Contract and affix my signature below in agreement with and confirmation of this Contract of Employment:

Signature _____

Date _____

TWO WITNESSES:

1. Name and Signature _____

2. Name and Signature _____

Annexure H



HUMAN RESOURCES CHECKLIST

Guide to International & Local Employees

Employee Name _____ DOH _____

- [illegible]

4.4 **SMP 04 – COMMUNITY AND SOCIAL DEVELOPMENT**

4.4.1 Introduction

The Community and Social Development Plan is designed to ensure the project has a role to fulfil as a corporate citizen in the communities where it works. The plan contains methods that shall be used to prevent adverse effects occurring during construction and operations, monitoring plans to assess potential effects during construction and operation, and monitoring plans for determining the effectiveness of mitigation. The first seven guidance notes focus on the role of public consultation in identifying, avoiding, and mitigating adverse social impacts associated with the project's core business activities. Addressing these impacts is the first responsibility of the project. However, being a responsible corporate citizen, or a "good neighbour," underscores the project's willingness to generate positive development benefits in the wider community. Modest annual budgets allocated for community development programs are outlined within this plan, and utilized as a way to build on already-proven trust and to maintain local support. Consultation planning during this process ensures that potential investments in community development are effective in generating benefits and community support.

4.4.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL to identify and select communities for projects;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define 2013-2014 Budget for Corporate Social Responsibility (CSR);
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.4.3 Targets

The targets of this Management Plan are to:

- Assist the directly impacted, as well as indirectly impacted villages to share in the development possibilities generated by the operations of the mine;
- Facilitate government programs related to building communities;
- Implement external projects targeted to community growth;

4.4.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to Community & Social Development as outlined in the RACI in Table 4.4.1.

Table 4.4.1: Roles & Responsibilities – Community & Social Development Management

Activity Description	MWMCL CSD Committee (Management)	Community Relations Manager	Public Relations Manager	Local Community/ Stakeholders
Develop the Community & Social Development Plan	R	A	A	C
Consult with Communities to determine priorities	I	R	A	C
Determine CSD Funding	R	I	I	I
Manage Expectations of the Community	I	R	A	C
Collaborate with local government	R	I	A	I
Record and report community feedback to CSD Committee	C	R	A	I
Develop a tracking system for community requests	I	R	A	C
Develop Public Relation Media Platform	I	A	R	I
Manage Grievance Process	I	R	A	C

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the Project Community Relations Manager who shall report on progress to the Project General Manager.

4.4.5 Management Actions

Actions expected from management are as follows:

1. Identify and select communities for projects;
2. Consult with the communities to determine their priorities;
3. Develop options for CSD projects;
4. Involve the community in designing each project and making decisions about how the community development funds are used;
5. Use consultation to maximize benefits;
6. Manage expectations of the communities, and;
7. Collaborate with local government and community organisations and clearly define roles and responsibilities.

4.4.6 Control Procedures

As Figure 4.4.1 represents, the CSD Committee will be utilised as the decision maker of CSD work, with its members consisting of representatives from project developers, local government, community representative, NGO and other stakeholders.

CSD team

CSD team of the project developer is the implementation body of CSD work. Now we have recruited 29 CSD members from nearby villages to this team and the relevant training has been carried out since 28th, March, 2013.

CSD Fund

A special CSD fund will be set up, and developers will provide Ks850 million to the fund in FY2014. We will open a specialized account at local bank and deposit Ks212.5 million for every three months. The account status report will be submitted to the CSD committee monthly.

According to the information collected from the community, CSD team prepares annual assistance plan and budget, and then submits to CSD committee for approval. For projects under \$10,000, CSD team will implement after getting approval from the Developer through Developer's internal procedure. For projects over \$10,000, CSD team should not implement without CSD committee approval.

One independent auditing report will be submitted to the CSD committee annually.

4.4.7 Annual Assistance Plan

The CSD projects selection are based on the suggestions of the Special Investigation commission and the Implementation Committee, the villagers' requests collected by CSD team, the instructions of Sagaing Region Government and the proposals from the company.

CSD team visited the nearby villages and made the investigation, then prepared the annual plan in accordance with our annual budget and the feasibility of every project.

The annual assistance plan could be updated if needed. The CSD committee can decide to add some preferential projects into the plan and some projects of lower priority will be delayed if the overall plan exceeds the annual budget.

4.4.8 Training

All management of MWMCL and Project Contractors directly working within Community and Social Development Projects shall be provided with training in the management and handling of social development. Additional, specialist training shall be provided to CSD members and PR employees or key Media personnel involved in activities which involve frequent contact with, or involvement with CSD works.

4.4.9 Performance Indicators

Measurement of the performance of CSD management shall be as follows:

- Reporting of grievance process;
- Reporting of village consultation prior to projects approval;
- Reporting of any incidents or accidents;
- Reporting completion of projects and acceptance by communities;
- Reporting of feedback from communities; and
- Recording of training.

4.4.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CSMP shall be performed by the MWMCL Community Relations Department and the MWMCL Committee in accordance with the schedule in Table 4.4.2.

Table 4.4.2: Auditing & Reporting for Community and Social Development

Performance Indicator	Reporting Schedule	Auditing Schedule
Reporting of grievance process	Monthly by Community Relations Manager	Quarterly by MWMCL Committee
Reporting of village consultation prior to projects approval	Monthly by Community Relations Manager	Quarterly by MWMCL Committee
Reporting of any incidents or accidents	Monthly by Community Relations Manager	Quarterly by MWMCL Committee
Reporting completion of projects and acceptance by communities	Monthly by Community Relations Manager	Quarterly by MWMCL Committee
Reporting of feedback from communities	Monthly by Community Relations Manager	Quarterly by MWMCL Committee
Recording of training	Monthly by Community Relations Manager	Quarterly by MWMCL Committee

4.5 **SMP 05 – RESETTLEMENT AND LAND USE**

4.5.1 Introduction

The Resettlement and Land Use Management Plan is designed to ensure that MWMCL mitigates and / or compensates for impacts to land and land use that will occur as a result of the Letpadaung Project.

The plan considers potentially adverse impacts related to:

- Land take for the Project;
- Loss of productive agricultural land;
- Loss of access to grazing land;
- Loss of seasonal dwellings;
- Loss of access to other assets such as water points; and
- Affects to livestock migration and related practices.

The plan is a flexible document that shall be reviewed on a periodic basis. This applies to MWMCL, although the Contractor, will be expected to support the Project to contribute to land use management activities during construction.

Associated plans which also incorporate activities related to local communities include the *Community Assistance Plan* which deals with providing sustainable community assistance to those affected and the *Cultural Heritage Management Plan* that seeks to ensure the protection and safeguard of local cultural heritage / resources.

4.5.2 Objectives

The objectives of this Management Plan are to:

- Establish effective plans and procedures to mitigate the effects of land take for the mine and ancillary facilities to ensure that affected people are not worse off as a result of the Project;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project Contractors;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.5.3 Targets

The targets of this Management Plan are to:

- Protect local communities from adverse impacts associated with land acquisition and change in land use;

- Where land acquisition is inevitable see that land owners are fairly compensated in a way that will allow them to live sustainably;
- Implement land use management procedures; and
- Achieve zero land use complaints associated with the Project.

4.5.4 Roles & Responsibilities

The project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI in Table 4.5.1.

Table 4.5.1: Roles & Responsibilities – Land Use Management

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL Environment / Community Team / MEHL
Develop a land use map & establish land owners / stakeholders	C/A	C/A	I	R
Develop land use management plans	C/A	C/A	I	R
Introduce land use management concepts to the work force	C/A	C/A	R	R
Monitor land use management across the project	I	C/A	C/A	R
Record and report land use management plus related training of personnel	I	C/A	R	R
Develop a tracking system for incidents / complaints related to land use	I	C/A	I	R

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Community Relations Manager. Others with responsibility for the implementation of this Management Plan shall include:

- MWMCL Environment Manager shall support the Community Relations Manager to design and implement land-based mitigation measures and foster the link between land use management processes and environmental management within the local/regional area;
- MWMCL Village Consultation Officer shall be responsible for engaging directly with affected communities on land use management issues and supporting the Community Relations Manager to implement relevant land-based mitigation measures; and
- MWMCL Operations Manager shall be responsible for ensuring that these procedures and requirements are implemented for all mine operations.
- MEHL shall be responsible for all negotiations and compensation payments to project affected persons.

4.5.5 Regulatory Requirements

Corporate Policy

MWMCL has established a policy regarding Social Responsibility that includes the Company's commitment to respecting land use rights and addressing social issues through active consultation with local communities.

Myanmar Requirements

The Farmland Law (2011)

This law, passed in 2011, repeals the Land Nationalization Act of 1953 which directed that all land in Myanmar become property of the government. It is written in the 2008 Constitution that all land is to remain property of the State, however The Farmland Law allows a person with 'land use rights' to transfer, exchange, or lease their land. Before this bill came into effect, it was common for citizens to sell their land and this was done openly, however this was officially illegal. Since 2011 these transactions have become legal. Amendments and revisions to The Farmland Law are currently being discussed, as many people are worried about the rights of farmers who lack proper documentation for the land they occupy.

The Vacant, Fallow and Virgin Lands Management Law (2012)

This law, which was passed as an amendment to The Farmland Bill, stipulates that any unused land can be claimed and utilized by willing individuals (foreign or local investors

included). This means that people cannot simply purchase land and then leave it vacant; they must make the land economically productive.

The Myanmar Mines Law (1994)

Chapter 5 - Right of Utilization of Land and Water for Mineral Production:

- The holder of permit for mineral production within an area under the Ministry's administrative control or which does not lie within the Mineral Reserve Area or Gemstone Tract, shall carry out such production only after co-ordinating and receiving agreement from the individual or organization having the right of cultivation, right of possession, right of use and occupancy, beneficial enjoyment, right of succession or transfer of the said land;
- If, in the interest of the State, it is necessary to acquire the land where mineral production could be undertaken on commercial scale, the Ministry shall co-ordinate with the relevant Ministry for the acquisition of such land in accordance with the existing law;
- If the holder of mineral production permit requires the use of public water for mineral production he shall first and foremost inform the Department of such requirement in accordance with the prescribed manner; and
- If the Department, after scrutinizing the requirement submitted under section 16 finds that the use of public water is really necessary for the holder of mineral production permit, it shall co-ordinate with the relevant government department and organization for obtaining permission to use water in accordance with the existing law.

International Standards

International Finance Corporation (IFC) Performance Standards for Social and Environmental Sustainability set out a range of recommendations with regard to land acquisition and involuntary resettlement in Performance Standard 5²⁴. MWMCL will comply with requirements of IFC Performance Standard 5 that are relevant to the Letpadaung Project. Key requirements include:

- The concepts of physical displacement (loss of shelter) and of economic displaced (loss of means of livelihood) – both Physically Displaced and Economically Displaced People are to be considered in resettlement planning;

²⁴ International Finance Corporation. Performance Standards for Social and Environmental Sustainability; Performance Standard #5. 1 January 2012. pp 1-10.

- The Project shall mitigate adverse social and economic impacts from land acquisition or restrictions on affected persons' use of land by: (i) providing compensation for loss of assets at full replacement cost; and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation and the informed participation of those affected;
- The Project shall improve or at least restore the livelihoods and standards of living of displaced persons;
- The Project is expected to offer displaced persons (both physically and economically displaced) and communities, compensation for loss of assets at full replacement cost and other assistance to help them at least restore their livelihood and improve their standard of living, including though the provision of adequate housing with security of tenure at resettlement sites;
- Special provisions shall apply to consultations which involve Indigenous Peoples as well as individuals belonging to vulnerable groups;
- Where livelihoods of displaced persons are land-based, or where land is collectively owned, the client will offer land-based compensation, where feasible;
- The Project is to "consult with and facilitate the informed participation of affected persons and communities, including host communities, in decision-making processes related to resettlement. Consultation will continue during the implementation, monitoring, and evaluation";
- The Project is expected to "establish a grievance mechanism consistent with IFC Performance Standard 1 to receive and address specific concerns about compensation and relocation that are raised by displaced persons or members of host communities, including a recourse mechanism designed to resolve disputes in an impartial manner"; and
- The Project is expected to "carry out a census with appropriate socio-economic baseline data to identify the persons who will be displaced by the Project, to determine who will be eligible for compensation and assistance, and to discourage inflow of people who are ineligible for these benefits. In the absence of host government procedures, the client will establish a cut-off date for eligibility. Information regarding the cut-off date will be well documented and disseminated throughout the Project area".

4.5.6 Approach to Land Use Management

The MWMCL approach to land use management is driven by the following objectives:

- Mitigation measures, including any compensation for Project-affected persons, will be carried out in compliance with Myanmar legislation and only with the approval or relevant government representatives;
- MWMCL shall also seek to comply with the IFC's requirements;
- Impacts from permanent or temporary land acquisition on assets and livelihoods will be mitigated, and both physical and economic displacement will be taken into consideration;
- Affected livelihoods will be restored as a minimum, or preferably improved, and living conditions of affected households will be improved;
- Cash compensation is not a preferable method of compensation for land use effects as a result of the Letpadaung Project, however compensation will be provided in-kind;
- Families affected by the loss of cultivated land and/or seasonal dwellings will be provided with in-kind support for land-based activities or non-land based options including employment, in addition to the measures allocated by the government;
- All mitigation measures related to grazing land and associated assets will be delivered at the community-level since one of the predominant impacts relate to loss of access to land used by various herders from a number of nearby villages;
- The implementation and outcomes of this plan will be monitored and evaluated as part of a transparent process involving independent parties;
- The complaints management process established for the Project will also be used to handle land use-related complaints (and shall be audited at regular intervals); and
- Affected families and communities will be engaged, informed and consulted during the course of plan development, implementation and evaluation.

4.5.7 General Mitigation Measures

Dwellings

Impacts to dwellings (seasonal / permanent) will need to be mitigated/compensated at the individual/household level.

It is proposed to provide replacement wood for huts and other negotiated in-kind support (rather than cash) or give preference to employment with the Project (through appropriate training).

Recently Cultivated Land

Impacts to agricultural land will need to be mitigated / compensated at the individual / household level.

It is recommended to give preference for employment with the Project to families affected by loss of productive land to mitigate livelihood effects (but training critical).

Grazing/Fallow Lands and Associated Assets

All impacts to lands defined as “rangelands”, “grazing” land and “fallow” land within the Project area will be mitigated / compensated at the community level only. This land is communal property and every member of the community has equal access to these areas.

It is recommended to provide grazing, herding and animal husbandry support, as well as replacement water points to affected communities.

Vulnerable Groups

Vulnerable People are people who by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status, may be more adversely affected by land acquisition than others and who may be limited in their ability to claim or take advantage of land-based assistance and related development benefits.

MWMCL will work with local authorities to identify vulnerable people that have been affected by land take as a result of the Project, and may require specific assistance and monitoring. Assistance may take various forms, depending upon the requests and needs of each vulnerable person and the context of the effects from land take for the Project:

- Assistance to access the programme;
- Assistance to obtain training and access employment opportunities either directly or indirectly with the Project;
- Help to make sure their opportunities for assistance are well understood and in accordance with what they need for improving their livelihoods; and
- Counselling in matters such as family, health, money management, and livelihood continuation.

4.5.8 Land Use Management Actions

Assess Land and Asset Losses

An assessment of the specific impact losses to individual households and communities from land take is required to determine if the mitigation measures proposed meet the relevant standards and the needs of affected communities. To this end, MWMCL will:

- Conduct an assessment of impacts from land take for the Project and confirm specific households/individuals and communities affected;
- Conduct consultation with government and affected communities to adequately characterise the affects from land and asset losses;
- Target the assessment to enable the MWMCL to distinguish the impact of the Project from the impact of the security zone;
- Ensure the assessment includes analysis of the 'post-conflict' situation of the area and that relevant recommendations are incorporated onto the specific initiatives identified;
- Ensure that the assessment includes preparation of relevant maps to clearly delineate land loss as a result of the Project; versus land loss as a result of the security zone; and
- Obtain input from a socio-economic specialist (or similar) to design and conduct the assessment.

Detailed Planning Process

In order to complete detailed planning, MWMCL will use the following general procedures:

- Review the results of the updated impact assessment;
- Develop a specific implementation plan for the Construction Phase of the Project clearly stating which actions are to be taken, when and by whom;
- Allocate responsibilities, costs and a schedule for each action or procedure required so that they will be implemented in the timeframe defined;
- Establish a Committee (or similar) to take responsibility for delivery of the land use management programme and this will likely be coordinated with a group to manage broader social programmes;
- Work with the Ministry of Agriculture in Myanmar and local authorities to complete detailed planning for the Construction Phase;
- Seek opportunities to involve local people as much as possible in the planning works for each of the land-based projects to be implemented;

- Identify specific partners for Construction Phase activities and complete relevant assessments of each individual or group;
- Complete contractual arrangements with partners (e.g. Memorandums of Understanding (MOU) for work to be completed); and
- Establish a monitoring and evaluation programme.

Cooperation with Government

Cooperation with the Myanmar Government related to land use management will be critical and shall include:

- MWMCL will work closely with various government agencies and ministries to continue discussions about land use impacts in order to create a coherent and agreed approach to the process;
- MWMCL will not independently engage directly with communities on land use issues and related mitigation measures, but will work with the Department of Mines and relevant local authorities;
- Proposals for specific mitigation measures will be introduced to national and regional level governments first, prior to final approval;
- Any external implementing partners that may be required will be introduced to the government and the community prior to any visits to the area; and
- MWMCL shall consult with government on the approach to funding the implementation of this *Land Use Management Plan* and the mitigation measures proposed, including how this information should be disclosed to the affected population and other interested parties.

4.5.9 Land Use Data and Documentation

The HSEC Department is responsible for maintaining a record of all land take impacts and associated mitigation measures and other activities related to land use management.

The database will contain information on the land based impacts and related mitigation measures. Information shall be recorded for each impact and mitigation measure, and will be updated to track changes as they occur. Such data will include:

- Each land use impact/category and the affected individual/group;
- Specific mitigation measures/programmes identified and agreed;
- Planning and implementation details for measures to be implemented;
- Implementing partners, including government;
- Consultation activities with government and local communities;

- Fund disbursement history;
- Commencement (and completion) dates; and
- Performance monitoring and evaluation.

4.5.10 Land Use Related Complaints

MWMCL will operate a complaints process for local communities through its stakeholder engagement plan. The Stakeholder Engagement Plan describes the complaints management procedure.

Complaints related to land use shall be managed through the same complaints management process.

4.5.11 Monitoring & Inspection

Land use management monitoring procedures shall be as follows:

- The MWMCL Community Relations Manager shall monitor the implementation of the programme and report to the MWMCL General Manager on at least a quarterly basis, including:
 - Specific mitigation measures developed and implemented
 - Engagement conducted with government and affected communities;
 - In-kind support provided to families/households
 - Funds disbursement history
 - Activities conducted by government versus MWMCL related to mitigation measures
 - Support for vulnerable people
 - Performance of implementing partners
 - Perceptions/attitudes of affected people towards the programme
 - Complaints process
- Each measure or initiative to be funded by MWMCL as part of this plan shall have its own specific monitoring and evaluation procedures; and
- Affected people shall participate in monitoring progress of each of the mitigation measures implemented through this plan.

4.5.12 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with basic training on the requirements of the Code of Conduct, which includes requirements to protect natural resources in the local area. Additional specialist training shall be provided to community relations and environmental staff and key personnel involved in land use management activities.

4.5.13 Performance Indicators

Measurement of the performance of land use management shall be as follows:

- Reporting of non-conformance with the relevant ECPs / Monitoring;
- Reporting of any incidents or complaints;
- Recording of land acquired and compensation; and
- Reporting of training.

4.5.14 Auditing & Reporting

The MWMCL Community Relations Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via a monthly report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to the Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Auditing and reporting of performance with respect to compliance with the CEMP shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 4.5.2.

Table 4.5.2: Auditing & Reporting for Land Use Management

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / Monitoring plan	• Monthly by Community Relations Manager	• Quarterly by Community Relations Manager
Incidents or Complaints	• Monthly by Community Relations Manager	• Quarterly by Community Relations Manager
Land Acquired & Compensation	• Monthly by Community Relations Manager	• Quarterly by Community Relations Manager
Training	• Monthly by Community Relations Manager	• Quarterly by Community Relations Manager

4.6 **SMP 06 - COMMUNITY HEALTH, SAFETY AND SECURITY PLAN**

4.6.1 Introduction

This Community Health, Safety and Security (CHSS) Plan is designed to ensure that the Letpadaung Project protects the health, safety and security of people and communities within the vicinity of the mine site and along the transport route to the port of Pakokku.

As community health and safety protection is of prime importance to the Letpadaung Project, MWMCL has developed specific measures to ensure that local communities are not adversely affected by off-site incidents or other hazards that may occur as a result of Project activities.

MWMCL recognises that it is necessary to collaborate with local communities and authorities to develop appropriate health and safety safeguards because the Letpadaung Project will introduce new activities to a largely rural setting. Furthermore, as a modern copper mining project in Myanmar, it may introduce a range of issues within the country that have not been dealt with either by regulators or by the general population to date.

This plan describes the measures to address potential health, safety and security impacts from Project-related activities beyond the site perimeter. The plan considers potentially adverse as well as positive impacts related to:

- Public access to the site;
- Employee conduct and awareness (in the community);
- Health and safety hazards that may arise off-site, e.g. dust deposition and traffic accidents;
- Community health and wellbeing, including raising awareness about health issues and maintaining healthy lifestyles;
- Health support services for the local population; and
- Security measures and the use of force.

This plan is a live document that shall be reviewed on a regular basis. This plan applies to MWMCL as well as Project Contractor personnel. The Project Contractors shall make sure that this plan is available to their own staff and that all procedures / actions included within the plan are recognised, adopted and applied during construction, operations and closure.

4.6.2 Objectives

The objectives of this Management Plan are to:

- Establish effective plans and procedures for protecting local communities in the Letpadaung area from Project-related hazards, as well as those villages/towns along the transport route that may be affected by increased traffic and related hazards from the Project;
- Define MWMCL requirements and procedures to guide the HSEC team and other Project Contractors;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.6.3 Targets

The targets of this Management Plan are to:

- Protect local communities from adverse impacts associated with Project activities;
- Where adverse impacts are inevitable see that local communities are engaged, educated and valuable in-kind support is provided;
- Implement CHSS management procedures; and
- Achieve zero complaints from local communities associated with the Project.

4.6.4 Roles & Responsibilities

The Project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI in Table 4.6.1.

Table 4.6.1: Roles & Responsibilities – Community Health, Safety & Security

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL Environment / Community Team
Develop CHSS Management Plan	C/A	C/A	I	R
Establish which communities are affected and strategies for engagement	C/A	C/A	I	R
Introduce CHSS management concepts to the work force	C/A	R	R	C/A
Monitor CHSS management across the Project	I	R	C/A	C/A
Record and report CHSS plus related training of personnel	I	C/A	R	R
Develop a tracking system for incidents / complaints related to CHSS	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Community Relations Manager who shall report on progress to the MWMCL General Manager. Others with responsibility for the implementation of this Management Plan shall include:

- Project Contractors, shall be responsible for the integration of these procedures and requirements into their operating procedures and plans;
- MWMCL Community Relations Manager shall be responsible for ensuring that activities related to engaging and working with local communities are conducted

in accordance with relevant procedures and requirements for stakeholder engagement and community assistance; and

- MWMCL Operations Manager shall be responsible for ensuring that these procedures and requirements are implemented for all operations.

4.6.5 Regulatory Requirements

Corporate Policy

MWMCL has established a policy regarding Social Responsibility that includes the Company's commitment to protecting community health, safety and security.

Myanmar Requirements

Myanmar does not currently have regulations specifically related to the Health, Safety and Security of Communities associated with mining activities.

Guidelines and International Standards are produced by the World Bank Group and are referenced below.

International Standards

International Finance Corporation (IFC) Performance Standards for Social and Environmental Sustainability set out a range of recommendations with regard to community health, safety and security in Performance Standard 4²⁵. MWMCL will comply with requirements of IFC Performance Standard 4 that are relevant to the Letpadaung Project. Key requirements include:

- The client will evaluate the risks and impacts to the health and safety of the affected Communities during the project life-cycle and will establish preventive and control measures consistent with good international industry practice. The client will identify risks and impacts and propose mitigation measures that are commensurate with their nature and magnitude. These measures will favour the avoidance of risks and impacts over minimisation;
- The client will design, construct, operate, and decommission the structural elements or components of the project in accordance with good international industry practice, taking into consideration safety risks to third parties or affected Communities. When new buildings and structures will be accessed by members of the public, the client will consider incremental risks of the public's potential exposure to operational accidents and/or natural hazards and be consistent with the principles of universal access;

²⁵ International Finance Corporation. Performance Standards for Social and Environmental Sustainability; Performance Standard #4. 1 January 2012. pp 1-3.

