

Volume Three

Environmental and Social Management Plans

VOLUME III - ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

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Volume III Annex A

Air Quality Management Plan

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LIST OF ACRONYMS

Abbreviation	Full Definition
$\mu\text{g}/\text{m}^3$	Micrograms per cubic meter
μm	Micrometer
AfDB	African Development Bank
AQS	Air Quality Standard
DMRB	Design Manual for Roads and Bridges
EHS	Environmental Health and Safety
ESHIA	Environmental, Social and Health Impact Assessment
g/m^2	Grams per meter squared
$\text{g}/\text{m}^2/\text{day}$	Grams per meter squared per day, a unit of dust deposition
IAQM	Institute of Air Quality Management
IFC	International Finance Corporation
KCl	Potassium chloride
km	Kilometer
kph	Kilometer per hour
$\text{mg}/\text{m}^2/\text{day}$	Milligrams per meter squared per day, a unit of dust deposition rate
mm	Millimeters
mph	Miles per hour
m/s	Meters per second
NaCl	Sodium chloride salt
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
PC	Process Contribution, the amount of airborne pollution that arises as a result of the process emissions
PEC	Predicted Environmental Concentration, the PC added to the existing baseline
$\text{PM}_{2.5}$	Particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 2.5 μm aerodynamic diameter
PM_{10}	Particulate matter which passes through a size-selective inlet with a 50% efficiency cut-off at 10 μm aerodynamic diameter
SO_2	Sulphur dioxide
TA-Luft	German air quality legislative tool
TSP	Total Suspended Particles (in air)
UK	United Kingdom
USEPA	United States Environmental Protection Agency
WHO	World Health Organization

DEFINITIONS

Air Quality Guideline and Air Quality Interim Target: Are the maximum allowable concentrations of pollutants in air, defined either in terms of the entire concentration in air, or the concentration arising from the Project related activity.

Dust Deposition Nuisance Criteria: Are the levels of dust deposition which are set to avoid causing nuisance issues at receptors.

Air Quality Action Level: Are levels relating to concentrations of pollutants in air, or dust deposition at which action should be taken on site to reduce emissions.

Friable Material: Material which can result in emissions of dust when disturbed, or when handled.

Real Time Monitoring: this is monitoring undertaken with a sample that actively draws an air sample (i.e. pumped) and provides instantaneous, immediate monitoring results.

Passive Monitoring: this is monitoring that utilizes the passive deposition of samples into a collection bottle and requires subsequent laboratory analysis.

Visual Monitoring: this is monitoring undertaken by eye and relying upon professional judgment to identify excessive emissions and any potentially significant issues associated with nuisance.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy) in the Danakil depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Several activities associated with the proposed Project will result in the emission of dust, and by association, PM₁₀ and PM_{2.5}, which could impact on the receiving environment. This Air Quality Management Plan (AQMP) has been developed to address the potential air quality related impacts that have been identified in the ESHIA and associated air quality impact assessment.

1.1 POLICY STATEMENT AND OBJECTIVES

The AQMP has been compiled within the context of the proposed Projects Environmental Policy Statement, as set out in *Box 1.1* below.

Box 1.1 Environmental Policy Statement

Allana will evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment.

1.2 OBJECTIVES

The objectives of this Plan are as follows:

- Provide measures and control for the reduction in emissions of dust, PM₁₀ and PM_{2.5}.
- Provide measures and controls for the maintenance of equipment and vehicles.
- Provide a schedule for ambient air quality monitoring.

- Provide action levels relating to monitored impacts, and the implementation of remedial activities in the event of action levels being triggered.

1.3 *PURPOSE AND SCOPE*

The purpose of the AQMP is to set out the actions and responsibilities for the control of emissions to air. This relates to construction, operation and decommissioning of the proposed facility.

The scope of the AQMP covers construction activities, inasmuch as relates to control of dust emissions from construction and decommissioning activities and road vehicles, and emissions from vehicles. With regard to the operational phase, the AQMP relates to emissions from the process itself, control of dust raised by on-site activities and emissions arising from road vehicles.