- For projects that operate moving equipment on public roads and other forms of infrastructure, the client will seek to avoid the occurrence of incidents and injuries to members of the public associated with the operation of such equipment;
- The client will avoid or minimize the potential for community exposure to hazardous materials and substances that may be released by the project. Where there is a potential for the public (including workers and their families) to be exposed to hazards, particularly those that may be life-threatening, the client will exercise special care to avoid or minimize their exposure by modifying, substituting, or eliminating the condition or material causing the potential hazards;
- The client will avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, and communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. Where specific diseases are endemic in communities in the project area of influence, the client is encouraged to explore opportunities during the project life-cycle to improve environmental conditions that could help minimize their incidence;
- The client will avoid or minimize transmission of communicable diseases that may be associated with the influx of temporary or permanent project labour;
- When the client retains direct or contracted workers to provide security to safeguard its personnel and property, it will assess risks posed by its security arrangements to those within and outside the project site. In making such arrangements, the client will be guided by the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of such workers, and by applicable law; and
- The client will assess and document risks arising from the project's use of government security personnel deployed to provide security services.

The World Bank Group produces specific guidelines for Community Health and Safety with regards to mining activities²⁶. A key portion of the guidelines consider the necessity to minimise the incidence and transmission of communicable diseases

²⁶ World Bank Group. Environmental, Health and Safety Guidelines for Mining. 10 December 2007. pp 21 -24

caused by the influx of migrant workers, associated family members and other service workers at the site.

A major threat to the feasibility of the mining operation and the health of local communities are potential negative impacts on key social determinants of health, such as drugs, alcohol, sexually transmitted infections and gender violence. The potential for triggering a new upsurge in these trends should be considered when developing a mining project. The hallmark of this situation is the “Four M’s”:

- Men – labour influx;
- Money – surge in disposable cash;
- Movement – development of new transport routes facilitating access to rural communities; and
- Mixing – interface of high prevalence rate groups (i.e. police, security, truckers and sex workers) with local low prevalence rate men and women.

Typical measures undertaken to reduce communicable disease incidence involve:

- Preventing illness among workers and their families and in local communities by:
 - Undertaking health awareness and education initiatives
 - Training health workers in disease treatment
 - Providing treatment through standard case management in on-site or community health care facilities (e.g. immunization programs)

4.6.6 Potential Impacts

Potential impacts to community health, safety and security will occur in all phases of the Project. However, impacts will likely be greatest during operations, when there will be a considerable increase in traffic on the road to Pakokku together with an increase in the transportation of goods and personnel to and from the site. There will also be a permanent workforce based at the site during operations that will inevitably interact with local communities.

There will be an increase in traffic on all the roads used for construction and operations. On some roads, and particularly smaller access roads passing through communities, this is likely to be more significant. This will result in increased nuisance and general disturbance for communities as well as higher safety risks for both people and animals. However, some community members may see an increase in traffic in their areas as a positive impact that provides more economic opportunities such as roadside stalls.

There may be incidents where workers obtain and consume illegal substances and/or excessive amounts of alcohol in communities nearby to the site or along the transport route. Previous construction projects show that this can have a negative impact on communities by increasing incidents of crime, violence and threats (real or perceived) to the safety of community members.

There is also a potential for prostitution associated with the construction and operations workforce, which carries the risk of the spread of sexually transmitted diseases, either to local communities or to commercial sex workers that might move into the area.

Each phase of Project implementation presents different potential community health and safety risks, and these are summarised for the construction, operations and closure/post closure phases.

Construction Phase

During the construction phase, the key issues related to community health and safety will be dust arising from earthworks activities and vehicles, an increasing number of new arrivals at site to take up temporary construction jobs and traffic in local communities.

Traffic will not increase significantly during construction and therefore the risk to public safety is expected to be minimal in comparison to during the operational stage of the mine. Dust will be of most concern on unpaved roads between the mine and Pakokku, and will increase proportionally to the increase in traffic. The key issues related to air emissions include vegetation stress, soil deposition in neighbouring communities, and visual impacts.

Potential issues related to the workforce and local communities include unfavourable interactions that may arise between Project personnel and residents (e.g. conflicts, fighting and prostitution). The Project will require security to protect both the workforce and to prevent unauthorised access to the site.

Operations Phase

During the operations phase an increase in heavy traffic will occur due to the transportation of the copper cathode.

Dust will occur as a result of increased traffic, and also from drilling, blasting, excavation and topsoil movement. Other gaseous emissions may occur from equipment operation and power generation.

Blasting is expected to occur regularly during operations and may create noise, visual and dust impacts to neighbouring communities.

Operations of mining equipment will occur daily at the site; however all high risk areas will be enclosed with a security fence to ensure that there is no access by the public or unauthorised people.

Associated plans for Dust Management and Greenhouse Gas Emissions incorporate specific health and safety requirements, management procedures and impacts to local communities.

Closure Phase

There may be some new or different impacts to community safety as a result of closure activities, such as those associated with reclamation work on potential hazardous sites, e.g. waste rock facilities, the tailings management facility and the open pit. However, where approved closure practices and plans are implemented, the risks are expected to be low. Following decommissioning and closure, it is expected that the security zone will cease and, assuming that all safety and other controls are in place, herders and use of migration corridors will be able to re-access the land.

4.6.7 Community Health & Safety Management Actions

The Letpadaung Project team have developed a range of community health and safety procedures to ensure the protection of local people, their properties, assets and livestock from potentially hazardous activities conducted for the Project.

Community Safety

Crimes and Violence

MWMCL has a zero tolerance policy on crimes and violence related to its workforce. To this end, MWMCL will implement the following provisions to minimise crimes and violence related to the workforce:

- Implement an Alcohol and Substance Abuse Policy which clearly sets out the requirements and rules related to alcohol use during “on-duty” and “off-duty” hours (there will be a zero tolerance to drunkenness during “on-duty” hours);
- Drug and alcohol testing will be carried out in accordance with the Alcohol and Substance Abuse Policy and the programme will reinforce the requirements of the policy;
- The Code of Conduct will contain rules and regulations related to illegal activities, including crimes and violence and other expectations of the workforce;
- The Community Relations Manager (or their delegate) shall induct all MWMCL employees, Contractor personnel and subcontractors on the requirements of the Code of Conduct prior to their commencing work;

- The Code of Conduct will be publicised in settlements potentially affected by the construction and operations of the Project so that local people know the expectations of the workforce;
- The Project will implement disciplinary procedures related to its workforce and any illegal conduct by Project personnel; and
- Entertainment and sports facilities shall be provided at construction camps to encourage workers to remain within the camp boundaries during leisure time.

Transport

MWMCL will put in place a number of traffic safety initiatives such as signage and speed limits to minimise traffic incidents involving people and animals. To this end, the Project will:

- Conduct route surveys, including to identify communities along the route, conduct building condition assessments (i.e. to assess potential damage from increased number of trucks), and identify accident black spots;
- Implement rigorous contractor selection processes to minimise risk;
- Implement rigorous driver training and vehicle inspection programmes for Project drivers and facilitate the adoption of similar standards for contractors (including off-road driving and 4x4s);
- Establish appropriate driving standards, including for day/night driving and rainy season driving;
- Impose speed limits; and
- Ensure that all Project vehicles are well-maintained and fitted with safety equipment as appropriate (seat belts, communication devices, reversing alarms etc.).

Blasting

- In order to minimise effects to local communities, domestic livestock and wildlife as a result of blasting activities, the following provisions will be made;
- MWMCL will obtain approval from the relevant local authorities for the transportation, storage and use of explosives;
- Shot-firers and other personnel using explosives must be licensed and appropriately trained for their duties;
- Times for blasting will be selected when the community is least sensitive to blasting impacts (e.g. day time hours);

- The local population shall be warned well in advance with dates and times of blasting (they must be allowed the opportunity to move livestock and prepare in advance);
- Warning signs and security staff must be put into place to ensure the safety of the local population during blasting;
- An audible pre-warning shall be given immediately before each blast or series of blasts; and
- Approved blasting practices shall be followed at all times.

Site Access, Demarcation and Protection (Site Security)

The following requirements will be met by the Project during construction and operations to ensure that site access is properly controlled:

- A high security fence will be erected around 'high risk' mine facilities including the mill and crusher areas;
- A manned security gate and personnel identification system will be implemented by MWMCL in the absence of other reasonable measures to control site access;
- All site activities will be clearly demarcated where fencing is not required to ensure that they are safe, visible and illuminated;
- Where roads or other access routes cross site activity areas, MWMCL will be responsible for providing and maintaining safe diversions, temporary bridges, traffic controls, barricades, signs and warning lights as required;
- All crossings of tracks and roads will be reinstated on completion of activities;
- Stock proof fencing will be erected in areas of danger for livestock and the Community Relations Team will decide on the areas to be fenced with relevant communities and livestock owners;
- Watchmen should be employed to survey the Project construction sites and night-time vehicle storage areas and they will also discourage public infringement onto all Project sites;
- The migration of people in search of employment opportunities will be actively discouraged through publication of MWMCL's recruitment policies which give preference to candidates from local/regional communities, as well as other measures to manage influx;
- Recruitment will only take place at designated recruitment centres and not via informal requests or approaches by members of the public either at the

construction camp or along the route (to reduce the potential for the public coming to the site in search of work); and

- All goods and equipment required for the Project will only be purchased through formal routes. This will be publicised around the community and in regional areas (to minimise the potential for hawking around the site boundary).

Community Health and Wellbeing

Personal Health Programme

MWMCL will develop a Personal Health Programme to educate their workers in illness and disease prevention to minimise the occurrence or spreading of diseases. The following provisions shall be implemented to ensure that the potential for health issues beyond the site are minimised:

- Employees will undertake a fitness to work assessment and baseline medical assessment on joining;
- The health programme will include medical examination of employees and main contractors on a regular basis;
- The health programme will include immunisations if required for Project workers and relevant contractors;
- Training will be provided to all staff, both national and expatriate, and will include awareness-raising on health considerations, including sexually transmitted diseases (STDs);
- Health awareness training for workers will be conducted at induction and then periodically throughout construction and operations; and
- Health awareness materials will be provided in the appropriate language and disseminated through the meeting houses, Storefront Information Centres and local schools.

Health Provision

MWMCL recognise that the first step in protecting community health and well-being is to protect its workforce, which requires the following minimum health provisions to be in place:

- Medical facilities will be provided to all workers and their families at the site and there will be a dedicated ambulance service for the Project;
- Dedicated medical facilities will reduce the demand on existing community health services which are lacking in many basic requirements;

- The medical facilities at the site will not be made available to the local communities in an attempt to reduce the potential for people to migrate to the area in search of health service provision;
- Medical staff from the Project may support government staff to conduct health awareness, health checks and other in-kind support services within local communities from time to time; and
- In the course of time, MWMCL may help to fund community inoculation programmes.

Community Health and Safety Awareness and Support

The Community Relations Department will provide health and safety education sessions in every community potentially affected by health and safety hazards related to the Project.

Traffic Safety Awareness

The Project has developed a Transport Management Plan that takes into account transport routes, speeds, times of travel, key roads in terms of local communities and measures to be taken to limit impacts on these key roads. Likely impacts on schools and major pedestrian crossing areas will also be assessed and necessary measures identified.

The Transport Management Plan includes a Traffic Awareness Programme for villages and towns affected by Project-related traffic. This programme will be facilitated by the Health & Safety Manager and the Community Relations Team, and will include:

- MWMCL will work with local Police Departments and administrators to help them implement a traffic awareness programme;
- The Traffic Awareness Programme will inform affected communities of the potential hazards that could be encountered from increased or altered traffic patterns and volumes on the roads used by Project-related vehicles;
- The Traffic Awareness Programme will include a range of practical education activities, demonstrations and other events to help the residents avoid traffic accidents and incidents;
- The Traffic Awareness Programme will tailor its activities to meet the needs of the different communities/settlements affected along the transport route;
- Consideration will be given to targeting different sections of the population that may be affected by increased traffic, particularly children, youth and the elderly; and

- Proper notification will be provided to affected communities well in advance of training dates to ensure maximum participation.

Health Awareness and Support in Communities

The following provisions will be made to support communities in health provision and raise awareness of the potential health issues associated with the Letpadaung Project:

- MWMCL shall conduct a Community Health Assessment within the Project-affected villages; this will be a key piece of work and will serve to inform any health awareness and support programmes implemented by MWMCL;
- Awareness-raising education and outreach events will be facilitated by MWMCL on health issues, particularly communicable diseases, including HIV/AIDS for communities close to the mine site;
- MWMCL will work with local Health Departments and administrators to help them implement the Community Health Awareness Programme;
- Project Contractors will be expected to participate in some health awareness events with local communities during the construction phase; and
- Printed materials including posters, leaflets and other documents will be prepared and disseminated through health clinics, community meetings and at the Store Front Information Centres.

Community Emergency Preparedness and Response

The following provisions will be implemented:

- MWMCL will work with communities and administrators and relevant Police and Fire Departments to identify an effective emergency alert system for the Project;
- MWMCL will provide potentially affected communities with information regarding the potential hazards and Project responses;
- MWMCL will work with communities in a collaborative manner to develop action plans for their preparedness and response;
- Participative workshops and emergency response demonstrations will be carried out in Project-affected communities and attendees will be paid per diem for their participation; and
- The Emergency Response Team (ERT) for the Letpadaung Project will be identified to local communities.

Security and the Use of Force

MWMCL intends to comply with IFC's Performance Standard 4 on Community Health, Safety and Security.

MWMCL intends to use a private security firm to provide site security and will conduct the relevant assessments and apply applicable standards to any individual or company it contracts for such activities.

To this end, MWMCL has developed and adopted a standard/procedure that describes the minimum requirements for all personnel, contractors and subcontractors related to security arrangements and the use of force.

This security standard is designed to help the Company to protect its people and assets in a way that minimizes conflict and respects the human rights of its stakeholders. The security standard is as follows:

- MWMCL will adhere to local laws as well as international standards on law enforcement in securing its operations, particularly those that relate to the use of force;
- MWMCL will carry out risk assessments in relation to security issues at each of its Project sites;
- Each MWMCL site will develop a Security Plan in order to prevent or mitigate any threats identified in its risk assessment. The Security Plan will determine how personnel will be deployed at the Project sites;
- The objective of the Security Plan will be to ensure that security is deployed in a way that respects and protects human dignity and human rights, avoids creating conflict and addresses security threats in as peaceful a way as possible;
- MWMCL will therefore seek to ensure that force is a last resort and is used in a way that minimizes damage and injury, and respects and preserves human life;
- MWMCL will only use armed guards where the above risk assessment determines that this is the only way to mitigate the risks identified or where it is required by law;
- Force should only be used for preventive and defensive purposes in proportion to the nature and extent of the threat. MWMCL's security personnel should accordingly:
 - First try to resolve any security incidents without using force; and
 - Only use the minimum force needed if this fails

- Firearms will only be used in accordance with the above principles and where human life is at risk and less extreme measures are not sufficient;
- In every instance in which a firearm is discharged, a report should be made promptly to MWMCL's central office;
- Security personnel must ensure that medical aid is given to anybody injured in any incident at the earliest possible moment;
- A community complaints process will be in place to allow the local community to express concerns about the security arrangements and acts of MWMCL security personnel;
- MWMCL will investigate any credible allegations of unlawful or abusive acts of its security personnel, take action to prevent recurrence, and report unlawful and abusive acts to public authorities when appropriate;
- Where MWMCL uses public or government security services to protect its operations, they must guarantee that existing international guidelines and standards for the use of force are respected;
- MWMCL will conduct due diligence on security providers to avoid retaining the services of any group or individual that has previously been responsible for violations of human rights or humanitarian law;
- MWMCL will provide training regarding the use of force (and where applicable, firearms) and appropriate conduct toward workers and the local community and monitor to ensure that security personnel abide by this standard; and
- MWMCL will never place or pressure employees to work in areas of high risk to personal security.

4.6.8 Monitoring & Inspection

It is important to monitor activities at the mine site, as well as those that occur off-site, including transportation of supplies and concentrate to and from Letpadaung, to ensure that local and regional communities are protected. Community Health and Safety Monitoring Procedures shall be as follows:

- Contractors shall report on a monthly basis to the MWMCL Community Relations Manager on the implementation of this Management Plan including:
 - Workforce conduct within the community
 - Any instances of workforce non-compliance with Project rules and regulations
 - Condition of access roads and dust suppression activities

- Security arrangement
 - Employee Personal Health Programme
 - Implementation of the substance and alcohol abuse policy
 - Time lost to illness or disease by workers
- MWMCL Community Relations Manager shall inspect the condition of areas of activity at the site on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Safety practices in areas that could impact communities
 - Spot checks of vehicles entering/exiting nearby local communities
 - Spot checks to indicate that workers and communities are aware of health issues, the Code of Conduct and other Project rules
 - Conditions of roads and other areas prone to dust
 - Health and safety inductions
 - Record for the Personal Health Programme
 - Records for the Drug and Alcohol Testing Programme
 - Lost time incident statistics
 - Records related to education event to raise health and safety awareness in communities.

4.6.9 Training

All employees of MWMCL and Contractors to MWMCL shall be provided with basic training on health, safety and security. Additional specialist training shall be provided to key personnel involved in activities that are conducted off-site, e.g. along the transport route.

4.6.10 Performance Indicators

Measurement of the performance of community health, safety and security shall be as follows:

- Reporting of non-conformance with the relevant ECPs / Monitoring;
- Reporting of any incidents or complaints;
- Recording of in-kind support given to the community; and
- Reporting of training.

4.6.11 Auditing & Reporting

The MWMCL Community Relations Manager shall be responsible for record-keeping.

Regular reporting shall be undertaken via the monthly report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 4.6.2.

Table 4.6.2: Auditing & Reporting for Community Health, Safety & Security

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / Monitoring Plan	• Monthly by Community Relations Manager	• Quarterly by Environment Manager
Incidents or complaints	• Monthly by Community Relations Manager	• Quarterly by Environment Manager
Community in-kind support	• Monthly by Community Relations Manager	• Quarterly by Environment Manager
Training	• Monthly by Community Relations Manager	• Quarterly by Environment Manager

4.7 **SMP 07 – IN-MIGRATION PLAN**

4.7.1 Introduction

The Letpadaung In-Migration Management Plan is designed to avoid or minimise potential impacts associated with in-migration to the Salingyi Township that may occur as a result of the Letpadaung Project. Sustainable local and regional economic development is important to the Project, and the MWMCL has therefore developed specific measures to:

- Minimise and manage in-migration;
- Ensure the sustainable growth and development of settlements within Salingyi Township and the wider Sagaing Division;
- Avoid, minimise or mitigate potential negative economic or social impacts which might result from Project-induced population increase; and
- Optimise opportunities for future economic development presented by the mine.

The Project will lead to population increase due to the arrival of not only a substantial work force but also a potentially large number of job-seekers and providers of goods and services. The Project's distance from Mandalay, Monywa and larger population centres as well as accessibility to the area by road or river transport is likely to encourage in-migration, as it does in more populous countries where in-migration multipliers can be as high as 3 or 4 (for every worker, 3 to 4 other people migrate into the area). As the operational workforce is established within the Salingyi Township and economic benefits become evident in Monywa and surrounding areas, in-migration is likely to further increase after construction is completed, as potential long-term employment opportunities become apparent.

All the Project components are located within Salingyi Township, an administrative sub-division of Sagaing Division. Salingyi town centre (the soum capital) is adjacent to the Project.

During the construction phase (2013 - 2015), all Project components, including the mine, mine infrastructure and corridors, water supply pipeline, heap leach pads and SX/EW plant are being built using a Myanmar and international workforce peaking at 2,000. Personnel are housed in a combination of purpose-built accommodation camps within the Project area. During operations the Project anticipates a steady workforce of approximately 1,500 people, and at least 90% will be Myanmar nationals by Year 5 of production.

The long-term accommodation strategy for the Project proposes to use accommodation developed for construction with operational Project personnel increasingly being housed with their families in the Salingyi Township, after the end of the construction period, as the proportion of local national employees increases complemented by a range of Fly-In-fly-Out (FIFO) and Bus-In-Bus-Out (BIBO) commuting arrangements. The Project employee housing model is centred on Salingyi Township which will develop as both an employment and service centre for the Project. The details of the strategy for employee housing and local business development would reflect those of the current S&K operation. Options which support the development of the Salingyi Township and ability for workers to live with their families (a major factor in relation to retention and sustainability of the workforce) are now being considered. The Township comprises a number of dispersed villages with extremely limited infrastructure and a relatively small population in relation to the Project's direct and indirect workforce demands.

Based on studies undertaken by the World Bank and others, in-migration may see between 500 - 1000 persons settle, at least temporarily, in the vicinity of the Project during construction. Additional influx is likely to be induced during operations, depending on the employment, procurement and enterprise development models adopted. Proactive measures may be required by regional and local Government and MWMCL to ensure the Salingyi Township has sufficient capacity in its water supply, sewerage, electricity, solid waste management and other municipal and social services such as health and education services to meet any significantly expanded population within the Township. There is also potential for influx to other areas including Pakokku, which is likely to become a service centre for Project transport requirements during the dry season, along with centres on the principal transport routes used by the Project.

MWMCL recognises that it will be necessary to collaborate closely with both National Government and local and regional communities, and to support the local Township authority to understand their responsibilities and the challenges associated with population in-migration. The Project will change the social, economic and environmental setting of what is currently a largely rural area. The Project is committed to define and develop measures to manage in-migration by:

- Working closely with the regional development authorities to prepare a sub-regional plan for Salingyi Township;
- Assisting with capacity-building for government organisations to develop and budget for appropriate town planning, infrastructure and service provisions in the Sagaing Division;

- Maximising local content in employment and procurement practices, and support regional economic development;
- Helping to monitor Project-related in-migration; and
- Investing in municipal infrastructure and service provision in partnership with government, non-government agencies and private sector partners.

This In-migration Management Plan contains the methods that are to be used by MWMCL to avoid and minimise, to the extent possible, in-migration of speculative job seekers, and to mitigate associated impacts. It will endeavour to ensure that in-migration occurs in an orderly and sustainable manner, prevents or minimises adverse effects including health, safety and security risks, and pressure on natural resources and local environments, and provides monitoring plans to assess potential effects during construction and operation. It also provides an outline of proposed mitigation measures and monitoring plans for determining the effectiveness of mitigation.

4.7.2 Objectives

The objectives of this In-migration Management Plan are to design and implement a combination of approaches and programmes to:

- Prevent or minimise speculative job seekers and those seeking to take advantage of Project related economic opportunities;
- Provide capacity building for local government and communities to help them cope with Project induced in-migration; and
- Provide investments in local and regional planning, infrastructure and service development in impacted communities to provide quality of life benefits to the existing and incoming population - to contribute to and facilitate government and community action but not for MWMCL to replace action by government and community.

4.7.3 Targets

Key targets used for the Project construction phase in-migration are as follows:

- All construction workers hired from locations other than Salingyi will be housed within the MWMCL Project Area with provision for up to 840 beds in total for construction personnel;
- The majority of construction phase influx will consist of single people, not migrant families - based on the observations of in-migration patterns on other projects of a similar nature;

- Construction phase in-migration numbers are expected to be in a direct correlation with the size of the construction workforce – the larger the workforce, the more sizeable the potential inflow of migrants;
- Fluctuation of the construction phase migration may be sensitive to mobilisation and demobilisation of workers on the site, i.e. in-migrant arrivals will increase during periods of recruitment and hiring, likely followed by out-migration during periods of down staffing and demobilisation;
- 10% of in-migrants arriving during the construction phase will probably settle in the area and will become permanent residents;
- Roads in the area of influence of the Project will undergo some incremental improvement during the construction period, but development of linkages of national trunk highway standard in the Project vicinity is not expected, e.g. there will not be an upgraded national highway linking the site with Mandalay or Pakokku; and
- The multipliers used to estimate the in-migrant population are assumed to capture all employees that may move into the Project area as part of off-site contractor and service groups, e.g. the vehicle and equipment servicing groups, specialty trades and other similar entities, within the construction period.

4.7.4 Roles and Responsibilities

The roles and responsibilities of various teams are shown in Table 4.7.1.