1.4 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

The AQMP links directly with the community Health, Safety and Security Plan (CHSSMP). Air quality has a direct link to social plans, specifically in regard to areas where people reside. The primary concern pertaining to air quality is people's health followed by negative impacts on the environment. Thus it is imperative that any future social development takes into account the zones of air quality impacts.

A summary of the legal requirements and standards relevant to the Air Quality Environmental Management Plan are presented below.

2.1 NATIONAL REGULATORY FRAMEWORK

Within Ethiopia, the following document sets out the key considerations pertaining to air quality:

- *Constitution of the Federal Democratic Republic of Ethiopia*

The constitution sets out the concept of sustainable development and provides the rights around living in a clean and healthy environment.

- *Environmental Impact Assessment Proclamation (no. 299/2002)*

The EIA Proclamation n^o 299/ 2002 came into force on 3rd December 2002. Any project listed in any directive issued pursuant to this Proclamation is to be subjected to an EIA. Project impacts must be assessed based on the size, location, nature, cumulative effect with other concurrent impacts or phenomena, trans-regional effects, duration, reversibility or irreversibility or other related effects of the project.

- *Environmental Pollution Control Proclamation (n^o 300/2002)*

The Environmental Pollution Control Proclamation came into force on 3 December 2002. The Proclamation advocates a “polluter pays” policy and the Environmental Protection Agency (EPA) or relevant regional environmental agency has the right to close or relocate any enterprise if the activity being carried out poses a risk to human health or to the environment.

2.2 NATIONAL GUIDELINES AND STANDARDS

Within Ethiopia, the following document sets out the key considerations pertaining to air quality:

- *Environmental Standards for Industrial Pollution Control in Ethiopia.*

This document sets out emission limits for emissions to air from fertiliser production; this is considered to be the most appropriate guidance related to the proposed Allana operations. In addition, the document sets out emission limits for other processes, including emission limits for total particulate matter and emission limits from combustion processes which are relevant to this study.

There are no standards enforced in Ethiopia through national legislation that are applicable to ambient air quality (as opposed to emissions, as set out above). Therefore, the air quality guidelines advocated by the International Finance Corporation (IFC) will be utilised instead.

2.3 *INTERNATIONAL GOOD PRACTICE FRAMEWORK*

The principle international documents referenced in the assessment are those from the IFC guidelines. However, these documents in themselves refer to good practice and statutory guidance from a number of sources, from, for example, the United States, Australia and the United Kingdom. Where appropriate, non-IFC guidance has been utilised to inform good practice and, in particular, to inform mitigation and emission control. In addition reference is made to the UK Government guidance¹ for the calculation of emissions of greenhouse gases.

2.3.1 *Guidance from the International Finance Corporation*

The IFC Environmental, Health and Safety (EHS) standards are considered throughout the assessment and provide the overarching guidance and principles for undertaking the assessment. The key documents considered are:

- IFC (2007) Environmental, Health, and Safety Guidelines: General EHS Guidelines.
- IFC (2007) Environmental, Health, and Safety Guidelines General Guidelines: Environmental Air Emissions and Ambient Air Quality.
- IFC (2007) Environmental, Health, and Safety Guidelines: Mining.
- IFC (2008) Environmental, Health, and Safety Guidelines: Thermal Power Plants.

Within these documents the principles for undertaking the assessment of impacts to air quality are set out. In addition, air quality standards are also set out, along with, where appropriate, emission limits and guidelines for specific technologies and operations.

One of the key aspects set out in the IFC guidelines, are ambient air quality standards based upon the World Health Organisation (WHO) Air Quality Guidelines for Europe 2000 and 2005 update. These are the principle air quality standards and guidelines utilised in the assessment. These are set out in *Table 2.1*.

¹ UK Government Department for Environment, Food and Rural Affairs (2012) 2012 Guidelines to Defra/DECCs GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors

Table 2.1 *Air Quality Standards and Guidelines*

Pollutant	Averaging Period	WHO Guideline Value ($\mu\text{g}/\text{m}^3$)
SO ₂	24-hour maximum	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)
	10-minute maximum	500 (guideline)
NO ₂	1-year mean	40 (guideline)
	1-hour maximum	200 (guideline)
TSP	1-year mean	No guideline
	24-hour maximum	No guideline
PM ₁₀	1-year mean	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)
	24-hour assessed as the third highest 24 hour period (99 th percentile)	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
PM _{2.5}	1-year mean	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)
	24-hour maximum	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)

With regards to dust deposition standards, there are several standards and guidelines published by various bodies. These are set out in *Table 2.2*.