Table 4.7.1: Roles & Responsibilities – In-migration Management Plan

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Contractors Team	MWMCL CSD Team
Land acquisition process	R	C/A	I	C/A
Community relations	R	I	I	C/A
Code of conduct	R	R	R	C/A
Inter-departmental coordination	C/A	I	I	R
Local recruitment and workforce management	C/A	R	R	C/A
Local procurement	R	C/A	I	C/A
Implementation of CSD Plan	R	C/A	I	C/A
Develop a tracking system for incidents related to in-migration (or lack of)	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of the In-migration Management Plan shall rest with the MWMCL General Manager. Day-to-day responsibility for the implementation of this Management Plan shall be by the MWMCL Manager Operations who shall be responsible for ensuring that these policies, procedures and plans are integrated into the department's overall operations, plans and programmes. The in-migration management and mitigation actions set out in this Plan will be integrated into the construction process for all Project facilities, including the water supply pipeline, barge landing facilities on the Yama Stream and at Pakokku and also with other related initiatives, such as the CSD Plan and monitoring of influx across the Project Area.

Other stakeholders with specific responsibilities in managing the In-migration Management Plan include:

- The MWMCL Commercial Manager, who shall support the MWMCL Project Manager in ensuring that these procedures and requirements are implemented for all land acquisition processes;
- The Salingyi Township authorities who are responsible for coordination of, and support to, in-migration management in the region; and
- Contractors who shall be responsible for ensuring that these procedures and requirements labour management are implemented during the construction phase prior to land disturbance activities.

The MWMCL Manager Administration is responsible for managing community relations and social performance commensurate with achieving the Project social performance objectives through the allocation of appropriate resources and training, and by personnel involvement in encouraging awareness and personal accountability. The MWMCL Manager Safety and Environment will be accountable for ensuring effective coordination with other departments in the execution of this plan, and in aligning functions within the Project to support successful implementation of this plan.

The Manager Safety and Environment is responsible for the implementation of this Plan and will report on performance through the Manager Operations. The CSD Superintendent will be responsible for coordinating activities under the other CSD programmes and projects so as to support the In-migration Management Plan objectives and implementation. In achieving this outcome, the CSD Superintendent will be supported by:

- The Community Development Coordinator;
- The Local and Regional Planning and Infrastructure Programme Coordinator;
- The Community Health Safety and Security Programme Coordinator;
- The Local Business and Economic Development Programme Coordinator;
- The Cultural Heritage Programme Coordinator; and
- CSD specialists and support staff as necessary.

Many of the outputs and outcomes to be achieved through the In-migration Management Plan will be delivered through the core programmes of CSD as listed above. Resources required for plan implementation are defined in this plan, and in the supporting core programmes. However, the plan and supporting programmes will need to be both closely monitored (see below) and flexible, to be able to respond to changing conditions. Programme priorities, activities and budgets will need to be reviewed and revised on an annual basis to ensure effective implementation of this plan, and thus achievement of plan objectives.

4.7.5 Management Actions

The key actions that are to be adopted by MWMCL to reduce the potential risk of large scale in-migration include, but are not limited to, the following measures.

4.7.5.1 Local recruitment and workforce management

Hiring locally/regionally and developing local labour resources, to avoid the need to import large numbers of outside workers, is consistent with commitments made to families who land has been acquired for the project. Hiring over and above one (1) person per family (as committed) will further assist in the replacement of income lost through the loss of land and animal herds. This is balanced by local recruitment only from designated recruitment offices, with no site-gate hiring, and a policy to minimise additional hiring from within Salingyi Township to deter speculative migration.

MWMCL is committed to investing in long-term training, scholarship and apprenticeship programmes to ensure local workers have the knowledge and skills that the mine requires for its operations. Training will focus on areas such as construction trades,

mechanical trades, occupational health and safety, nursing, mill operation and secretarial skills. All recruitment and employment is undertaken in accordance with applicable Myanmar employment law

4.7.5.2 Local and regional planning and infrastructure programme

Several key programmes including the Cultural Heritage Plan (CHP) and the Community Health, Safety & Security Plan (CHSSP) are central to managing in-migration and providing quality of life benefits and equitable economic growth in the region. The focus of these programmes is on providing training and resources to Township and Division government agencies to help them better manage land use, protect natural resources, and provide basic public infrastructure, services and facilities to their communities. Capacity building will extend to strengthening revenue management and fiscal accountability of local government so that revenues streams are more effectively used to provide infrastructure and services where they are needed. Investments in regional and municipal infrastructure and service provision will form part of these programmes, where possible offset against government revenues from the mine.

4.7.5.3 Promotion of regional diversified growth strategies

MWMCL will promote development of alternative economic opportunities away from the mine so as to avoid the mine becoming the sole focus of economic development and attraction for in-migration. MWMCL is committed to implement a Local Business and Community Development Programme to encourage non-mining economic opportunities in the Project area and in the Sagaing Division.

4.7.5.4 Provision of water supply to Salingyi town centre

At Salingyi town centre, the community water supply is envisaged to move from individual and community wells towards a system which provides network services in central areas and water kiosks in less densely populated areas of villagers and individual houses. Water demand will increase as the population of the community grows and economic activity increases.

4.7.5.5 MWMCL procurement policies

MWMCL has developed its Procurement Policy and will seek to encourage the expansion of existing local production and service industries to meet the requirements of the Project with a view to assisting develop sustainable production and markets in the long-term.

4.7.5.6 Local economic support and development

MWMCL has a policy of optimising local content by identifying and developing local companies and making them competitive in a new business environment. The Social and Community Assistance and Development Plan includes activities designed to build capacity in this area. This is a corporate programme that aims to ensure that Myanmar registered businesses are given priority for procurement opportunities. A key objective will be to develop the local supplier community within the Salingyi Township and Sagaing Division and within Myanmar generally, thus facilitating these suppliers ability to participate effectively in competitive sourcing processes.

4.7.5.7 Access control programme

This is the set of measures adopted by MWMCL to control its activities and facilities and how they interact with the local population. These measures do not seek to prevent in-migration but to maintain a secure and safe site, and reduce the likelihood of fenceline communities in and around Project work sites.

To assist with achievement of this programme, MWMCL has established policies on health and safety, social responsibility, employment and a Code of Conduct to be observed by all direct and contract personnel of MWMCL.

4.7.5.8 Community health safety and security

MWMCL has developed a Community Health, Safety & Security Plan (CHSSP) that aims to address both the potential community health and safety impacts from the Project, as well as improve the overall health and development of local communities. This is described in *SMP06 – Community Health, Safety and Security*.

4.7.5.9 Community education and mobilisation

Communities can be made aware of the benefits and potential adverse impacts of in-migration and assisted to make decisions about the level they are willing to accept. Communities and the individuals within them can frequently choose to make available or withhold land from in-migrants thus influencing the extent of settlement that occurs in a given location.

4.7.5.10 Managing community and government expectations

Managing community expectations is a key part of the Project community relations process. MWMCL recognises the need to implement a carefully conceived communications strategy, so that the Company can manage community expectations. Communication with the community is directed through the village representatives on the MWMCL Community and Social Development team.

4.7.6 Control Procedures

Unemployment of women and men residents of Salingyi Township will be monitored to ensure does not increase during the construction phase due to in-migration (that is, in-migration does not outstrip employment opportunities).

The Code of Conduct controls workers' behaviour in and around the camp and sets clear rules in the camp regarding outside visitors. All MWMCL staff and contractor's personnel are required to abide by the Code.

The majority of camps are located within the Mine Licence Area, and other satellite camps which will be used temporarily are outside the boundaries of , and away from, villages, and culturally or ecologically sensitive sites. On completion of construction, any camps no longer required for the operations phase will be removed and the camp area rehabilitated.

The Mine Licence Area will be fully fenced by the start of construction and all of these facilities will have controlled access. There are three access gates into the Project site and these are controlled by security personnel and an entry management system. Families are not permitted at any work sites.

MWMCL will work closely with the Salingyi Township authority to discourage the establishment and growth of informal "service" centres and fence line communities near camps or at any other work sites. MWMCL will report any evidence of informal settlement to the Township authorities.

4.7.7 Monitoring and Inspection

Prediction of influx is an imprecise science and can be affected by many factors. Monitoring of influx numbers and of the impact of influx mitigation measures taken by MWMCL and others will therefore be regularly carried out. Influx related monitoring procedures shall be as follows:

- The CSD Superintendent shall report on a monthly basis to the General Manager on: (i) the occurrence of in-migration in the mine impacted communities; (ii) implementation progress of this In-migration Management Plan; and (iii) observed impacts of plan implementation. The outcome from the Monitoring Plan will be used to refine the plan itself as it rolls forward. Some of the parameters that will be incorporated into the Monitoring Programme include:
 - Employment composition (Township, Division, national, expatriates)
 - Employment from each hire point
 - New registrations in each village in the review period

- Total number of in-migrants within each village and locations of resettlement
 - Township unemployment levels
 - Orderliness of settlement (based on a controlled plan developed in accordance with the revised land-use and master plans)
 - Access to basic infrastructure (water, heating and electrical power)
 - Effective management of waste water and solid waste
 - Fire safety
 - Evidence of conflict or tensions with or within host communities
 - Cost of living (perhaps through pricing of a standard basket of staple goods, rental prices, fuel prices, replicate surveys of household income & expenditure)
 - Cases of hardship amongst vulnerable households
 - STDs, communicable disease reporting
 - Evidence of social ills – problems with alcohol, drugs, gambling, prostitution
 - Crimes, incidents, convictions and evictions recorded by the local police
 - Any grievances related to influx.
- Some of these indicators are already, or will be, captured by MWMCL (through MEHL), whilst others will need to be obtained from statistics and records kept by the Township and Division administrations;
 - Each programme implemented by MWMCL shall have its own specific monitoring and evaluation procedures; and
 - Local and regional communities and authorities shall participate in monitoring progress of each of the mitigation measures implemented through this Plan.

The MWMCL CSD Superintendent shall be responsible for record-keeping related to this Plan.

Regular reporting shall be undertaken via the monthly CSD Department Report that shall be prepared and submitted to the General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

The monitoring carried out by MWMCL will be supplemented through periodic monitoring by: (i) the Sagaing Division; and (ii) the Salingyi Township. MWMCL will prepare summary In-migration monitoring reports for submission to both the Division and Township authorities. The Division will carry out its own periodic review of in-migration status. The Salingyi Township will assist in coordinating influx management and mitigation between Government, MWMCL and other investors in the region.

4.7.8 Performance Indicators

The following indicators shall be used for the In-migration Management Plan:

- Increases in number of residents at village level;
- Increase in number of residences at village level;
- % registered unemployed to working age population of the Salingyi Township (disaggregated by gender);
- Total number of school children registered;
- Average school class size;
- Number of communicable diseases per 1000 inhabitants does not increase;
- Number of people from the 26 affected villages and Salingyi Township employed as unskilled workers by MWMCL (also disaggregated by gender) with increases compared to the May 2013 level;
- Number of people from the 26 affected villages and Salingyi Township employed as skilled workers by MWMCL (also disaggregated by gender) with increases compared to the May 2013 level;
- Number of people from the 26 affected villages and Salingyi Township employed as skilled workers by MWMCL suppliers under the Procurement Policy (also disaggregated by gender) with increases compared to the May 2013 level;
- Number of registered serious crimes in Salingyi Township per 1000 inhabitants does not increase;
- Value of Myanmar goods and services as proportion of quarterly purchasing by MWMCL (disaggregated by Yangon, Sagaing and Salingyi) increases in line with annual targets set by the Procurement Policy;
- Number of trainees commenced in the training college, their point of hire and their registered place of residence (disaggregated by gender);
- Number of serious incidents reported by MWMCL;
- 10% of serious incident reports completed by MWMCL; and

- Number of external fence-line structures does not increase from a May 2013 baseline.

4.7.9 Auditing and Reporting

Auditing and reporting of performance with respect to compliance with the CEMP shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule presented in Table 4.7.2.

Table 4.7.2: Auditing & Reporting for In-Migration management Plan (IMP)

Performance Indicator	Reporting Schedule	Auditing Schedule
Increase in residents	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Number of unemployed	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Number of schoolchildren	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Class sizes	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Number of trainees	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Communicable diseases	Monthly by medical Superintendent	Quarterly by Community Relations Manager
Number of people employed	Monthly by HR Manager	Quarterly by Manager Administration
Value of local purchases of goods and services	Monthly by Procurement Superintendent	Quarterly by Manager Administration
Number of serious crimes	Monthly by MEHL	Quarterly by MEHL
Number of serious incidents/reports completed	Monthly by Safety Superintendent	Quarterly by Manager Operations
Number of fence-line structures	Monthly by MEHL	Quarterly by MEHL
Non-conformance with IMP	Monthly by CSD Superintendent	Quarterly by Community Relations Manager
Non-conformance with Monitoring and Inspection Plan	Monthly by CSD Superintendent	Quarterly by Community Relations Manager

4.8 **SMP 08 – ACCOMMODATION PLAN**

4.8.1 Introduction

The Accommodation Management Plan is designed to ensure that appropriate standards are adopted for the accommodation provided by the Letpadaung Project, for employees and contractors of MWMCL.

The plan outlines internationally accepted guidelines for workers accommodation at the Project and provides a Code of Conduct for occupants of the Project provided accommodation. Ensuring good standards in living facilities is important in order to avoid safety hazards and to protect workers from diseases and/or illness resulting from humidity, bad/stagnant water (or lack of water), cold, spread of fungus, proliferation of insects or rodents, as well as to maintain a good level of morale.

The location of the facilities is important to prevent exposure to wind, fire, flood and other natural hazards. It is also important that workers' accommodation is unaffected by the environmental or operational impacts of the worksite (for example noise, emissions or dust) but is sufficiently close that workers do not have to spend undue amounts of time travelling from their accommodation to the worksite.

4.8.2 Objectives

The objectives of this Management Plan are to:

- Establish standards for accommodation to be provided by the Project for the construction phase of the Letpadaung Project;
- Establish a Code of Conduct to be adopted for occupants of the Project provided accommodation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.8.3 Targets

The targets of this Management Plan are to:

- Ensure that accommodation provided by the Project is suitable for habitation by project personnel;
- Ensure a harmonious atmosphere in the Project construction camps; and
- Implement related training and accommodation management procedures.

4.8.4 Roles & Responsibilities

The Project team is ultimately responsible for the following key tasks, roles and actions relating to hazardous waste as outlined in the RACI in Table 4.8.1.

Table 4.8.1: Roles & Responsibilities - Accommodation

Activity Description	MWMCL Senior Management Team	MWMCL HR	MWMCL: Project Manager	Contractors Team	MWMCL Environment / Community Team
Develop an Accommodation Management Plan	I	R	C/A	C/A	C/A
Introduce accommodation policy and Code of Conduct to the workforce	I	R	C/A	C/A	C/A
Monitor accommodation management	I	R	C/A	C/A	C/A
Record and report utilisation of accommodation plus related training of personnel	I	R	C/A	I	C/A
Develop a tracking system for incidents related to accommodation	I	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

4.8.5 Management Actions

Actions expected from management are as follows:

1. Accommodation provided for Project personnel during the construction phase is suitable for habitation.
2. Accommodation provided is managed by appropriately trained people to ensure hygiene, housekeeping and maintenance standards are upheld.
3. Ensure sufficient number of appropriately trained camp staff for cooking, cleaning and maintenance. Such staff should be recruited from the local communities.
4. Adequate rooms, facilities and materials for training will be provided to support the construction phase.

5. Non-compliance with accommodation codes of conduct and training policies will be reported to the HR Manager within 24 hours.

4.8.6 Approach to Accommodation

During the construction phase of the Letpadaung Project, workers will live in purpose-built camp accommodation on-site.

Construction camps will be as follows:

- Main Construction Camp (210 beds); and
- Temporary Construction Camp (840 beds).

Letpadaung camps are managed in accordance with applicable Myanmar standards. International guidelines are provided jointly by the International Finance Corporation (IFC) and the European Bank for Reconstruction and Development (EBRD) in their guidance note, *“Workers’ Accommodation: Processes and Standards”*. The key elements of the standards are as follows:

- Climatic aspects: given the range of average annual temperatures and constant high humidity that may occur at the Project site, accommodation is provided with heating in winter and ventilation or air conditioning in summer so that the inside temperature is constantly kept around 20°C;
- Drinking water is provided in sufficient quantities at all times, either from regular taps if drinking water quality can be ensured or in bottles;
- Pest extermination, vector control and disinfection are carried out throughout the living facilities as required and pests and vectors are monitored on a regular basis;
- The following standards apply for accommodation and sanitary facilities:
 - Not more than eight workers accommodated in the same room, with separate beds for each worker, partitions to ensure privacy and a minimum distance of one metre between beds
 - Not more than one worker per five square metre (surface) and one worker per ten cubic metre (volume)
 - 100 litres of water per worker per day are available on average for personal hygiene purposes. This water is drinking water quality unless explicitly marked otherwise
 - One hand wash sink per ten persons
 - One toilet per ten persons
 - One urinal per fifteen persons

- One shower per ten persons
 - Regular cleaning of sanitary facilities and regular washing of bed linen
 - Separate storage provided for work boots and Personal Protective Equipment (PPE)
- Gender: separate sleeping areas and separate sanitary facilities are provided for men and women;
- Comfort, culture and recreation:
 - Facilities for the storage of workers' personal belongings are provided
 - Facilities are provided for observance of religion as defined in consultation with workers' representatives
 - Television and internet are provided in dedicated facilities allowing inexpensive phone calls.
- Safety:
 - Both natural and artificial lighting are provided and maintained in living facilities. Emergency lighting is provided
 - Extinguishers are provided and fire emergency procedures are in place, with trained Fire Wardens in each accommodation block.

4.8.7 Control Procedures

MWMCL has established a Camp Policy and Code of Behaviour for all personnel to maintain good employee and camp relations, and to guide all staff with expectations of professional behaviour at the Project.

Employees and contractors at the camp will be provided with a copy of the Policy and code prior to residing at the camp. Copies of the Camp Policy and Code of Behaviour will also be made available at the site. The Camp Policy relates principally to on-site behaviour and also to interaction with the local communities. A copy of the Policy is attached as Annex A of SMP-08 and an outline of the core elements of it and Code of Behaviour are as follows:

Camp Policy and Code of Behaviour

The Camp Policy and Code of Behaviour includes details on the following:

- Application of the Camp Policy and Code of Behaviour;
- Code of Behaviour:
 - Acceptable behavioural standards

- Unacceptable behaviour resulting in immediate termination of employment and removal from the site
 - Unacceptable behaviour resulting in disciplinary action
- Alcohol consumption:
 - Alcohol use at the workplace;
 - Alcohol consumption at designated areas; and
 - Alcohol search at camp entrances.
- Accommodation:
 - Check in and Check out;
 - Rest and sleep;
 - Residential supplies and services;
 - Safety and security of residents; and
 - Complaints and suggestions.
- Catering and dining;
- Health and hygiene; and
- Fire fighting equipment.

4.8.8 Monitoring & Inspection

It is important to monitor activities at the accommodation camp, to ensure that workers are accommodated in acceptable and pleasant surroundings and therefore safeguarding employee health and safety, and the continued success of the Letpadaung Project. Accommodation monitoring procedures shall be as follows:

- The Camp Manager shall report on a monthly basis to the MWMCL Human Resources Manager on the implementation of this Management Plan including:
 - Accommodation manning levels
 - Accommodation staff training carried out and planned
 - Workforce conduct within the Project provided accommodation camp;
 - Any instances of workforce non-compliance with the camp Code of Conduct;
 - Health, safety and security arrangements plus any accommodation related incidents
 - Cleaning and maintenance schedule
 - Accommodation maintenance carried out and planned
 - Pest control carried out and planned

- MWMCL Human Resources Manager shall inspect the condition of the accommodation camp on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - General housekeeping within the accommodation site
 - Spot checks of ablution and laundry facilities
 - Spot checks of food preparation areas
 - Spot checks of recreational facilities
 - Records for accommodation numbers, maintenance and training;
 - Health and safety plus camp Code of Conduct inductions
 - Accommodation related incidents.

4.8.9 Training

The Project accommodation camp will be required to be staffed with appropriately trained personnel to ensure cleanliness, hygiene, housekeeping and maintenance standards are met. Basic training should be provided in health and safety, food hygiene and fire fighting should be provided to all camp staff.

The accommodation should be managed by an appropriately trained and experienced manager.

4.8.10 Performance Indicators

Measurement of the performance of accommodation and relevant management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the Monitoring and Inspection Plan;
- Complaints and suggestions received from camp residents;
- Presence of pests and vermin sighted in the accommodation and extermination activities;
- Training conducted/given to staff and planned; and
- Cases of unacceptable behaviour and disciplinary actions taken.

4.8.11 Auditing & Reporting

The MWMCL Human Resources Manager shall be responsible for record-keeping.

Regular reporting shall be undertaken via the monthly report that shall be prepared and submitted to the MWMCL General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;

- Planned activities during the next reporting period; and
- Any other issues of concern.

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Human Resources Department in accordance with the schedule in Table 4.8.2.

Table 4.8.2: Auditing & Reporting for Accommodation

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs / Monitoring Plan	• Monthly by Human Resources Manager	• Quarterly by Community Relations Manager
Incidents or Complaints from Camp Residents	• Monthly by Human Resources Manager	• Quarterly by Community Relations Manager
Presence of pests and vermin in accommodation	• Monthly by Human Resources Manager	• Quarterly by Community Relations Manager
Training	• Monthly by Human Resources Manager	• Quarterly by Community Relations Manager

Annexure A

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Camp Policy and Code of Behaviour



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1. Application of the Camp Policy and Code of Behaviour

- 1.1 This Policy and Code of Behaviour is applicable to any and all individuals residing, visiting or accommodated at all MWMCL site camp facilities.
- 1.2 Failure to comply with the Camp Policy and Code of Behaviour may result in disciplinary actions and/or removal from the camp and site.
- 1.3 Intended residents and guests will be expected to sign an agreement to abide by the Camp Policy and Code of Behaviour prior to being given an accommodation.
- 1.4 These policies and codes of behaviour will be a condition of an employment agreement, contracts and understandings governing the work and service of residents, and receipt, acknowledgement, and agreement to abide by this Camp Policy and Code of Behaviour whichever applies to the given circumstance.
- 1.5 For the purpose of this Camp Policy and Code of Behaviour non-work areas and premises such as residents sleeping area, places designated for catering, and social gathering shall be considered as work related premises and any offences and misconducts that take place in the above shall result in disciplinary actions including the termination of employment.

2. Overview of Camp Policy and Code of Behaviour

- 2.1 Residents or guests entering or leaving the camp facility will check in and check out with Camp Administration.
- 2.2 Pets/animals of any kind are not allowed to be kept on site, or encouraged to remain in the camp environment.
- 2.3 Smoking is not allowed in any premises and buildings. Smoking is allowed only in designated areas identified in the camps.
- 2.4 Specific policies on the consumption of alcohol are adopted or will be adopted for various Project sites and residential camps and all guests and residents are required to abide by these policies.
- 2.5 Rubbish bins are located at convenient positions throughout the camp area and should be used for disposal of general waste. Recycling bins are marked and posted throughout the camp and are to be used as instructed.
- 2.6 Designated speed limits and road rules for all roads and areas within MWMCL Project sites and residential camps are to be strictly observed.

3. Code of Behaviour

All residents and guests will be expected to observe levels and standards of behaviour consistent with mutual and harmonious co-existence with other residents and employees.

3.1 Acceptable Behavioural Standards

A good guide to acceptable behaviour in general is to treat and behave towards others as you would like to be treated yourself. Acceptable behavioural standards include, but not limited to, the following:

- Polite and courteous personal interaction with fellow personnel and residents
- Respect for others personal space and the right to uninterrupted rest free from unnecessary disturbance
- Respect for others taste in food, drink and clothing
- Respect for others culture and religion
- Ensure personal and collective hygiene
- Wear appropriate tidy and modest attire in camp public facilities.
-

3.2 Unacceptable Behaviour Resulting in Immediate Termination of Employment and Removal from the Site

Occurrence of the following will result in immediate termination of employment for MWMCL personnel and removal from the site for other individuals residing or accommodated at any MWMCL Project site. In case contractor personnel are involved MWMCL will notify the contractor of the incident and the contractor shall remove its personnel from the camp or site and replace him/her by a person acceptable to perform the service as required by contract and the Camp Policy and Code of Behaviour.

- 3.2.1 Violent behaviour, individual or group, of any kind toward any person or group.
- 3.2.2 Horseplay and practical joke that may result in injury or property damage.
- 3.2.3 Malicious damage of company property. This shall also include an intentional damage to the environment.
- 3.2.4 Threatening, aggressive or menacing action whether individual or group against any person or group.
- 3.2.5 All residents and guests will comply with Myanmar laws and regulations which may prohibit gambling, distribution or consumption of narcotics, unauthorised possession of any type of weapon, explosive or dangerous chemical or biological substances or illegal activities. Any of these activities found will be reported to the Police Department for further action.
- 3.2.6 Unauthorised meetings, rallies or uncontrolled drunkenness or alcohol/drug abuse that affect the site safety and security, peaceful and secure residence, camp culture and behaviour and personal rights and freedoms.

- 3.2.7 Intoxication to any degree at any work place by any personnel. In case of a grounded suspicion that an employee/contractor personnel is intoxicated he/she will be required to undergo alcohol test to be conducted by safety personnel subject to notice and notification of any co-worker, employee, supervisor, or manager.
- 3.2.8 Repeated attempt to import alcohol into a camp or possession of unauthorised quantities of alcohol.
- 3.2.9 Interfering with any type of fire-fighting or emergency equipment, including misuse of fire extinguishers, if the circumstances do not require such use.
- 3.2.10 Blatant, repetitive or unlawful discrimination and harassment either:
- Religious
 - Cultural
 - Racial
 - Sexual

MWMCL shall suspend the employment of the concerned personnel until the competent authority issues an official ruling on the matter.

3.3 Unacceptable Behaviour Resulting in Disciplinary Action

In addition to the cases specified in the Employment Rules, the following shall result in disciplinary action for MWMCL employees and warning and/or removal from the site will be implemented for the offenders.

- 3.3.1 Parties and disturbances that interfere with camp operation, personal sanctuary, or the wellbeing of any personnel or residents.
- 3.3.2 Defamatory or derogatory behaviour toward any personnel or resident including the generation of rumour and innuendo.
- 3.3.3 Disrespect for others personal space, sanctuary and the right to have undisturbed rest.
- 3.3.4 Unhygienic practices or behaviour including use of non-designated ablutions facility for toilet purposes and spitting which is a transmission media for tuberculosis (TB).
- The use of water or other containers for the storage of urine is strictly prohibited.
- 3.3.5 Non-compliance with flora and fauna related provisions of MWMCL Environmental Policy and Procedure in the camp areas.
- 3.3.6 Physical, emotional or mental intimidation of any person or group by an individual or group.
- 3.3.7 Breach of catering and dining procedures as specified in the Camp Policy and Code of Behaviour or other relevant procedures.

- 3.3.8 An attempt to import alcohol to the camp or camp facility despite the awareness of the Camp Policy and Code of Behaviour.
- 3.3.9 Discrimination and harassment either:
- Religious.
 - Cultural.
 - Racial.
 - Sexual.

4. Alcohol Consumption

Alcohol abuse and uncontrolled drunkenness shall not be supported or permitted.

4.1 Alcohol Use at the Workplace

- 4.1.1 Intoxication to any degree at any workplace by any MWMCL personnel will result in immediate termination of employment. In the case of Contractor personnel, MWMCL will notify to the contractor of the incident and the contractor shall remove the personnel from the site.
- 4.1.2 In case of a grounded suspicion that an employee/contractor worker is intoxicated he/she will be required to undergo an alcohol test to be conducted by safety personnel subject to notice and notification of any co-worker, employee, supervisor or manager.

4.2 Alcohol Consumption at Designated Areas

- 4.2.1 Sale of alcohol will be controlled to allow recreational consumption at the site.
- 4.2.2 Designated areas for alcohol consumption shall be established in non-working areas of the camp where residents and guests are permitted to consume alcohol in a responsible manner. Such designated areas may include MWMCL Senior Management hosting areas and shall be clearly signposted.
- 4.2.3 The wet canteen facility shall be closed for 30 minutes during dining room opening times to ensure that all residents and guests have the opportunity to access adequate nourishment.
- 4.2.4 Only approved alcohol supplies will be provided at the designated areas. This is limited to beer and wine.
- 4.2.5 All alcoholic drinks served will be opened at the location of sale and no more than six drinks will be sold at any one time to any one person.

Open containers are not allowed to be taken from the designated/approved areas.

- 4.2.6 The Camp Administration reserve the right to refuse service to any person that is drunk and disorderly.
- 4.2.7 No alcohol will be provided on credit.
- 4.2.8 Alcohol consumption on special occasions such as leave days for public holidays, disco nights, concerts and other events authorised and/or arranged by Camp Administration shall be as advertised prior to the event. All such events will be approved by Site Management.

4.3 Alcohol Search at Camp Entrances

- 4.3.1 Luggage/bag search shall be conducted at the site entrance including on buses, by a designated Safety and Security Officer. Alcohol, contraband and stolen materials of any kind will be reported to Camp Administration.
- 4.3.2 The contracted security services personnel shall have the right to inspect bags/vehicles entering/leaving the site as directed by the HSE Manager.
- 4.3.3 Search results and confiscation will be recorded by safety and security personnel and the signature of the persons from whom the alcohol is confiscated shall be secured on the relevant records.
- 4.3.4 Any alcohol found during the search shall be confiscated and reported to the relevant supervisors, managers and organizations. Such confiscation shall not preclude the enforcement of appropriate measures and actions to a concerned individual.
- 4.3.5 Alcohol awareness training, information and educational programs shall be introduced through the MWMCL HSE Department.

5. Accommodation

5.1 Check in and Check out

- 5.1.1 Rooms and accommodations will be allocated by Camp Administration.
- 5.1.2 New arrivals and other personnel who have been offsite for ninety days continuously will undergo a safety induction.
- 5.1.3 All arriving residents/guests must check in with the Camp Administration. They will be expected to sign an agreement to abide by the Camp Policy and Code of Behaviour and required to fill in a registration form and are issued with keys to accommodation.
- 5.1.4 The Registration Form lists items assigned to a resident's care. Residents will be advised to check and make sure what is posted is the same as what is actually counted. The form is to be signed and returned within 24 hours of check in and any discrepancies are to be reported. Non-return of the Registration Form within the nominated time acknowledges acceptance of assigned items.

- 5.1.5 Visitors are to be met by their Site Sponsor at the Camp Administration after check in.
- 5.1.6 Personnel leaving the site need to be identified on a security log/manifest and will be logged at their point of exit.
- 5.1.7 Residents departing site should check out with the Camp Administration and will sign out leaving all assigned items in good condition, normal wear and tear considered. All guests are responsible for their accommodation contents and must take proper care of the camp facilities and equipment. Deliberate and negligent conduct which result damage to company property will result in disciplinary action and the recovery of the assessed costs from the individual to the satisfaction of the company (Lost or stolen items shall be deducted from the resident's pay check or from employer's/contractor's invoice).
- 5.1.8 Regular employees on the Project who will be absent from the camp on recreational or short term leave, will be required to tidy their room, pack personal effects, lock the door and leave keys with the Camp Administration. The Project will not be responsible for any loss or damage and provides no insurance cover for personnel effects.

No resident has the right to remove any furniture or fixtures to or from his/her room.

5.2 Rest and Sleep

All residents or guests are expected to maintain an environment that is respectful of their fellow personnel and residents. The following points outline general guidelines for the expected behaviour of all personnel and residents:

- 5.2.1 Respect the right for other to sleep without disturbance. Maintain quiet at all times in the areas where personnel sleep and shift work is common.
- 5.2.2 Do not bang doors or yell in sleeping areas at any time.
- 5.2.3 Do not have televisions or music loud enough to disturb fellow personnel or residents.
- 5.2.4 Do not gather in sleeping areas for any other purpose than to sleep. Entertainment and social meetings shall be held in designated areas.
- 5.2.5 Respect the right of others to have private undisturbed time.
- 5.2.6 Only authorised personnel are permitted to live or stay overnight in MWMCL Camps. Visitors and non-MWMCL personnel shall be approved by the Camp Administration to stay in or visit the camp facilities.
- 5.2.7 Quiet hours will be observed 24 hours per day in the vicinity of quarters where persons are resting and or sleeping. Camp residents and guests are to ensure that

any loud talking, parties and sports are below the noise level that can be heard in the adjoining rooms, or be of annoyance to other camp residents.

5.3 Residential Supplies and Services

- 5.3.1 Residents and guests will be allocated for their rooms, in good clean condition, the following: towels, a bed, mattress cover, pillow, pillowslip, a pair of sheets and a blanket. The room occupant will sign for these items when the accommodation is allocated and will be returned in good condition [normal wear and tear considered] on termination.
- 5.3.2 Bed linen and towels will be changed by staff. Blankets and the mattress cover will be cleaned as scheduled by the Camp Administration. Each room occupant is responsible for keeping his allocated quarters clean between regular services. Cleaning equipment is available for this purpose on request from the camp office. To assist room cleaning camp residents are asked to keep loose items and clothing stowed in a tidy manner.
- 5.3.3 Ablution blocks and public areas will be cleaned daily by the camp cleaning staff. Shower, laundry and toilet facilities are to be left in a clean and sanitary condition after use by camp occupants. Urinating in the camp area outside these facilities shall result in disciplinary actions.

5.4 Safety and Security of Residents

- 5.4.1 Keys where applicable will be provided for all rooms and accommodation. If keys are lost, the loss is to be immediately reported to the camp office where a new key will be issued.
- 5.4.2 Personal belongings are not insured against loss or damage by fire or theft. It is not advisable to leave valuables or money in rooms.
- 5.4.3 Residents and guests are responsible for their rooms and the contents and must take proper care of the building, grounds and equipment – deliberate or negligent conduct which results in damage to company property will result in disciplinary action.
- 5.4.4 Residents will be required to notify Camp Administration at any time if a maintenance problem occurs with accommodation and related common areas. If the problem represents an immediate safety or security hazard, the area must be barricaded or guarded and Camp Administration contracted immediately. (Maintenance forms are provided on check in to the camp or are available from Camp Administration. Please fill in the form and deliver to the Camp Administration office.)
- 5.4.5 Electrical equipment or furniture shall not be added or installed without prior approval by Camp Administration. Privately owned electrical equipment shall meet the required electrical regulations.

The installation and/or use of private electrical appliances including hair dryers, portable heaters, TVs, radios or music equipment shall be subject to Camp Administration approval.

5.4.6 Alterations to rooms or furniture shall only be permitted with Camp Administration approval.

5.4.7 Vehicles are to be parked in the designated parking areas only.

5.5 Complaints and Suggestions

5.5.1 All suggestions and or complaints regarding camp services are to be taken to the Camp Administration.

5.5.2 A suggestion box will be established in the camp dining facility to enable guests and residents to list out any complaints and suggestions for improvement of services or encouragement to catering staff.

Under no circumstances shall guests or residents approach or complain to catering staff directly.

6. Recreation Facilities

6.1 The MWMCL Camp Administration shall be responsible for the camp recreational facilities and will establish the rules in a particular camp.

Recreation facilities and equipment are available for residents and approved visitors during appropriate hours.

Residents and guests are asked to properly use the facilities and report any damage to the Camp Administration.

6.2 Activities by any person or group that have the potential to disrupt normal camp operations must be authorised by the Camp Administration.

Special events such as disco night, karaoke night, musical groups and plays shall be arranged by the Camp Administration. Individuals may arrange entertainment events with the approval of the Camp Administration.

6.3 Social activities must be considerate of the larger resident and personnel population, and activities that impact on the ability of other personnel and residents to sleep, rest or relax shall not be undertaken without the support of all potentially affected people and authorisation of the Camp Administration.

7. Catering and Dining

7.1 To assist in the smooth running of the mess and kitchen, residents are encouraged to assist and support the caterer's employees to carry out their duties.

- 7.2 All personnel using the dining hall shall be reasonably attired in clean tidy modest dress.
- 7.3 Dining hours will be strictly observed and meals will not be served outside these hours, unless specifically authorized for particular reasons such as emergency overtime or other extenuating circumstances.
- 7.4 Meals or any perishable foodstuffs shall not be stored in residents living quarters that do not have authorised cooking and/or storage facilities. Fruit and snack type food are allowed.
- 7.5 No item of crockery, cutlery or other mess equipment is to be removed from the dining hall.
- 7.6 Crib type lunches will be provided on work days at various locations on and off the Project site. Employees will have a choice from nominated items.
- 7.7 The catering contractor will serve standard size meals, allowing for attractive presentation and general food tastes.
- 7.8 Use of the dining hall is restricted to camp residents, guests and approved visitors. Approved non-MWMCL persons, visiting residents or guests will be charged for each meal consumed in dining hall facilities.
- 7.9 At MWMCL camps with multiple locations, personnel will be assigned to a particular kitchen. Each person must request approval from Camp Administration to change.

8. Health and Hygiene

- 8.1 All camp residents, guests or visitors are expected to maintain a high standard of personal and collective hygiene as a part of respectful interaction with fellow residents.

Residents, guests or visitors must practice proper hygiene and be especially attentive to leaving the common areas clean for others.
- 8.2 Facilities including ablutions will be maintained for personal hygiene such that all personnel can apply high standards of hygiene in their daily routine.
- 8.3 Residents, guests or visitors should inform Camp Administration if they become aware of unhygienic conditions that are not consistent with this Policy.

Suspected instances of infectious disease whether real or suspected are to be reported immediately to Camp Administration.
- 8.4 The close proximity of residents, guests or visitors makes it essential to ensure that public areas are treated with respect and no unhygienic practices [e.g. spitting] are tolerated or condoned by any resident, guest or visitor.

9. Safety and Security at Other Camp Locations

It is important that levels of security are maintained at all MWMCL camps such that residents and guests have personal safety, freedom of movement within the camp environment and authorised areas without concern.

- 9.1 No unauthorized persons are allowed into the MWMCL camp facility.
- 9.2 Loss or damage of personal or company property shall be reported to Camp Administration immediately upon discovery.
- 9.3 Buildings, offices, rooms and their equipment and contents that are company property, shall be subject to periodic inspection. The company reserves the right to inspect the accommodations as required.
- 9.4 Dangerous and flammable materials are not allowed to be stored in any accommodation/camp facility, unless designated and controlled by Camp Administration.
- 9.5 Firearms or any type of weapons, including traditional weapons, are not allowed in the rooms. If in doubt residents shall contact Camp Administration for clarification.
- 9.6 Site Security should always be used to dispel groups or individuals causing disturbance and restore a peaceful and harmonious camp environment. Disruptions and disturbances should be referred to the Site Security immediately. No resident, guest or visitor either individually or collectively should approach individuals or groups that are disrupting the peace of the camp, are under the influence of alcohol or are in any way aggressive.
- 9.7 Structure, location, duty hours, and duty phones of Camp Administration shall be indicated at each MWMCL camp location for those to be governed by this Camp Policy and Code of Behaviour.

10. Fire Fighting Equipment

- 10.1 The fire fighting equipment is provided for the safety of residents. Fire fighting equipment is strategically placed in the specific areas and shall only be used for its intended purpose.
- 10.2 Any person found interfering with fire extinguishers or other fire fighting equipment, if the circumstances do not require such interference, shall be subject to instant dismissal.
- 10.3 Residents and guests will take every precaution to guard against the possible outbreak of fire.

All residents and guests should avoid making potential fire hazards including smoking in non-designated areas, use of naked flames or leaving flammable rubbish in rooms and around the camp area.

Additionally all residents and guests are requested to avoid over utilizing electrical plug - in facilities. Due to the risks of overloading electrical circuits, only one electrical device per power outlet should be installed.

- 10.4 In the case of fire residents are required to call the emergency number provided and posted in each camp location.

11. Off Site Rules

- 11.1 Work for MWMCL may involve travel or work off site at an assigned work location. All personnel shall abide by this policy or its intents while working off site. This includes, but is not limited to, alcohol consumption, respect for others, and safety and security.
- 11.2 All line management is responsible for control of their personnel during normal daily movement or regularly scheduled work days.

CAMP POLICY AND CODE OF BEHAVIOUR

Consent to abide by

As an intended resident of Camp (MWMCL Camp), I have received a copy of and understand the Camp Policy and Code of Behaviour and consent to abide by the same.

Date: _____

Name (Print): _____

Signature: _____

Employer: _____

Witnessed By: _____

Note: This document shall be signed by an intended resident upon or prior to arrival at MWMCL Project Site Camp and the signed copy is to be submitted to Camp Administration.



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4.9 **SMP 09 – TRANSPORT**

4.9.1 Introduction

The Transportation Management Plan for the Project includes the transport of materials and supplies to the Project site together with copper cathode and wastes generated from the Project site. The destination of materials from the Project will be the port at Pathein in the Irrawaddy delta of Myanmar. The plan contains methods that reduce risk along transportation routes, and monitoring plans to assess potential effects and determine effectiveness of mitigation, during construction and operation.

The Transportation Management Plan addresses the management of the transportation of all personnel, supplies, materials, mine components, copper cathode and wastes to and from the Project. Transport methods will include road, river, sea and air transportation. The majority of materials will be shipped to the Port of Pathein and will then be transported via river barge to the Letpadaung site. Copper cathode and back-haul transport will follow the same route and the copper will be shipped from Pathein to China. Explosives will be transported to the site by truck from China (crossing the border at the town of Muse). Expatriate personnel movement to and from the mine will be undertaken by air (flying in and out of Mandalay).

This plan covers all activities that could result in adverse effects from the transportation of materials to and from the Project. A number of management plans are related to the transportation issues of the Project and include the Noise Management Plan, Petroleum and Oils Management Plan, Air Quality Management Plan, Community Health and Safety Plan, Emergency Preparedness & Response Plan, and the Occupational Health and Safety Plan.

Impacts from transportation will occur in all phases of the Project, but will be greatest during the operational phase. The predominant mode of transport (for materials and copper) will be via barge along the Irrawaddy River. During the wet season the depth of flow in the Chindwin River (a tributary of the Irrawaddy that flows past Letpadaung) is adequate to allow barge access to a landing adjacent to site. Over the dry season, river levels are such that barges can generally only venture as far upstream as the town of Pakokku. Thus, at this time of the year it will be necessary to transport materials via road between the Project and Pakokku.

As a result, for the roads between Pakokku and site, the total traffic (and the proportion of heavy traffic) will increase significantly. The various transport routes are shown on Figure 4.9.1.

Potential road transport impacts include animal road kills, driver and public safety concerns and safety issues related to transportation along many portions of the route that are steep, narrow, winding, and have varied users from large trucks and buses, to cattle, buffalo, goats and sheep.

It is anticipated that the percentage increase in truck traffic between Pakokku and site, due to the Project, will increase traffic noise. Dust will be of less of a concern as the roads are sealed.

Transport of goods via barge is commonplace along the Irrawaddy and Chindwin Rivers so additional barge traffic associated with the Project is not expected to have significant impact.

During the construction phase, access roads will be constructed and there will be limited transportation impacts off-site. Supplies and materials will be brought to the Project via the routes shown on Figure 4.9.1.

The current plans are to use and upgrade the existing barge jetty and load-out facilities at Pakokku and Letpadaung. Once details of the area of operations, upgrades and responsibilities are determined the environmental management of the barge jetty and load-out facilities will be developed and integrated into the EMPs and SMPs.

Periodically, expatriate construction / mine personnel will travel to and from their homes to Mandalay via aircraft. Transport of local staff to and from the Project will generally be via buses running between local towns / villages and site.

4.9.2 Objectives

The objectives of this Management Plan are to:

- Establish Standard Operating Procedures (SOPs) for MWMCL construction activities;
- Define MWMCL requirements and procedures to guide the Project Management Team and other Project contractors;
- Define plans/measures for impact mitigation;
- Define roles and responsibilities; and
- Define monitoring and reporting procedures.

4.9.3 Targets

The targets of this Management Plan are to:

- Protect workers, local communities, livestock, wildlife and vegetation from adverse impacts associated with transport of materials / personnel;

- Implement traffic management procedures; and
- Achieve zero regulatory or community concerns regarding traffic management.

4.9.4 Roles & Responsibilities

The Project team is ultimately responsible for the following key tasks, roles and actions relating to hydrocarbons as outlined in the RACI in Table 4.9.1.

Table 4.9.1: Roles & Responsibilities – Transport Management

Activity Description	MWMCL Senior Management Team	MWMCL Project Manager	Transport Contractors Team	MWMCL Environment / Community Team
Coordinate all mine transport	R	C/A	C/A	C/A
Coordinate driver orientation, vehicle maintenance and mechanical inspection	R	C/A	I	C/A
Introduce transport management strategies to the workforce	I	R	R	C/A
Monitor transport management across the Project	I	C/A	I	R
Record and report transport management and training of personnel	I	R	R	I
Develop a tracking system for incidents related to transport	R	C/A	I	C/A

R = Responsible / Accountable: The person(s) who is ultimately answerable for the execution and results of the activity.

A = Assisting / Attending: The person(s) who assists in the execution of the task and/or attends a meeting.

C = Consulted: The person(s) to be consulted during the decision making process. A two-way communication.

I = Informed: The person(s) who need to be informed after a decision is made or action taken. A one-way communication.

Overall responsibility for the implementation of this Management Plan shall rest with the MWMCL Project Manager who shall report on progress to the MWMCL General Manager.

4.9.5 Management Actions

Actions expected from management are as follows:

1. Environmental induction and toolbox meetings will include transport management and awareness.
2. Drivers, vehicle / barge operators, and mechanics will be trained to ensure safe operation, maintenance, repair and material handling.
3. Vehicle transport will be limited to day light hours, as much as possible.
4. Truck traffic will be planned, where possible, to avoid passing through towns during busy pedestrian periods (e.g. market days and school start / finish).
5. Transport related accidents will be reported to the Community Relations Manager within 24 hours.

4.9.6 Control Procedures

Transport control procedures to reduce environmental damage and loss of life are described below.

General

The following procedures are designed to mitigate any adverse impacts associated with transport.

1. All transportation will be undertaken along pre-designated routes that have previously been surveyed by MWMCL or its contractors. MWMCL will approve all designated transportation routes.
2. MWMCL will ensure that consultation is undertaken with local communities, police, military and emergency services along transportation routes. MWMCL will provide local community representatives and government authorities with a summary of driving practices adopted by MWMCL.
3. MWMCL will discuss and agree Emergency Response Procedures with local emergency services and local administrations. Emergency response plans will be highlighted in public consultation and disclosure activities.
4. Pre-construction building condition assessments will be undertaken along principal transport routes for buildings considered to be at potential risk from transportation vibration, and for other culturally-sensitive buildings and structures adjacent to principal transport routes.
5. Route condition assessments will be undertaken on an annual basis as a minimum and specific inspections of river crossings will be undertaken after extreme weather events and at the end of the rainy season.

6. MWMCL will require all transportation contractors to use modern efficient vehicles with appropriate noise and emission control measures. At least one vehicle in each transportation convoy is to be equipped with a suitable VHF radio for routine and emergency communications.
7. MWMCL will require all transportation contractors to ensure and demonstrate that all drivers are appropriately trained and hold an appropriate valid driving licence.
8. MWMCL will require all river transportation contractors to ensure and demonstrate that all barge operators are appropriately trained and hold an appropriate valid operator's licence.
9. MWMCL will ensure that all drivers / barge operators are trained in safe handling of hydrocarbons / hazardous materials and EMSC emergency response procedures.

Safety

1. Trucks that are appropriately sized for the relatively narrow roads will be used. The size and capacity of trucks that MWMCL will acquire will be similar to those of trucks that are already in operation in the country and which regularly use the transportation corridor under consideration.
2. Mitigation of safety issues is a priority for MWMCL. Mine trucks will have a speed limit set for travel through villages where there are no posted speed limits. Speed limits will be determined on the basis of MWMCL consultation with local Police Departments and town/village administrators. Guidance from relevant central government shall also be sought, as well as agencies and national organizations.
3. Limits will be set through discussion with the villages to achieve a practical compromise. In addition, MWMCL will sponsor a Traffic Awareness Programme for affected villages to reduce the risk of accident with people or farm animals. This will be achieved by MWMCL working with the local Police Departments and administrations. MWMCL will assist in developing the programme and will fund its implementation.
4. Truck traffic will be planned, where possible, to avoid passing through towns during busy pedestrian periods (e.g. market days and school start / finish).
5. During the rainy season, MWMCL will ensure that all river crossings are inspected on a daily basis and all MWMCL staff and contractors are informed

if any river crossings are considered impassable. In that event, all fording of rivers by wheeled vehicles will be prohibited until the “all clear” is announced.

6. On the day prior to barge departure the contractor shall check weather and river conditions. Departure shall be delayed if conditions are considered unsafe. Confirmation of safe conditions shall be conveyed to the HSEC Manager prior to departure.

Noise

1. Increased traffic noise will be managed at night by ceasing travel at 11:30pm, due principally to safety reasons, but with the secondary benefit of noise reduction through the night; trucks will commence travel again at 5:30 AM.
2. Schedule transportation for daytime hours whenever possible.
3. Speed limits will be enforced in relation to road conditions and location of sensitive receptors such as important wildlife habitat, camp site and on-route communities.
4. Maintain road surfaces in good repair to reduce tyre noise. MWMCL is responsible for access roads within the Project site; repair and maintenance of public roads will be financed and undertaken by government.
5. Assure continuous traffic flow to avoid prolonged idling and reduce the emissions of greenhouse gases.
6. All large trucks will be equipped with truck muffler systems, shall be maintained regularly and there will be a limit using engine braking systems.

Dust

1. Dust will be of most concern on unpaved roads around the mine and will increase proportionally to the increase in mine-related traffic. MWMCL will undertake an ongoing review of dust generation and maintain an ongoing dialogue with local villages. Following the dialogue, decisions will be made, and steps taken, by either or both parties to address the issue.
2. If dust related to mine truck traffic becomes problematic in some villages, discussion will be held with village elders to arrive at a solution. The use of dust suppressants may be considered as an option or the sealing of key stretches of road may also be considered.

Exhaust Emissions

1. MWMCL will maintain all vehicles according to manufacturer instructions through regular scheduled maintenance in the mine mechanical shop by

licenced mechanics. Engine and exhaust systems will be operated at manufacturer's specifications to minimize exhaust gases.

2. Contractors will be encouraged to maintain their vehicles according to factory specifications as well.

4.9.6.1 Accident Response (Off-Site)

Prior to the commencement of haulage activities, MWMCL and its transport contractor(s) will notify local authorities and emergency services of the routes and quantities of materials that will be transported on a daily basis. The haulage contractor(s) will ensure that all drivers / barge operators are equipped with suitable communications equipment to enable an incident to be reported promptly (this is assumed to be mobile phones, unless significant gaps are identified in which case an alternative communication system needs to be developed). Spill response equipment will be kept and maintained on trucks / barges. The haulage contractor will be responsible for the preparation of suitable incident response procedures for all incidents occurring outside the Project site. In the case of an off-site incident with a truck / barge outside the Project site:

- The contractor will immediately inform the appropriate emergency services and the MWMCL Environment Manager and send its own Emergency Response Team (ERT) to the location;
- Working with the appropriate emergency services, the ERT will take control of the incident and rectify the situation; if it is considered that the exclusion zone set up around the incident requires to be communicated with the local communities, the MWMCL Community Relations Manager will be involved and briefed;
- The ERT will neutralise any spills and clean the location; any contaminated material created by the incident will be stored in Hazardous Waste Storage Bins. Once the material has been classified it will be disposed of in a designated area; and
- For all incidents and accidents, the Community Relations Team will be briefed in order to address any community concerns that may be raised.

4.9.7 Monitoring & Inspection

Transportation monitoring procedures shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan during the construction phase, including:
 - Quality of access roads
 - Number and size of trucks used

- The Environment Manager shall inspect the condition of areas on monthly basis and shall maintain appropriate records. The inspection shall include:
 - Road conditions along the preferred truck routes
 - Driver / barge operator orientation
 - Driver / barge operator updates
 - Maintenance and mechanical inspection of trucks / barges
 - Compliance with applicable regulatory and corporate requirements.

In addition, all trucks / barges shall be inspected for essential systems prior to each trip. The Environment Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any substantial deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

Further information on environmental monitoring and reporting requirements and procedures is set out in the Monitoring Plan.

4.9.8 Training

All employees of MWMCL and their Contractors shall be provided with training in the procedures to be following with respect to transportation issues. Additional, specialist training shall be provided to Plant Operators and key personnel involved in activities which involve transportation of hazardous materials or explosives. In addition, transportation and shipping contractors must have compliant Environmental, Health, and Safety systems in place as part of their contract. All contractors will be periodically audited by MWMCL.

4.9.9 Performance Indicators

Measurement of the performance of transport management shall be as follows:

- Reporting of non-conformance with the relevant ECPs;
- Reporting of non-conformance with the Monitoring and Inspection Plan;
- Reporting of any incidents or accidents;
- Reporting of spill responses; and
- Recording of training.

4.9.10 Auditing & Reporting

Auditing and reporting of performance with respect to compliance with the CESMS shall be performed by the MWMCL Construction and Environmental Departments in accordance with the schedule in Table 4.9.2.

Table 4.9.2: Auditing & Reporting for Transport

Performance Indicator	Reporting Schedule	Auditing Schedule
Non-conformance with ECPs	Monthly by Project Manager	Quarterly by Environment Manager
Non-conformance with Monitoring and Inspection Plan	Monthly by Project Manager	Quarterly by Environment Manager
Incidents or accidents	Monthly by Project Manager	Quarterly by Environment Manager
Spill responses	Monthly by Project Manager	Quarterly by Environment Manager
Training	Monthly by Project Manager	Quarterly by Environment Manager

4.10 **SMP 10 – MONITORING**

4.10.1 General

Monitoring is a key tool to enable mitigation and management measures to be adjusted to respond to inevitable changing conditions and the unexpected. Mitigation and management of a project before it is constructed depend on assessment of potential impacts and public and government concerns expressed through consultation and the approval process. It is almost impossible to fully and accurately predict all social / community impacts which might arise from a project at this early stage. Even the best impact assessment may fail to identify and mitigate all negative impacts which a project could have on the social environment. In addition, no project is implemented in a static environment. Changes in conditions could lead to negative social impacts arising from a project which it would have been impossible to predict at the time of assessment. For these reasons, monitoring and evaluation of a project's social impact following approval and implementation is an important part of the overall project cycle. General procedures regarding monitoring are included in each of the social management plans.

4.10.2 Cultural Heritage

Cultural heritage monitoring procedures shall be as follows:

- The Project Manager shall report on a monthly basis to the Community Relations Manager on the implementation of this Management Plan during the construction phase, including:
 - "Watching briefs" participated in at specific areas/construction sites
 - The erection and maintenance of demarcation fencing around sites
 - The protection of sites by careful siting of access routes or facilities
 - Induction training including cultural heritage awareness given to staff and planned training
 - Cultural heritage-related complaints and actions taken
 - Cases of damage to, or disruption of, cultural heritage properties and actions taken.

The Community Relations Manager will conduct routine inspections of site activities in consultation with the Project Manager to assess the potential for chance finds at work sites and any other cultural heritage issues that may arise.

The Community Relations Manager will conduct an inspection of any cultural heritage field activities and documentation that are implemented as a result of a chance find or other event that results in archaeological field work. The inspection shall include:

- Details of all work specifications prepared and implemented;
- Monitoring/"watching briefs" conducted at specific construction and other sites;
- Consultation with local communities related to cultural resources;
- Communication and cooperation with the Construction Department and the National Museum;
- Review of how the Cultural Heritage Database is being maintained;
- Information dissemination regarding cultural heritage;
- Performance of the Construction Department in managing cultural resources at specific construction sites;
- Cultural heritage-related complaints and actions taken; and
- Cases of damage to, or disruption of, cultural heritage properties and actions taken.

The Community Relations Manager shall be responsible for record-keeping.

4.10.3 Stakeholder Engagement

All activities involving Monitoring and Reporting on the Stakeholder Engagement will be the responsibility of the CSD Team Project Manager and the Public Relations Officer. They will report directly to The DGM and the Managing Director of MWMCL.

4.10.4 Human Resources, Training and Employment

It is important to monitor employment and training to ensure that employment targets are met and that efforts to enhance local and national skills and employment opportunities are maximised.

Human resources, employment and training monitoring procedures shall be as follows:

- The Human Resources Manager shall maintain records on the following:
 - Recruitment conducted
 - Recruitment and employment targets
 - How the Employment Database is being maintained
 - Training conducted/given to staff and planned
 - Interviews and random selection processes
 - Job descriptions and selection criteria

- Information dissemination regarding employment, including vacancy announcements
 - Operation of recruitment offices
 - Equities and inequities in recruitment process (e.g. gender, ethnicity, age)
 - Employee grievances and actions taken
 - Cases of corruption and disciplinary actions taken
 - Working conditions and related issue
- The Human Resources Manager shall inspect recruitment offices and MWMCL / Contractor documentation on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Records of recruitment processes
 - Records of employees hired
 - Records of hours worked
 - Records of wages paid (and against project pay structures as a cross reference)
 - Records of National Service Demobilisation Certificates
 - Records of grievances and of disciplinary actions taken
 - Condition of workers on site and worker camp areas
 - Records of training given to staff
 - Condition and operation of recruitment offices
 - Other spot checks of relevant practices and documentation
 - Compliance with applicable regulatory and corporate requirements.

Contractors will report on a monthly basis to the Human Resources Manager on the implementation of this Management Plan during the construction phase.

The Human Resources Manager shall be responsible for record-keeping.

4.10.5 Community and Social Development

It is important to monitor community development activities to ensure that commitments are met and that efforts to make improve health and well-being of local communities are maximised. Community and social monitoring procedures shall be as follows:

- The Community Relations Manager shall monitor the implementation of the community and social development program and report to the MWMCL General Manager on at least a quarterly basis, including:
 - The number and value of projects supported for community assistance
 - Villages benefiting from improved water, sanitation or other similar systems
 - New or improved infrastructure developments funded

- Training, skills development and capacity building provided including the number of sessions held and number of people trained
- The number of awareness raising materials distributed to target stakeholders
- Public attitudes to community development initiatives
- Performance of the Community Action Group and implementing partners
- The Community Relations Manager shall inspect community assistance projects and documentation on a quarterly basis and shall maintain appropriate records. The inspection shall include:
 - Records of community assistance activities/meetings/events;
 - Records of funds disbursed;
 - Feedback from local communities related to projects implemented;
 - Records of training given to communities;
 - Condition and operation of specific projects (e.g. for infrastructure projects);
 - Status of projects already implemented;
 - Review of projects being planned;
 - Spot checks on the activities of the Community Action Group; and
 - Review of progress and performance of implementing partners or operators.
- The Community Relations Manager shall report findings from regular inspections to the community assistance Steering Committee;
- Each project or initiative to be funded by MWMCL as part of the community and social development program shall have its own specific monitoring and evaluation procedures; and
- The Community Action Group shall participate in monitoring Project progress of community assistance projects and related activities.

The planning for each individual project will include definition of specific objectives, expected measurable results and key indicators of success. Key indicators must be able to show statistically significant results or improvements. To achieve this may require specific baseline studies and data collection to be carried out prior to implementation of the community assistance project. MWMCL will develop key indicators and measurable results for each community assistance initiative to monitor how these projects change the social and economic conditions of the recipient communities. Communities that are beneficiaries of the projects being implemented will be included in the monitoring program.

4.10.6 Land Use Resettlement

Land use management monitoring procedures shall be as follows:

- The MWMCL Community Relations Manager shall monitor the implementation of the programme and report to the MWMCL General Manager on at least a quarterly basis, including:
 - Specific mitigation measures developed and implemented
 - Engagement conducted with government and affected communities
 - In-kind support provided to families/households
 - Funds disbursement history
 - Activities conducted by government versus MWMCL related to mitigation measures
 - Support for vulnerable people
 - Performance of implementing partners
 - Perceptions/attitudes of affected people towards the programme
 - Complaints process
- Each measure or initiative to be funded by MWMCL as part of this plan shall have its own specific monitoring and evaluation procedures; and
- Affected people shall participate in monitoring progress of each of the mitigation measures implemented through this plan.

4.10.7 Community Health, Safety and Security

It is important to monitor activities at the mine site, as well as those that occur off-site, including transportation of supplies and concentrate to and from Letpadaung, to ensure that local and regional communities are protected. Community Health and Safety Monitoring Procedures shall be as follows:

- Contractors shall report on a monthly basis to the MWMCL Community Relations Manager on the implementation of this Management Plan including:
 - Workforce conduct within the community
 - Any instances of workforce non-compliance with Project rules and regulations
 - Condition of access roads and dust suppression activities
 - Security arrangements
 - Employee Personal Health Programme
 - Implementation of the substance and alcohol abuse policy
 - Time lost to illness or disease by workers

- MWMCL Community Relations Manager shall inspect the condition of areas of activity at the site on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - Safety practices in areas that could impact communities
 - Spot checks of vehicles entering/exiting nearby local communities
 - Spot checks to indicate that workers and communities are aware of health issues, the Code of Conduct and other Project rules
 - Conditions of roads and other areas prone to dust
 - Health and safety inductions
 - Record for the Personal Health Programme
 - Records for the Drug and Alcohol Testing Programme
 - Lost time incident statistics
 - Records related to education event to raise health and safety awareness in communities.

4.10.8 In-migration

Prediction of influx is an imprecise science and can be affected by many factors. Monitoring of influx numbers and of the impact of influx mitigation measures taken by MWMCL and others will therefore be regularly carried out. Influx related monitoring procedures shall be as follows:

- The CSD Superintendent shall report on a monthly basis to the General Manager on: (i) the occurrence of in-migration in the mine impacted communities; (ii) implementation progress of this In-migration Management Plan; and (iii) observed impacts of plan implementation. The outcome from the Monitoring Plan will be used to refine the plan itself as it rolls forward. Some of the parameters that will be incorporated into the Monitoring Programme include:
 - Employment composition (Township, Division, national, expatriates)
 - Employment from each hire point
 - New registrations in each village in the review period
 - Total number of in-migrants within each village and locations of resettlement
 - Township unemployment levels
 - Orderliness of settlement (based on a controlled plan developed in accordance with the revised land-use and master plans)
 - Access to basic infrastructure (water, heating and electrical power)
 - Effective management of waste water and solid waste

- Fire safety
 - Evidence of conflict or tensions with or within host communities
 - Cost of living (perhaps through pricing of a standard basket of staple goods, rental prices, fuel prices, replicate surveys of household income & expenditure)
 - Cases of hardship amongst vulnerable households
 - STDs, communicable disease reporting
 - Evidence of social ills – problems with alcohol, drugs, gambling, prostitution
 - Crimes, incidents, convictions and evictions recorded by the local police
 - Any grievances related to influx
- Some of these indicators are already, or will be, captured by MWMCL (through MEHL), whilst others will need to be obtained from statistics and records kept by the Township and Division administrations;
 - Each programme implemented by MWMCL shall have its own specific monitoring and evaluation procedures; and
 - Local and regional communities and authorities shall participate in monitoring progress of each of the mitigation measures implemented through this Plan.

The MWMCL Community Relations Manager shall be responsible for record-keeping related to this Plan.

Regular reporting shall be undertaken via the monthly CSD Department Report that shall be prepared and submitted to the General Manager. Reporting shall include:

- A summary of activities undertaken during the reporting period;
- Any material deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

The monitoring carried out by MWMCL will be supplemented through periodic monitoring by: (i) the Sagaing Division; and (ii) the Salingyi Township. MWMCL will prepare summary In-migration monitoring reports for submission to both the Division and Township authorities. The Division will carry out its own periodic review of in-migration status. The Salingyi Township will assist in coordinating influx management and mitigation between Government, MWMCL and other investors in the region.

4.10.9 Accommodation

It is important to monitor activities at the accommodation camp, to ensure that workers are accommodated in acceptable and pleasant surroundings and therefore safeguarding employee health and safety, and the continued success of the Letpadaung Project. Accommodation monitoring procedures shall be as follows:

- The Camp Manager shall report on a monthly basis to the MWMCL Human Resources Manager on the implementation of this Management Plan including:
 - Accommodation manning levels
 - Accommodation staff training carried out and planned
 - Workforce conduct within the Project provided accommodation camp;
 - Any instances of workforce non-compliance with the camp Code of Conduct
 - Health, safety and security arrangements plus any accommodation related incidents
 - Cleaning and maintenance schedule
 - Accommodation maintenance carried out and planned
 - Pest control carried out and planned
- MWMCL Human Resources Manager shall inspect the condition of the accommodation camp on a monthly basis and shall maintain appropriate records. The inspection shall include:
 - General housekeeping within the accommodation site
 - Spot checks of ablution and laundry facilities
 - Spot checks of food preparation areas
 - Spot checks of recreational facilities
 - Records for accommodation numbers, maintenance and training
 - Health and safety plus camp Code of Conduct inductions
 - Accommodation related incidents.

4.10.10 Transport

Transportation monitoring procedures shall be as follows:

- The Project Manager shall report on a monthly basis to the Environment Manager on the implementation of this Management Plan during the construction phase, including:
 - Quality of access roads
 - Number and size of trucks used

- The Environment Manager shall inspect the condition of areas on monthly basis and shall maintain appropriate records. The inspection shall include:
 - Road conditions along the preferred truck routes
 - Driver / barge operator orientation
 - Driver / barge operator updates
 - Maintenance and mechanical inspection of trucks / barges
 - Compliance with applicable regulatory and corporate requirements.

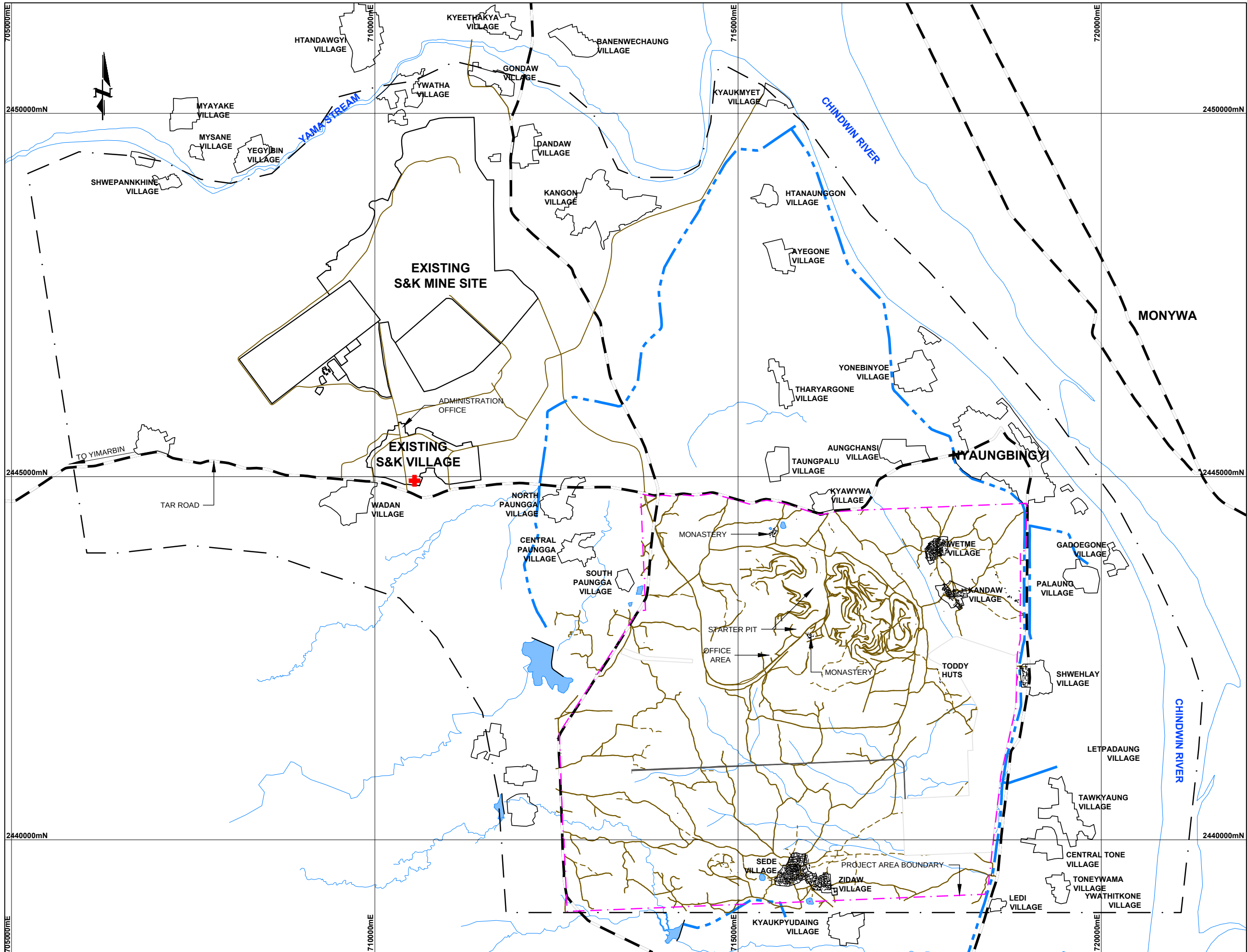
In addition, all trucks / barges shall be inspected for essential systems prior to each trip. The Environment Manager shall be responsible for record-keeping. Regular reporting shall be undertaken via the monthly EMS Report that shall be prepared and submitted to the General Manager. Reporting shall include:

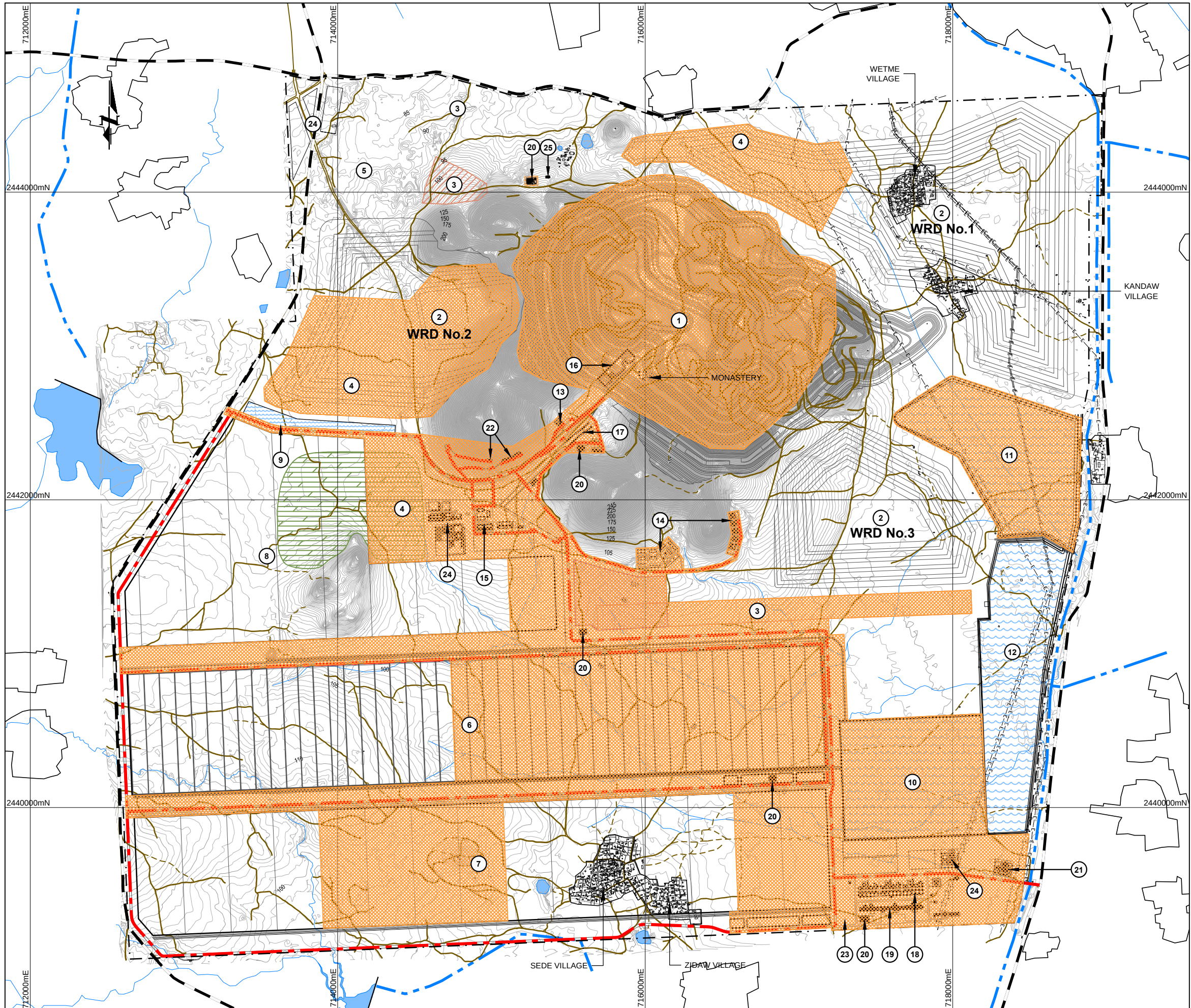
- A summary of activities undertaken during the reporting period;
- Any substantial deviations or non-compliances to this Management Plan;
- Planned activities during the next reporting period; and
- Any other issues of concern.

5. REFERENCES

1. China Nerin Engineering, *Basic Design for Letpadaung Copper Project*, 2011.
2. International Finance Corporation. Performance Standards for Social and Environmental Sustainability. 1 January 2012.

FIGURES





LEGEND:

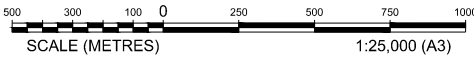
- EXISTING POWER LINE
- EXISTING MAIN ROAD (SEALED)
- EXISTING ROAD/TRACK (UNSEALED)
- LETPADAUNG LEASE BOUNDARY
- SITE ROAD ALIGNMENT
- EARLY WORKS SITES

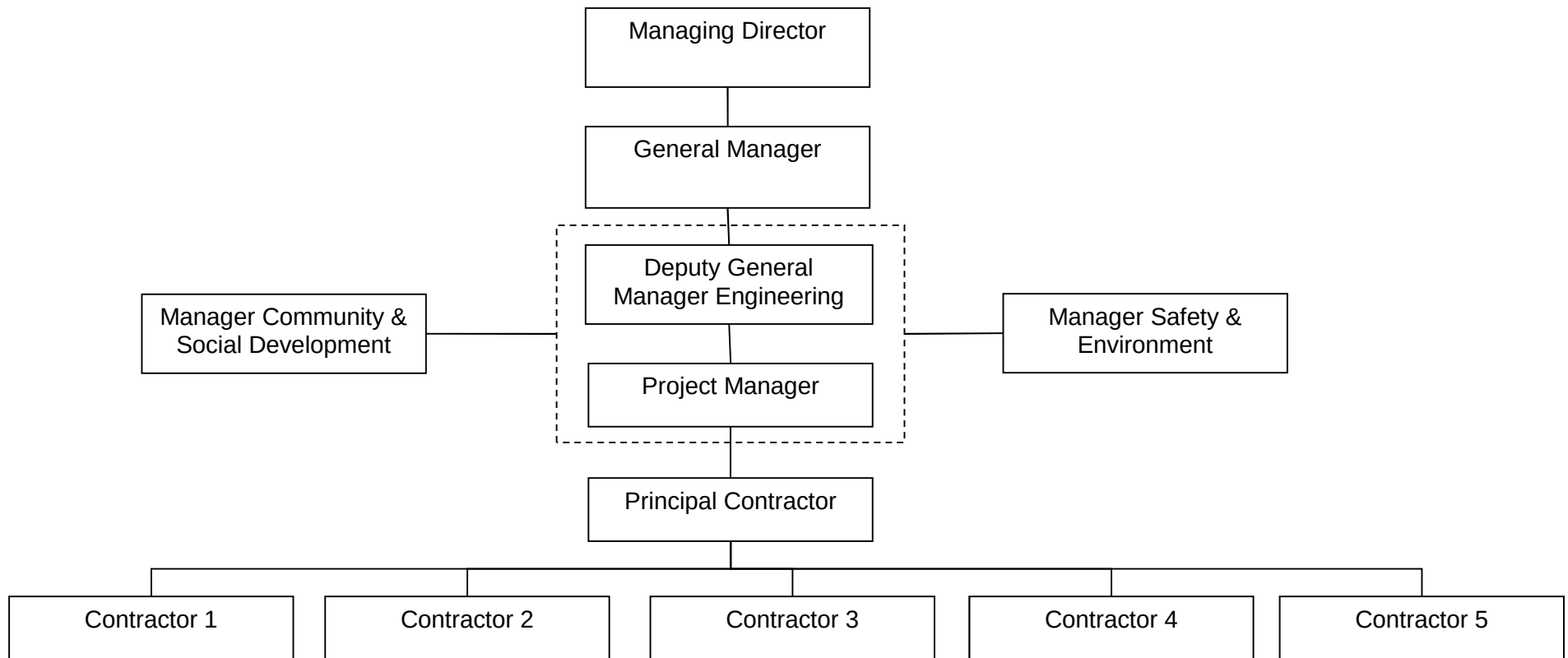
NOTES:

- ALL COORDINATES SHOWN IN UTM (WGS84) ZONE 46.
- 1m CONTOUR INTERVALS SHOWN.

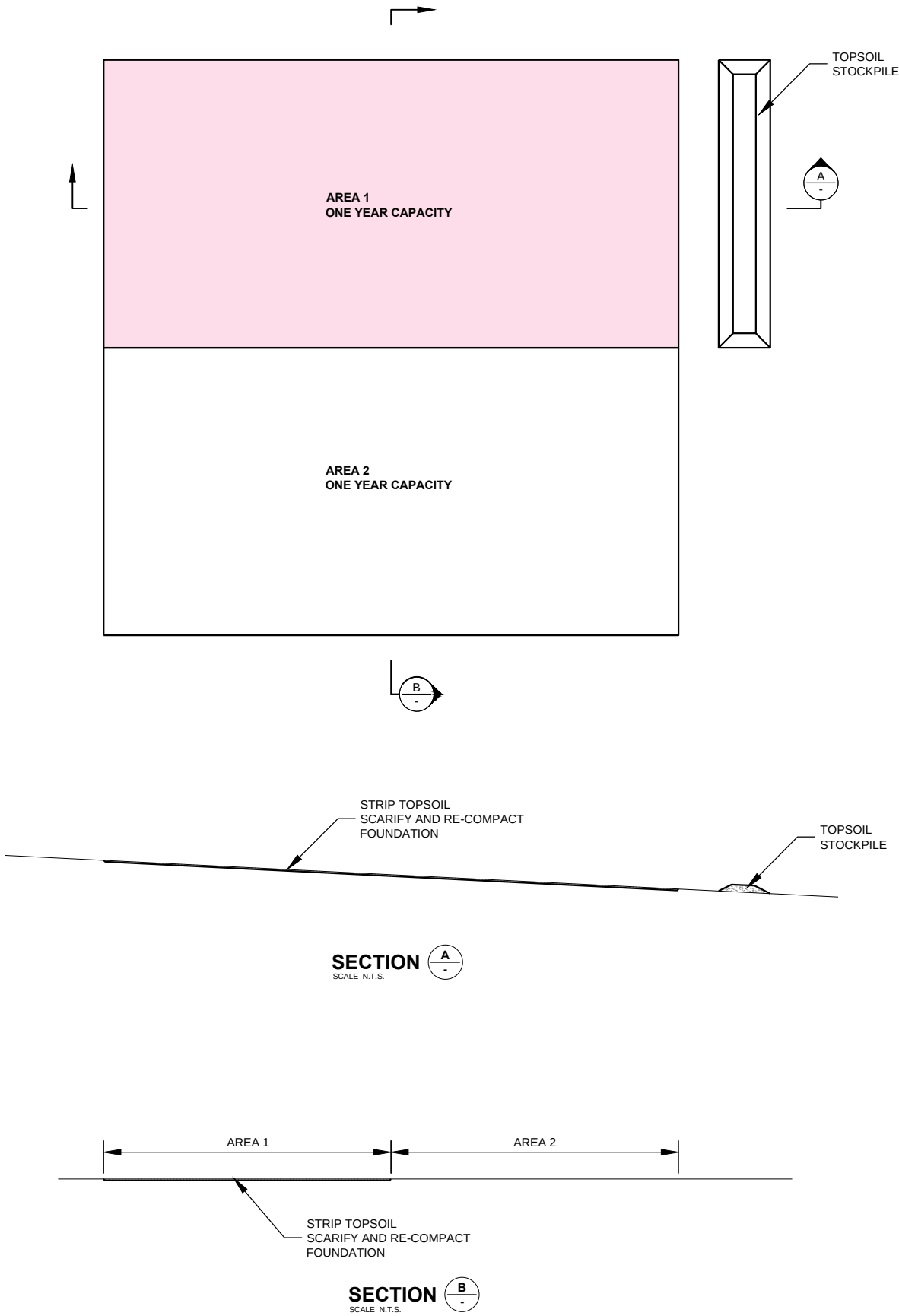
KEY:

- 1 PIT
- 2 WASTE DUMP
- 3 TOPSOIL STOCKPILE
- 4 LOW GRADE ORE STOCKPILE
- 5 RESERVE ORE STOCKPILE
- 6 HEAP LEACH PAD No.1
- 7 HEAP LEACH PAD No.2
- 8 HEAP LEACH PAD No.3
- 9 WASTE WATER COLLECTION POND
- 10 HEAP LEACH STORM WATER POND
- 11 WASTE WATER RESERVOIR (NORTH)
- 12 WASTE WATER RESERVOIR (SOUTH)
- 13 FUEL STATION
- 14 EXPLOSIVES AREA
- 15 OFFICES/ WAREHOUSES/ MAINTENANCE AREA
- 16 MOBILE CRUSHER FOR QUARRY
- 17 CONVEYOR FOUNDATIONS
- 18 EXTRACTION PLANT
- 19 ELECTROWINNING PLANT
- 20 33kv SUBSTATION
- 21 230kv SUBSTATION
- 22 WATER PURIFICATION AREA
- 23 ACID STORAGE AREA
- 24 STAFF ACCOMMODATION
- 25 2Mw DIESEL POWER STATION

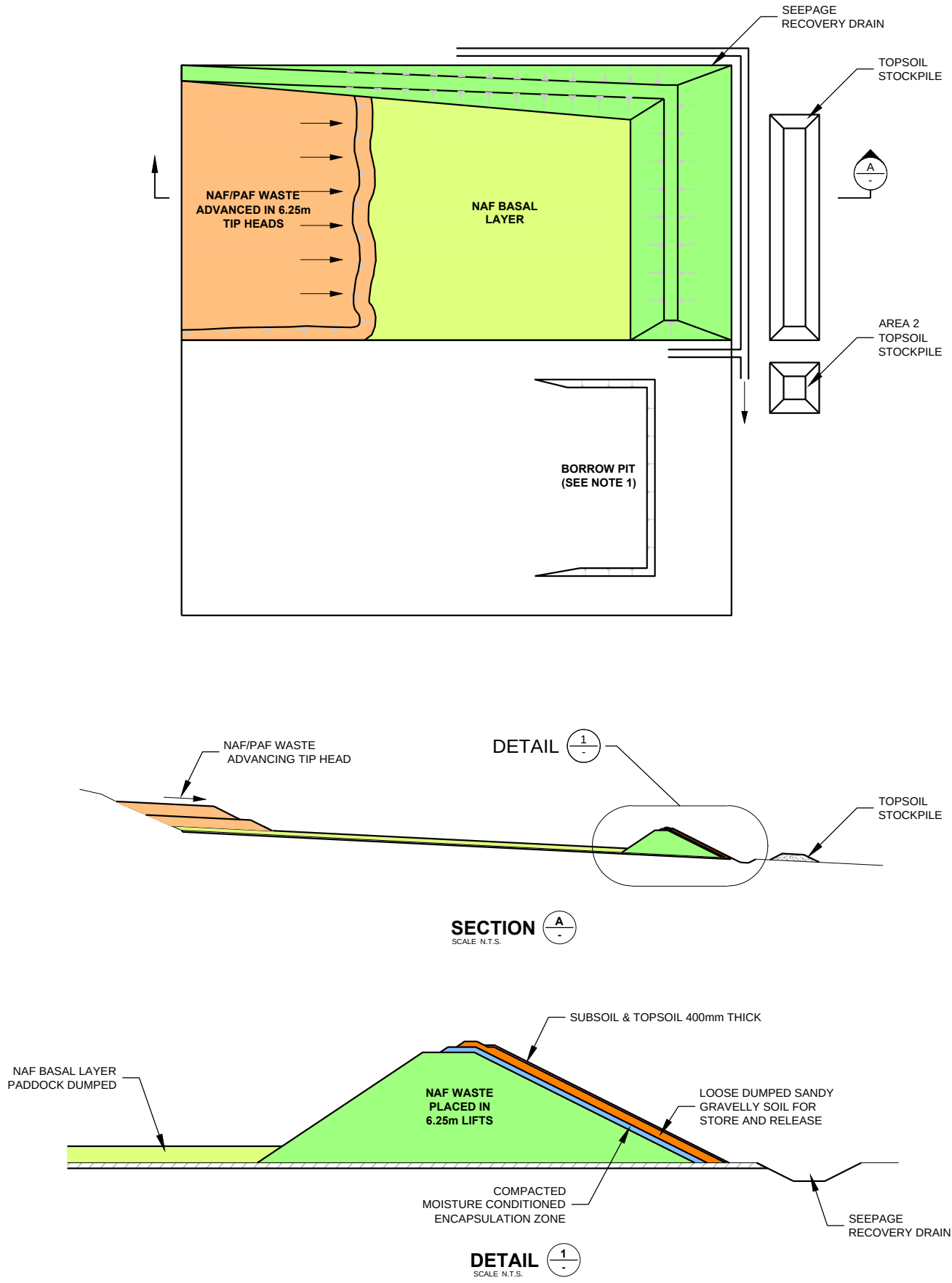




STEP 1:

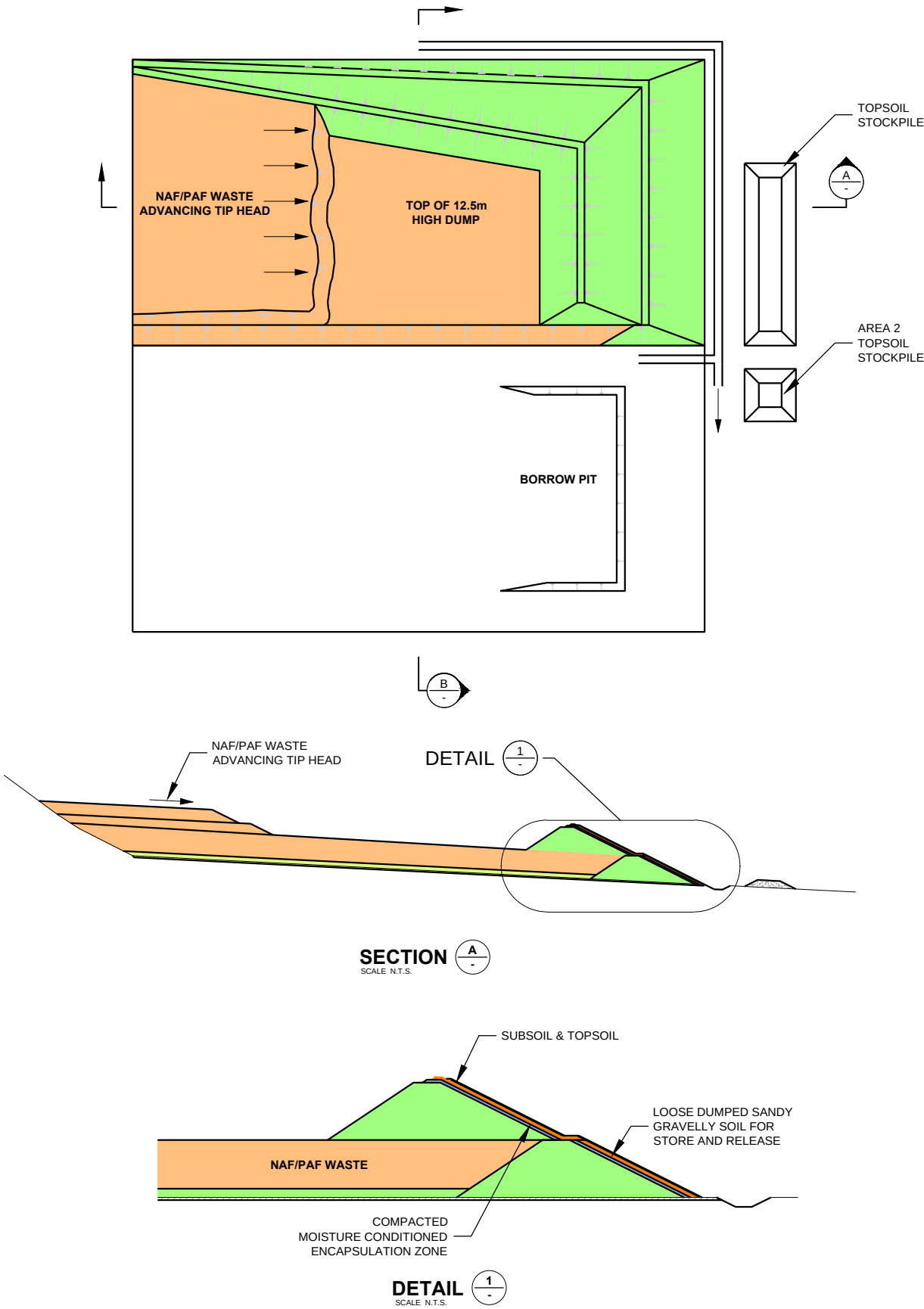


STEP 2:

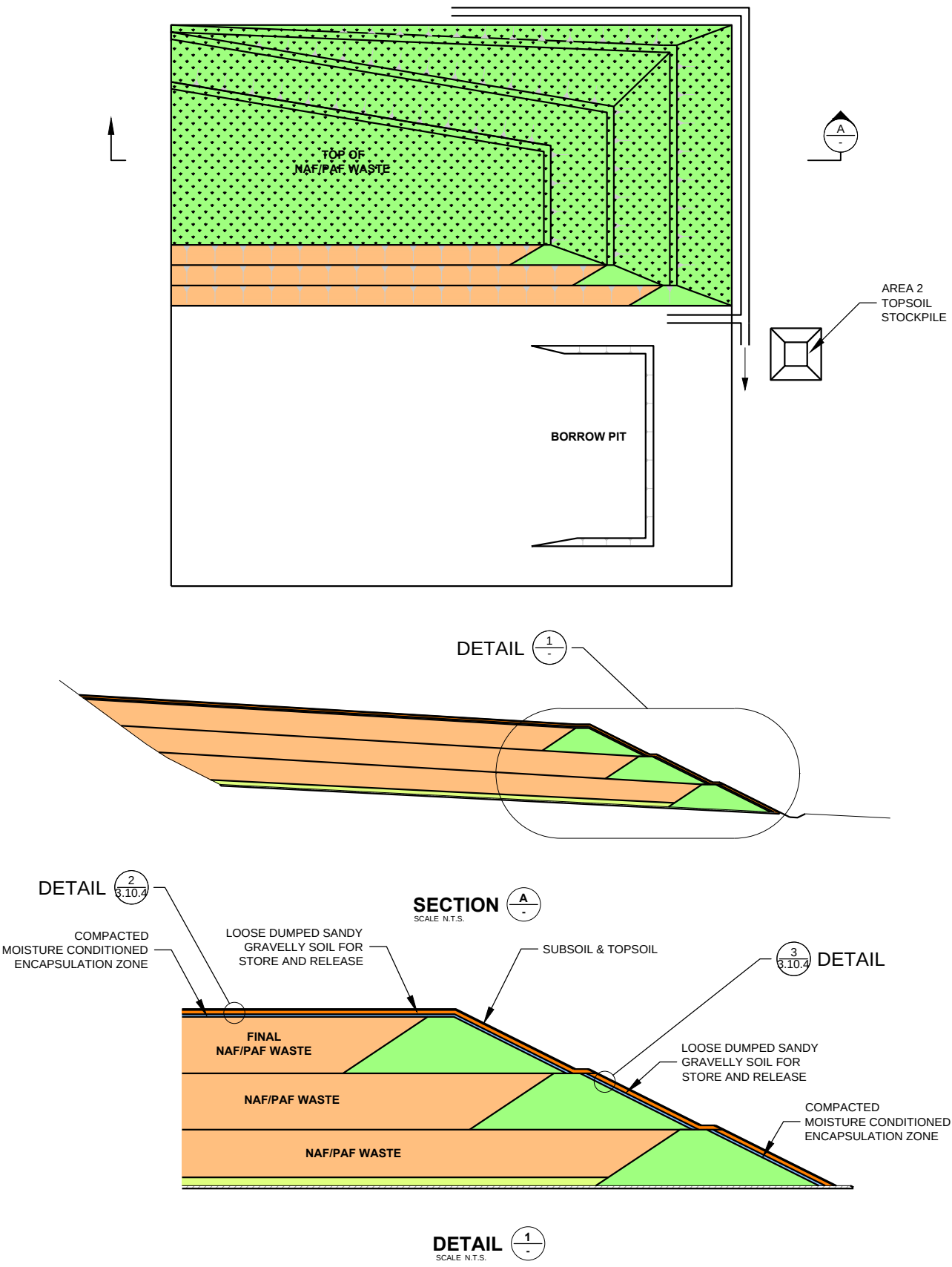


- NOTE:**
1. BORROW PIT IN NEXT WASTE DUMP AREA TO SUPPLY ENCAPSULATION MATERIAL AND STORE AND RELEASE ZONE.
 2. LOCAL OUTER BATTER SLOPE ANGLES TO BE CONFIRMED.

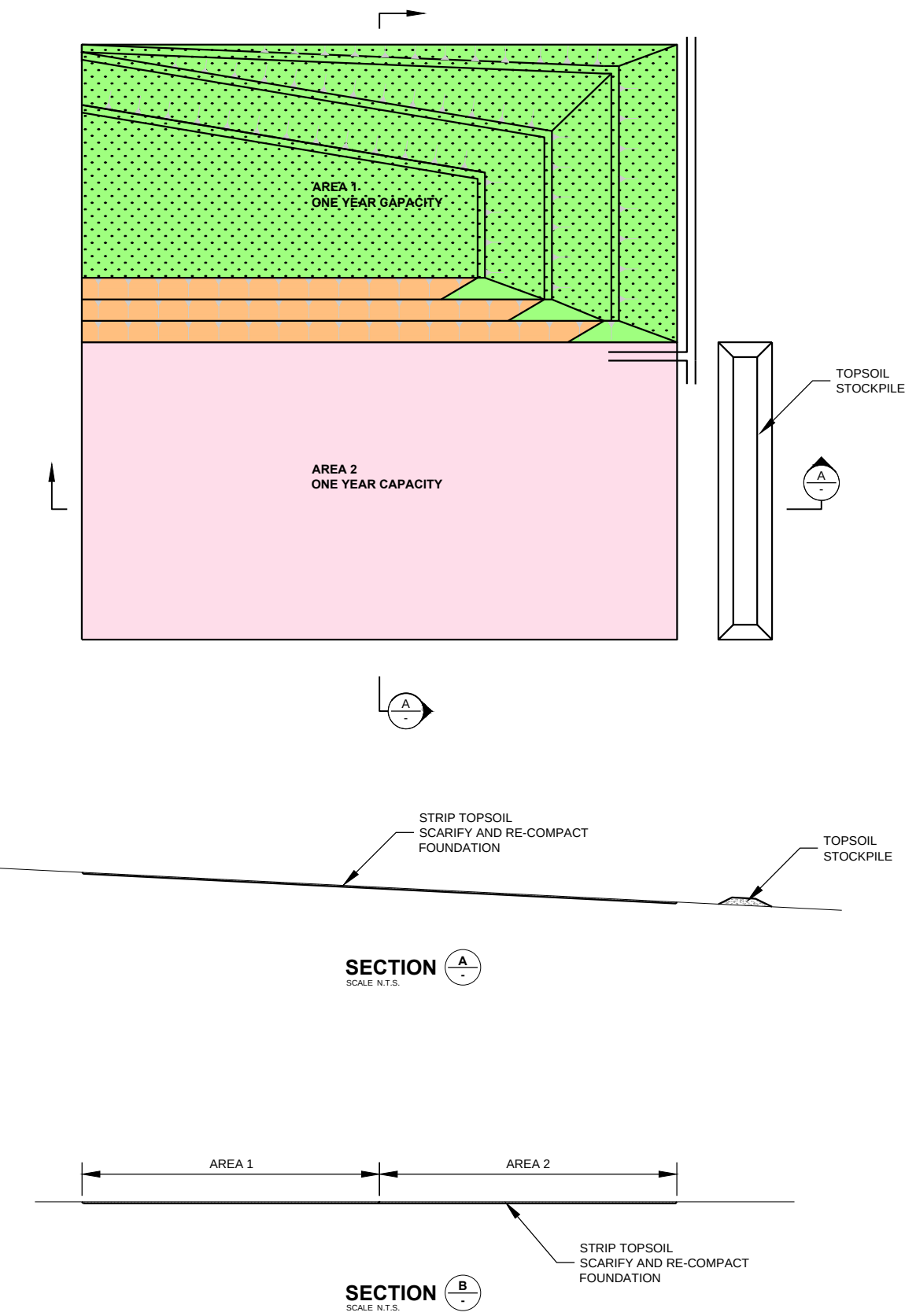
STEP 3:



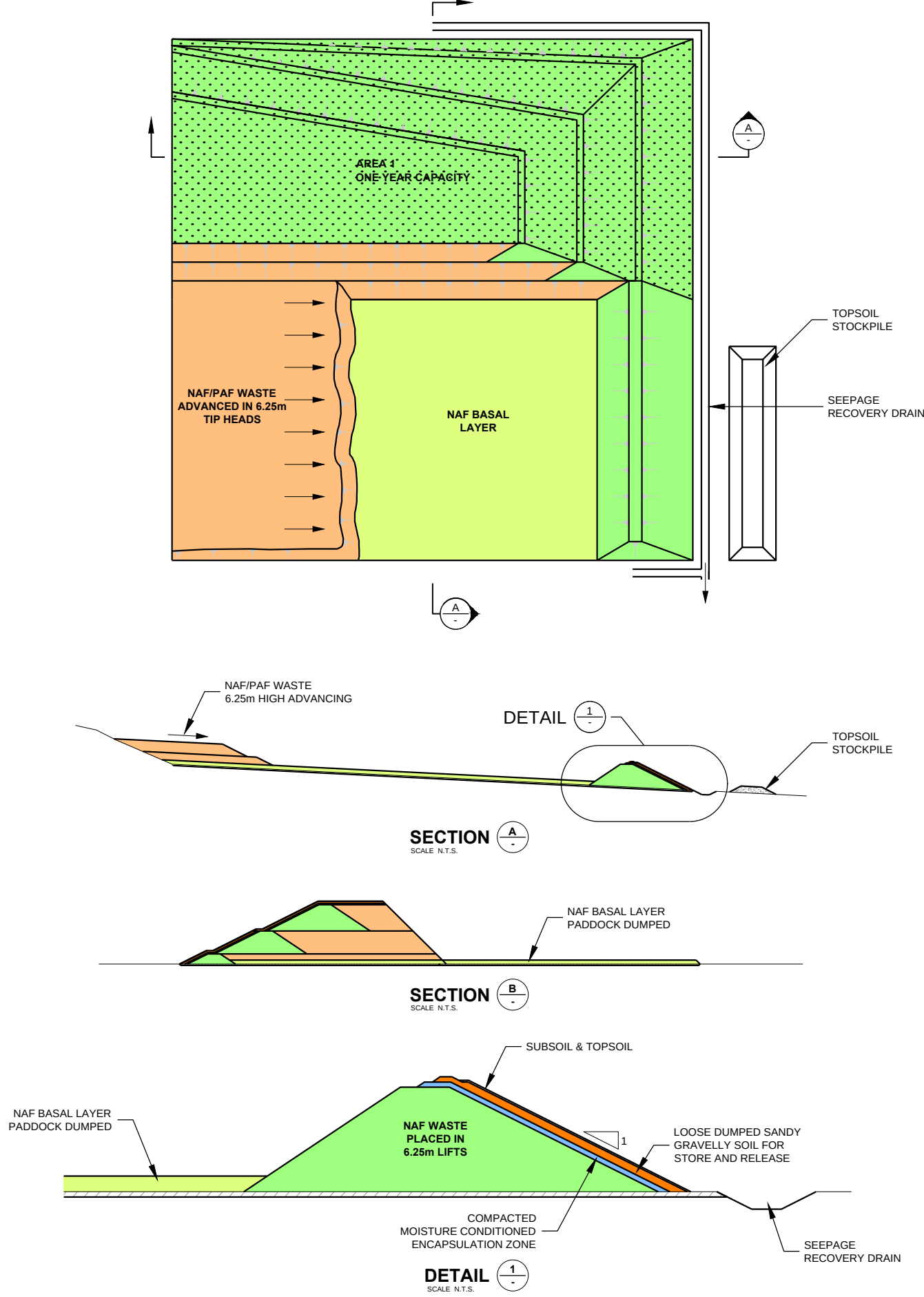
STEP 4:



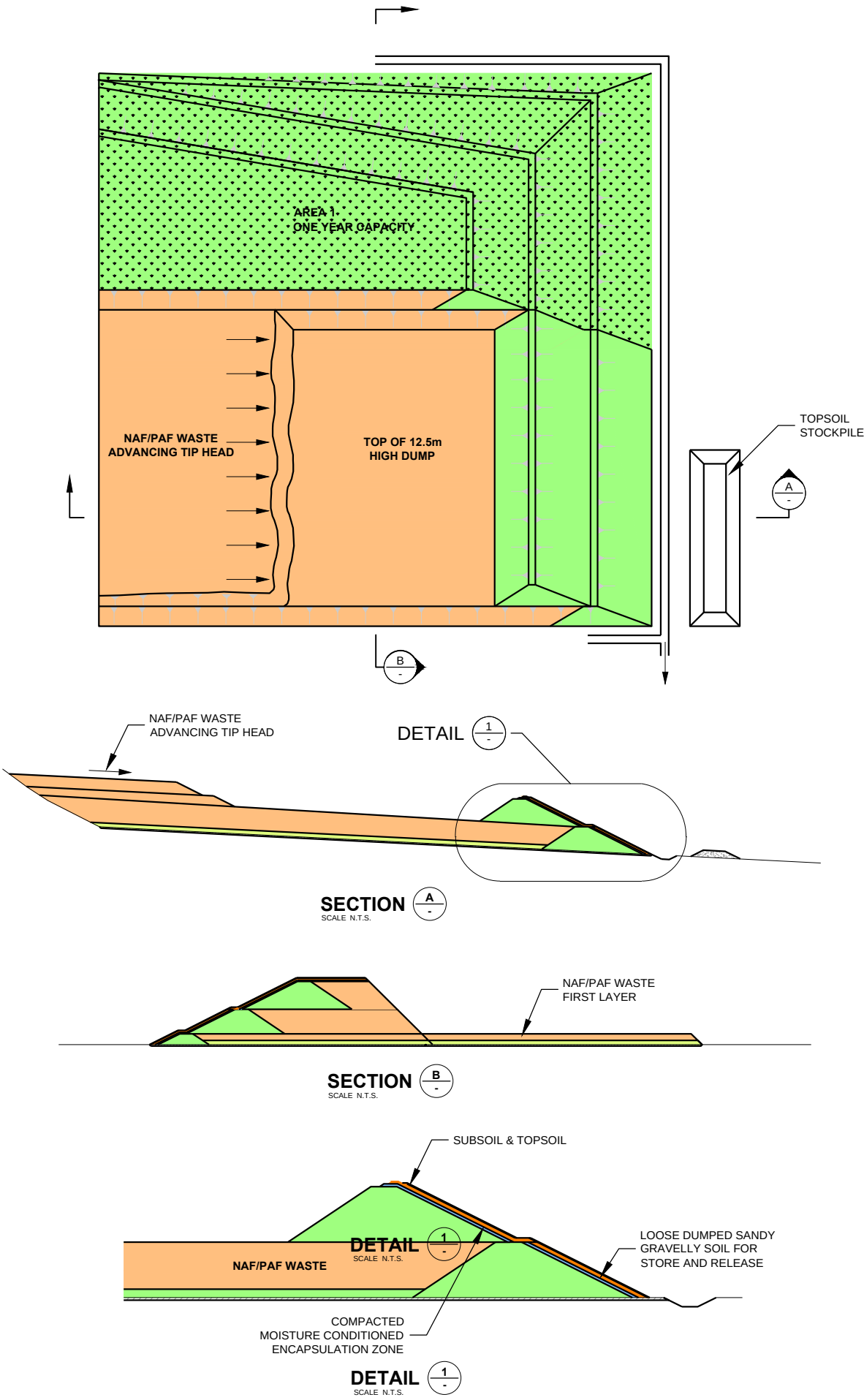
STEP 5:



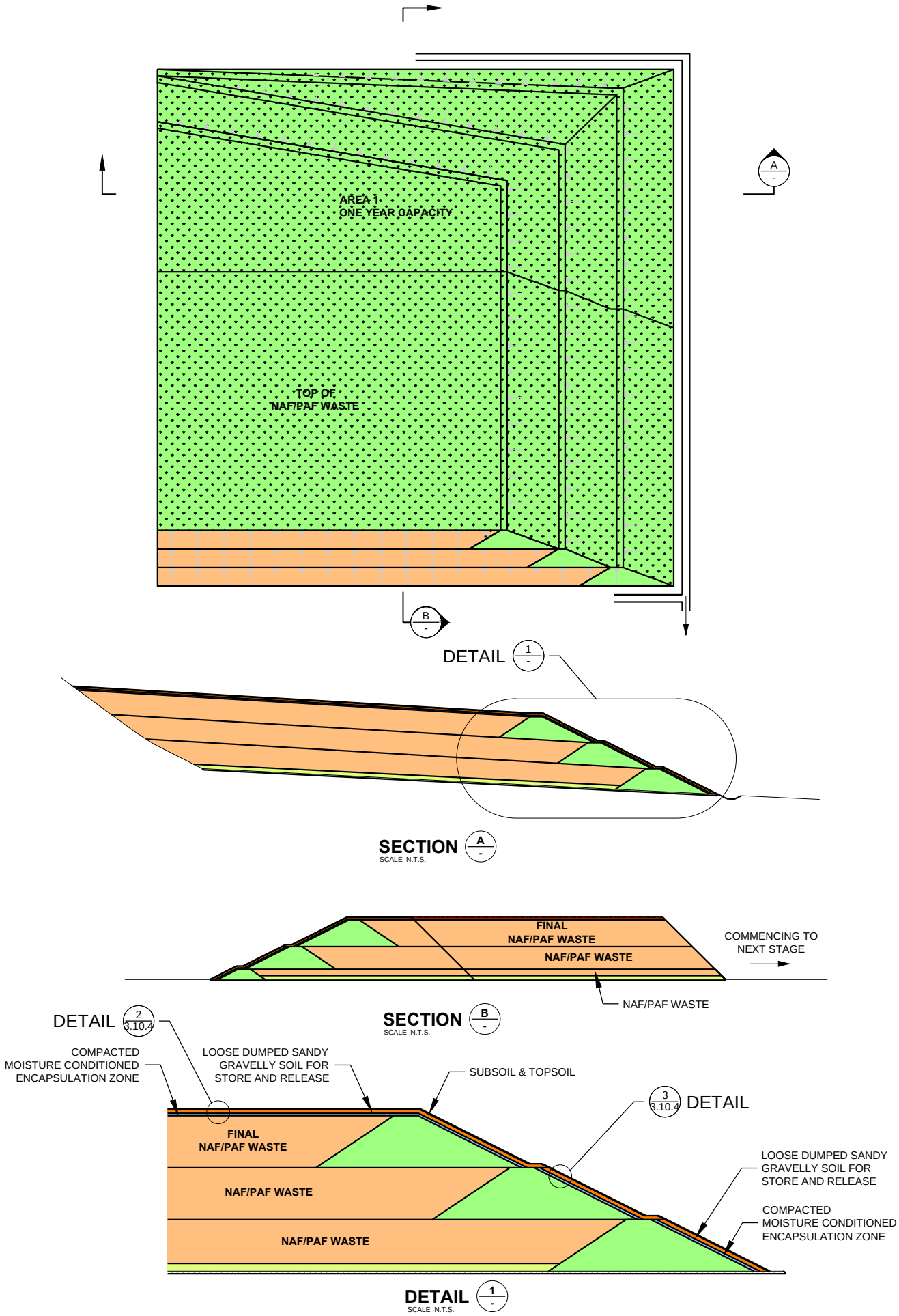
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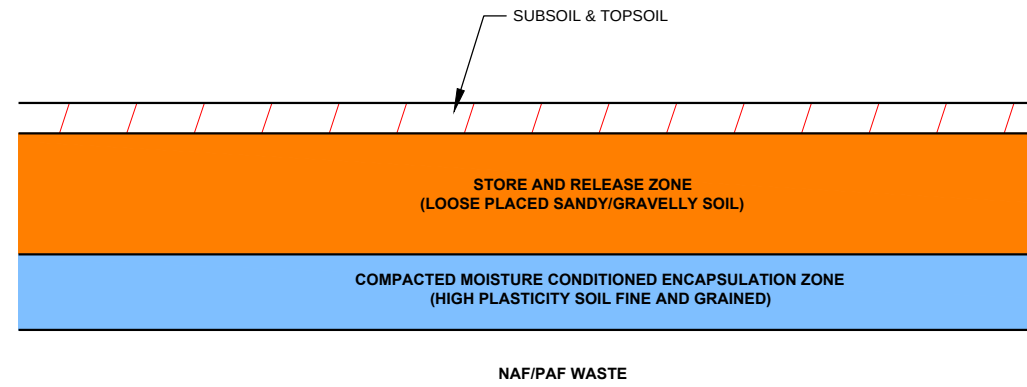


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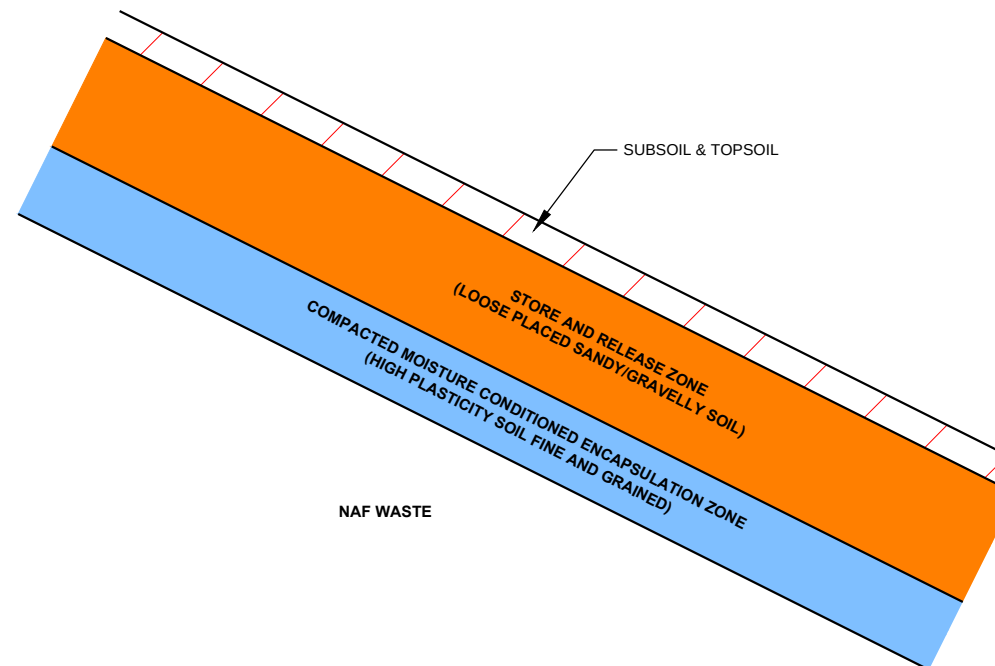


STEP 8:

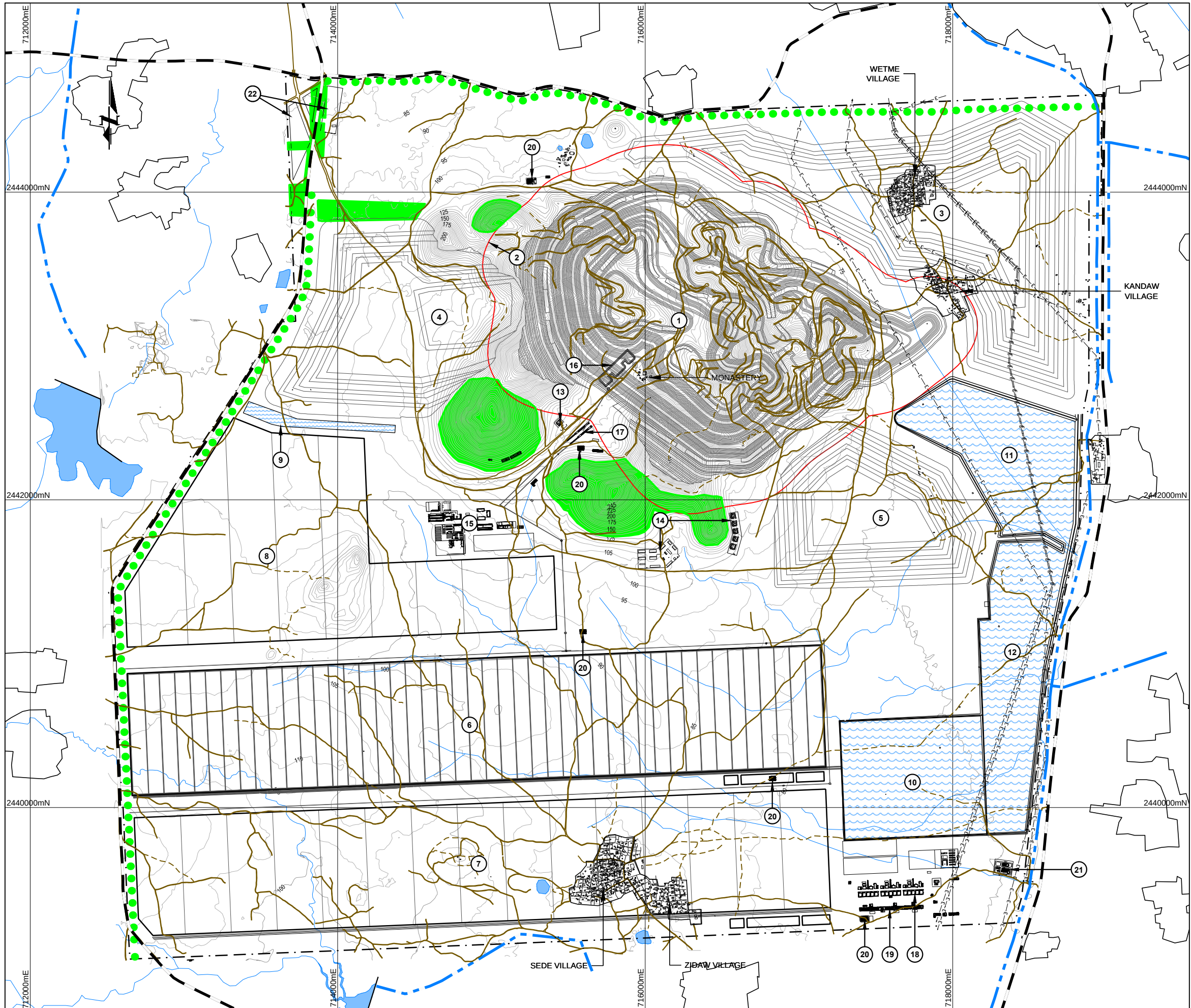




DETAIL 2 2 WRD CLOSURE COVER
SCALE 1:100 3.10.2 3.10.3 SYSTEM FOR TOP OF DUMP



DETAIL 3 3 WRD CLOSURE COVER
SCALE 1:100 3.10.2 3.10.3 SYSTEM
 FOR DUMP BATTER SLOPES



LEGEND:

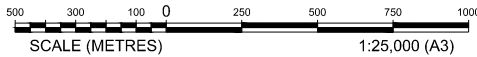
- EXISTING POWER LINE
- EXISTING MAIN ROAD (SEALED)
- EXISTING ROAD/TRACK (UNSEALED)
- LETPADAUNG LEASE BOUNDARY
- AFFORESTATION AND TREE PLANTING AREAS
- TREE LINED BOUNDARY

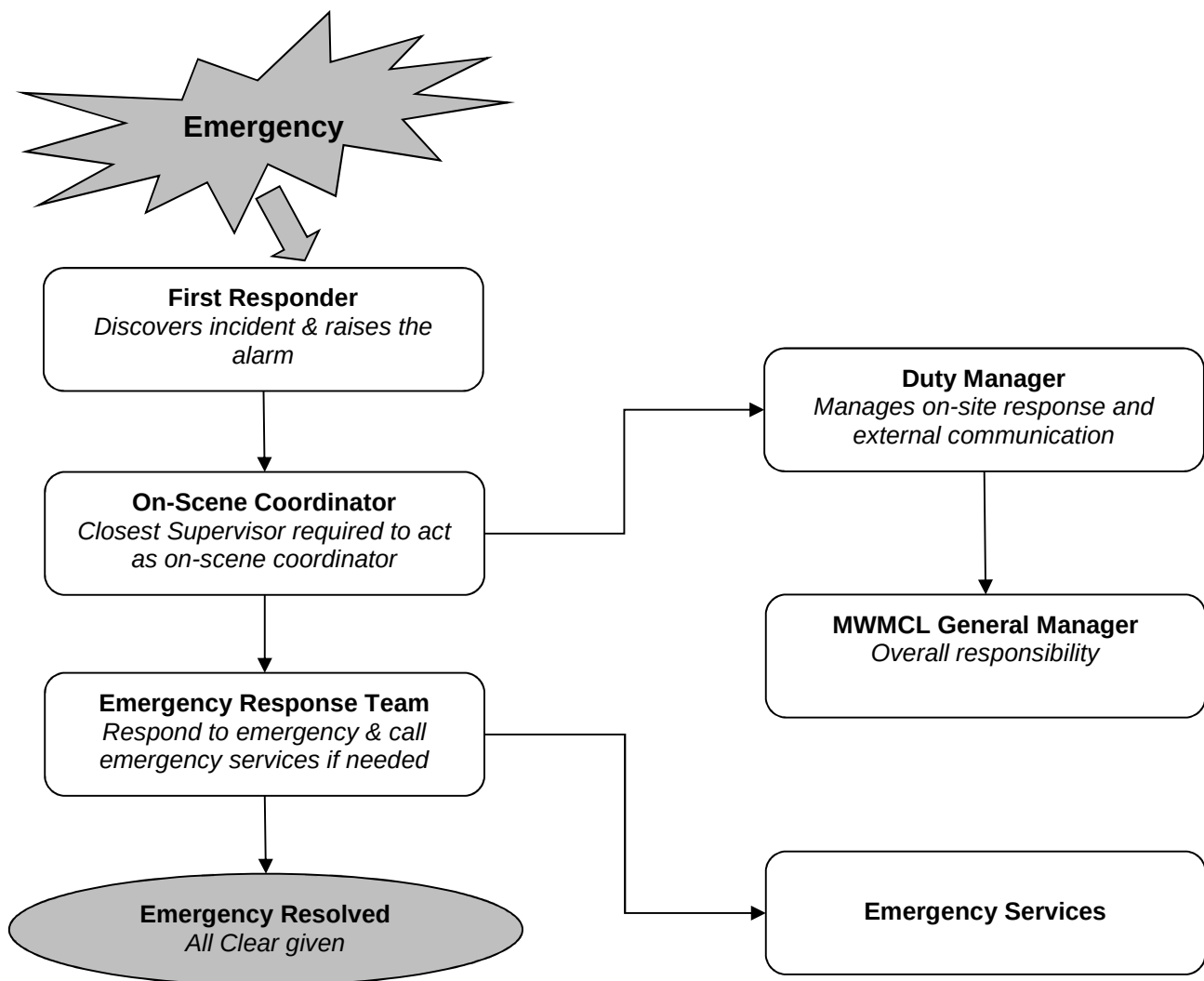
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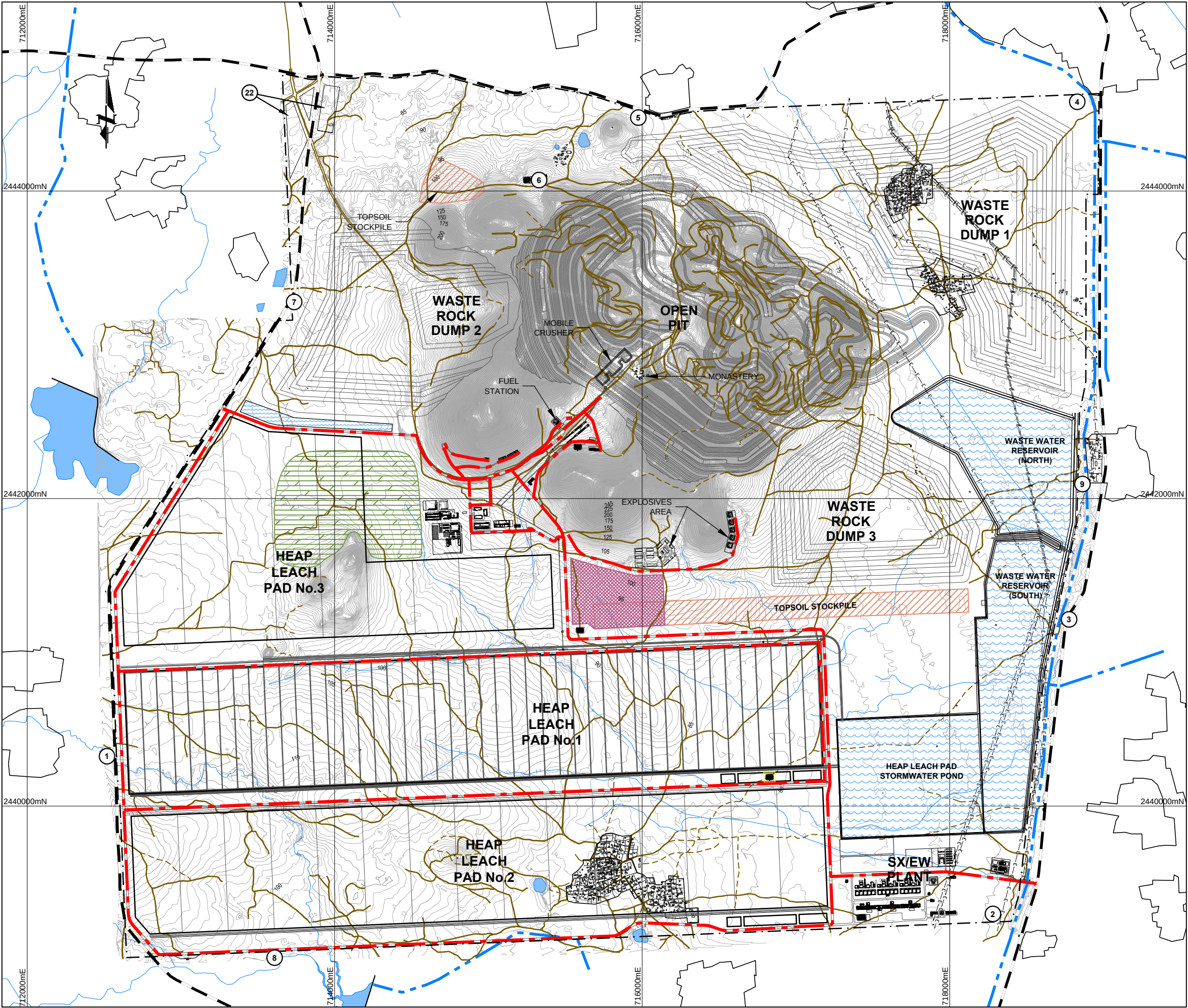
- ALL COORDINATES SHOWN IN UTM (WGS84) ZONE 46.
- 5m CONTOUR INTERVALS SHOWN.

KEY:

- 1 PIT
- 2 PIT BLAST EXTENT
- 3 WASTE ROCK DUMP No.1
- 4 WASTE ROCK DUMP No.2
- 5 WASTE ROCK DUMP No.3
- 6 HEAP LEACH PAD No.1
- 7 HEAP LEACH PAD No.2
- 8 HEAP LEACH PAD No.3
- 9 WASTE WATER COLLECTION POND
- 10 HEAP LEACH STORM WATER POND
- 11 WASTE WATER RESERVOIR (NORTH)
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- 15 OFFICES/ WAREHOUSES/ MAINTENANCE AREA
- 16 MOBILE CRUSHER FOR QUARRY
- 17 CONVEYOR FOUNDATIONS
- 18 EXTRACTION PLANT
- 19 ELECTROWINNING PLANT
- 20 33kv SUBSTATION
- 21 230kv SUBSTATION
- 22 ACCOMMODATION VILLAGE







LEGEND:

- EXISTING VILLAGE EXTENT
- EXISTING POWER LINE
- EXISTING MAIN ROAD (SEALED)
- EXISTING ROAD/TRACK (UNSEALED)
- LETPADAUNG LEASE BOUNDARY
- SITE ROAD ALIGNMENT
- LOW GRADE ORE STOCKPILE
- RESERVE ORE STOCKPILE
- TOPSOIL STOCKPILE

NOTES:

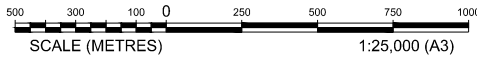
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- 1m CONTOUR INTERVALS SHOWN.

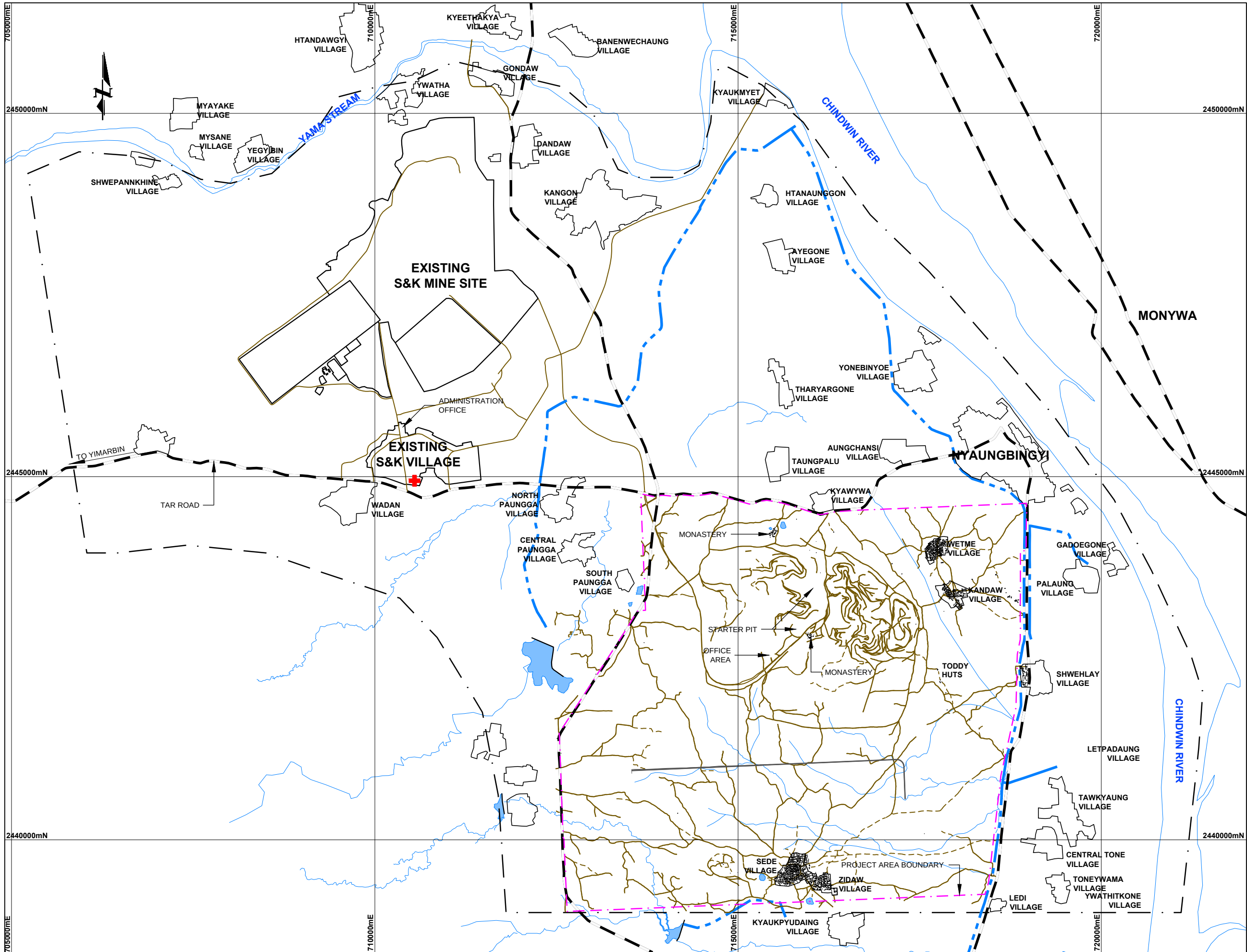
MONITORING POINTS:

- 1 MOE GYP PYN SOUTH
- 2 SX/EW PLANT
- 3 CLEAN WATER OUTLET
- 4 TAN DAW
- 5 KYAW
- 6 OPEN PIT MINE HV SUBSTATION
- 7 PHAUNGA SOUTH
- 8 GRID POINT 40/14
- 9 SHWEHLAY

SUMMARY OF MONITORING PLAN

MONITORING POINT	MONITORED PARAMETER				
	DUST/AIR QUALITY	NOISE	WATER QUALITY	WATER FLOW	WEATHER STATION
1	X	X			
2	X	X	X	X	X
3			X	X	
4	X	X			
5	X	X			
6					X
7	X	X	X	X	
8			X	X	
9	X	X			





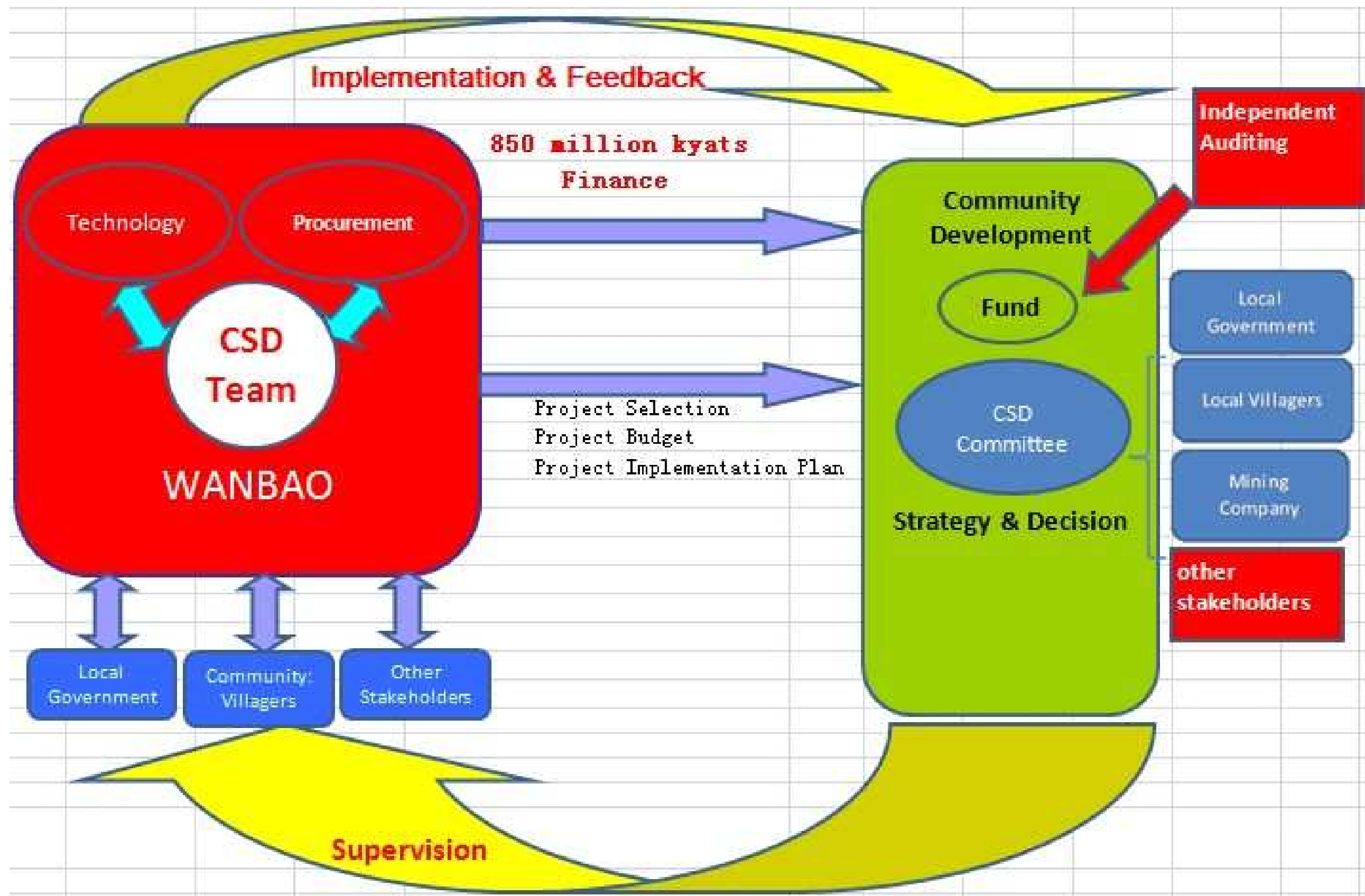
LEGEND:

- + HOSPITAL
- EXISTING CANAL
- EXISTING MAIN ROAD (SEALED)
- EXISTING ROAD/TRACK (UNSEALED)
- STUDY AREA EXTENT
- PROJECT AREA BOUNDARY

NOTES:

1. ALL COORDINATES SHOWN IN UTM (WGS84) ZONE 46.
2. 1m CONTOUR INTERVALS SHOWN.

CLIENT TO PROVIDE
ARCHAEOLOGICAL SITE
LOCATIONS





LEGEND:

- CITIES
- MAJOR HIGHWAY
- RAILWAY
- AIRPORT
- BARGE ROUTE (WET/DRY SEASON)
- BARGE ROUTE (DRY SEASON)
- ROAD (DRY SEASON)
- ROAD (EXPLOSIVE ROUTE)



TRANSPORT SUMMARY PLAN		
DESCRIPTION	DESTINATIONS	TRANSPORT MODE
PEOPLE		
LOCALS	VILLAGE <--->MINE	BY BUS
EXPATS	MANDALAY <--->MINE	BY BUS
	HOME <--->MINE	BY AIR
MATERIALS/COPPER		
DRY SEASON	PATHEIN <--->MINE	BY RIVER BARGE
	PAKOKKA <--->MINE	BY TRUCK
	PATHEIN <--->CHINA	BY SHIP
WET SEASON	PATHEIN <--->MINE	BY RIVER BARGE
	PATHEIN <--->CHINA	BY SHIP
EXPLOSIVES	CHINA <---> MINE (VIA MUSE)	BY TRUCK

APPENDIX A

Construction Environmental Risk Register

Letpadaung Copper Project

Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.01	Conducting works without required environmental approvals or in breach of requirements of existing approvals	Non-compliance	Non-compliance - Damage to reputation - Modification required to design after construction additional \$ and time - Legal ramifications	Unlikely	Serious	Moderate	Procedural: Governmental approval for project required prior to construction of new facilities. Behavioural: Include importance of project approval in toolbox/inductions	Rare	Serious	Moderate	
1.02	Clearing in areas of environmental significance	Land Management	- Destruction / modification of environmentally significant communities / species / habitats - Damage to reputation - Non-compliance	Unlikely	Serious	Moderate	Physical: Environmental site presence during veg clearing Demarcation of clearing areas and/or exclusion areas Procedural: Approvals request system to be used Internal clearing procedure to be used. Include procedure in CEMP Behavioural: Include procedure in toolbox/ prestart/induction	Unlikely	Serious	Moderate	
1.03	Failure to / incorrect collection and storage of topsoil	Soil Management	Loss of topsoil resource - Inadequate stockpile for use at closure, inadequate rehabilitation - adverse impact to the ecosystem	Possible	Serious	High	Procedural: Topsoil for new facilities to be collected (top 200mm). Store adjacent to facility in low stockpile or due to low volumes transport to nearby mine site for re-use or stockpiling. Include requirements in CEMP.	Unlikely	Serious	Moderate	

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Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.04	Chemical and hydrocarbon spills or leaks	Hazardous Materials	Release to environment - Soil, surface and groundwater contamination - Non-compliance, breach of legislation - Legal ramifications	Possible	Medium	Moderate	Physical: Provide spill response equipment, dedicated refuelling and/or workshop areas with appropriate bunding/containment Procedural: Include spill response procedure in CEMP All chemicals and fuel to be stored in bunded areas Refuelling procedure to be developed and followed by contractors - including use of drip trays during refuelling Behavioural: Include procedure in toolbox/prestart/induction	Unlikely	Medium	Low	
1.05	Release of Greenhouse Gasses from energy and fuel consumption	Air Emissions	Contribute to greenhouse gases	Likely	Minor	Moderate	Physical: Use diesel fuel Procedural: Regular maintenance of equipment	Possible	Minor	Low	
1.06	Wastewater – leakage, spill, inadequate treatment	Land Contamination	Release to environment - Soil, surface and groundwater contamination - Non-compliance, breach of legislation - Legal ramifications	Possible	Minor	Low	Physical: Design to International accepted Standards Procedural: Include requirements/procedure in CEMP for disposal of waste	Unlikely	Minor	Low	

Letpadaung Copper Project

Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.07	Vehicles / plant / excavator movement leading to the spread of weeds	Change to Ecosystems	- Introduction/spread of weed species	Likely	Minor	Moderate	Physical: Vehicles clean upon mobilisation to , known weeds will be demarcated Procedural: Weed inspection procedures and forms Behavioural: Inductions, pre start meetings and toolboxes	Possible	Minor	Low	
1.08	Dust generated from mining, earthworks and construction activities	Air Emissions Community Concern	- Dust loading onto vegetation - Potential erosion - Health issues	Likely	Serious	High	Physical: Visual dust assessment, vegetation clearing kept to a minimum Procedural: Speed restrictions, use water cart to apply water during earthworks/ on roads. Modified Waste Rock Dump Construction Technique Behavioural: Inductions, pre start meetings and toolboxes	Unlikely	Serious	Moderate	
1.09	Vehicle / Plant movements – wildlife interaction	Fauna Management	- Collision with fauna resulting in injury and death	Possible	Minor	Low	Physical: Stick to speed limits, avoid driving at night/evening Procedural: Wildlife Interactions Guidelines Behavioural: Driving course	Unlikely	Minor	Low	

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Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.10	Impact on heritage sites	Community Concern	- Non-compliance - Damage to reputation - Legal ramifications	Possible	Serious	High	Physical: Signage and barricading to indicate presence of a heritage site & exclusion zone Procedural: Approvals request system to be used Internal clearing procedure to be used Include requirements in CEMP & Contracts Behavioural: Include in toolbox/prestart/induction	Unlikely	Serious	Moderate	
1.11	Waste disposal	Land Contamination	- Non-compliance - Soil, surface and groundwater contamination - Damage to reputation - Legal ramifications	Possible	Medium	Moderate	Procedural: Develop Waste Stream Analysis, Waste Strategy and include disposal requirements in CEMP. Behavioural: Include in toolbox/prestart/induction	Unlikely	Medium	Low	
1.12	Poor construction of containment areas, i.e. bunds	Land Contamination	Poor construction resulting in spill and release of hydrocarbons to environment: - Non-compliance - Soil, surface and groundwater contamination - Legal ramifications	Possible	Major	Critical	Procedural: Quality control process to be implemented on the project.	Unlikely	Major	High	

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Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.13	Operation and/or field maintenance of vehicles/plant	Land Contamination	Spills resulting in the release of hydrocarbons to the environment - Non-compliance - damage to reputation	Likely	Medium	High	Physical: Pre start inspections, Drip Trays, Spill kits Procedural: Spill Response Procedure Behavioural: Toolbox, pre-start, Inductions, Spill Response	Possible	Medium	Moderate	
1.14	Driving outside of approved area	Non-compliance	- Potential spreading of weeds - Potential to injure fauna - Damage rare / priority species - Damage Heritage sites - Non compliance	Likely	Serious	High	Physical: Vehicles and machinery will only use existing designated tracks/roads. Area to be cleared marked in the field with pink flagging; Procedural: Clearing permit procedure Behavioural: Inductions, relevant training	Unlikely	Serious	Moderate	
1.15	Mining Operations – Blasting and Crushing	Noise & Vibration Air Emissions Community Concerns	- Non-compliance - Damage to reputation - Legal ramifications	Almost Certain	Serious	Critical	Physical: Barriers to be constructed to protect communities from noise, e.g. strategic positioning of Waste Rock Dumps. Fixed plant to be fitted with noise dampening where possible. Procedural: Blasting to occur at times when impact on community will be minimal. Behavioural: Inductions, relevant training. Advice to community.	Unlikely	Serious	Moderate	

Letpadaung Copper Project

Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.16	Construction Activities – Outside site hours	Community Concerns Noise & Vibration	- Damage to reputation - Community Complaints	Possible	Serious	High	Physical: Barriers constructed to protect communities from noise. Procedural: Avoid out-of-hours work, give notification to community if out-of-hours work required. Contractor work method statements. Behavioural: Site inductions and toolbox training.	Unlikely	Serious	Moderate	
1.17	Construction Activities – Outside site boundaries	Community Concern Non-Compliance	- Damage to reputation - Community Complaints - Legal ramifications	Possible	Major	Critical	Physical: Site boundary marked / fenced. Procedural: Clearing permit procedure. Contractor work method statements. Behavioural: Site induction and toolbox training.	Unlikely	Serious	Moderate	
1.18	Construction Activities – Unauthorised traffic movements	Community Concern Greenhouse Gases Noise & Vibration	- Damage to reputation - Community Complaints - Public / Pedestrian safety - Unscheduled delivery of materials.	Possible	Serious	High	Development and compliance with the Transport Management Plan. Notification to local communities. Site induction and toolbox training. Install signage. Journey management process.	Unlikely	Serious	Moderate	

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Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.19	Construction Activities – Inappropriate storage / transport practices for hazardous materials	Hazardous materials	- Non-compliance - Explosions of chemical, fuel or equipment on site resulting in fire and discharge of gases, fumes and chemicals to the environment.	Possible	Major	Critical	- Development and compliance with the hazardous materials management plan. - Site induction and toolbox training. - Spill kits.	Unlikely	Serious	Moderate	
1.20	Construction Activities – Concrete washout	Land contamination Hazardous materials	- Non-compliance - Impacts to soil and water quality	Likely	Serious	High	- Development and compliance with the Concrete batching management plan. Site induction and training. - Designated washout facility.	Unlikely	Serious	Moderate	
1.21	Ineffective erosion and sediment controls	Release to water Community Concerns	- Non-compliance - Impacts to soil and water quality - Excessive erosion	Almost Certain	Serious	Critical	- Minimise the extend of disturbed areas. - Development and compliance with the erosion and sediment control management plan. - All potential wind-blown materials to be stabilised to prevent them from being blown into watercourses. - Installation and maintenance of erosion and sediment controls.	Possible	Serious	Moderate	

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Construction Environmental Risk Register

Ref	Activity	Environmental Issue	Impact	Inherent Risk			Required Controls	Residual Risk			Comments
				Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating	
1.22	Mining Operations – Stockpiling of Spoil	Mineral Waste Release to Water Community Concerns	- Non-compliance - Impacts to soil and water quality - Acid Rock Drainage. Acid release to environment. - Loss of fauna habitat	Almost Certain	Major	Critical	Develop and comply with Waste Rock management plan. Designated areas for stockpiles. Minimise the extent of disturbed areas and progressive site rehabilitation.	Unlikely	Serious	Moderate	

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Construction Environmental Risk Register

Environmental Issue Category	Category Definition / Description
Release to Water	Includes all releases to both surface waters and groundwater
Air Emissions	Includes dust emissions, NOx, SOx. Excludes Greenhouse Gas Emissions.
Natural Resource Use	Includes water use. Energy and fuel consumption is covered under Greenhouse Gases.
Non-mineral Waste	Includes general waste, (including hazardous waste), sewage. Excludes tailings and waste rock.
Mineral Waste	Includes tailings and waste rock. Excludes general waste.
Land Contamination	Includes activities leading to potential soil contamination.
Noise and Vibration	Includes environmental noise and vibration from blasting, crushing, earthworks etc.
Greenhouse Gases	Includes CO2, CH4, PFCs, N2O, SF6, HFCs.
Land Management	Includes land disturbance activities associated with exploration, new projects and mines expansion. Topsoil / Resource Management.
Hazardous Materials	Includes any activities that use hazardous materials and transport and storage of hazardous materials.
Change to Ecosystems	Includes biodiversity impacts, rehabilitation, closure, continuous discharges, dewatering, weed & seed management and terrestrial fauna.
Non-compliance	Includes any known issues of non-compliance associated with a particular activity / area.
Closure	Includes any environmental issues associated with closure.
Community Concern	Includes issues which have the potential to generate community complaints.

Letpadaung Copper Project

Construction Environmental Risk Register

Consequence	Minor	Medium	Serious	Major	Catastrophic
Likelihood					
Almost Certain	Moderate	High	Critical	Critical	Critical
Likely	Moderate	High	High	Critical	Critical
Possible	Low	Moderate	High	Critical	Critical
Unlikely	Low	Low	Moderate	High	Critical
Rare	Low	Low	Moderate	High	High