Table 2.2 Dust Deposition Nuisance Criteria

Criteria definition	Measure of soiling (mg/m ² /day)	Data source
National Guidelines		
Possible Nuisance	350 (monthly mean)	TA-Luft (Germany)
Very Likely Nuisance	650	TA-Luft (Germany)
First Loss of Amenity	133 (monthly mean)	West Australia Nuisance Standard
Unacceptable reduction in air quality	333	West Australia Nuisance Standard
Serious nuisance	200	UK recommended nuisance dust deposition rate
Nuisance dust deposition	133	Malaysia air quality standard
Evidence based guidelines		
Noticeable (urban)	95	Source 1
Possible complaint (rural)	119	Source 1
Objectionable	167	Source 1
Probable complaint	476	Source 1
Serious complaint	1191	Source 1

Note: Source 1: Cites:

Hancock, R. P., Esmen, N. A., and Furber, C. P. (1976) "Visual Response to Dustiness", Journal of the Air Pollution Control Association, 26 (1), 1976, pp54 -57;

Beaman, A. L. and Kingsbury, R. W. S. M. (1981) "Assessment of Nuisance from Deposited Particles Using a Simple and Inexpensive Measuring System". Clean Air, 11, 1981;

Bate, K. J. and Coppin, N. J. (1991) "Dust impacts from mineral workings", Mine and Quarry, 20 (3), 1991, pp31 - 35;

Hofschreuder, P. and Vrins, E. L. M. (1992) "Nuisance from coarse dust", Journal of Aerosol Science, 23 (S1), 1992, pp691 - S694;

Quality of Urban Air Research Group. (1996) "Airborne Particulate Matter in the United Kingdom: Third Report of the Quality of Urban Air Review Group", prepared at the request of the Department of the Environment. University of Birmingham, Birmingham.

There is no clear consensus as to the level of dust deposition that is likely to result in nuisance issues. However, on the basis of pragmatic consideration of the various criteria set out in *Table 2.2*, the following magnitude criteria have been developed relating to dust deposition:

- Negligible: <120mg/m²/day.
- Small: 120 - 200 mg/m²/day.
- Medium: 200 - 350 mg/m²/day.
- Large: >350mg/m²/day.

2.3.2

African Development Bank

A review of AfDB policies, strategies and guidance was undertaken. This review did not identify any guidance relevant to the air quality management plan.

With respect to this Plan, Allana have the responsibility to ensure that adequate measures are developed and implemented by parties, including third parties, to prevent and control air quality related impacts associated with their activities.

Furthermore, Allana have the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence with respect to air quality management.

Table 3.1 outlines the roles and responsibilities related to implementing this management plan.

Table 3.1 *Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Mine Manager	<ul style="list-style-type: none"> • Review monthly and annual air quality reporting • Work with Environmental, Land and Community Relations (ELCR) Manager to identify necessary improvements in the management plan • Ensure operational personnel have management systems in place to support ELCR commitments
Environmental Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> • Work with Mine Manager to ensure AQMP addresses air quality related impacts and that the plan is suitably implemented • Responsible that all air quality and meteorological monitoring and associated reporting is undertaken
ELCR Support Staff	<ul style="list-style-type: none"> • Assist the ELCR in air quality and meteorological monitoring programmes • Carryout visual inspections of activities resulting in dust onsite • Prepare monthly air quality report (during the construction and decommissioning phase) and biannual report during the operational phase
Contractors	<ul style="list-style-type: none"> • Deliver air quality training to employees • Implement management measures relating to this plan

4.1 SUMMARY OF IMPACT MANAGEMENT

As with any project of this scale and nature, there are certain impacts that cannot be entirely eliminated, i.e. residual impacts after implementing mitigation measures. With respect to impact mitigation, the proposed Project subscribes to the philosophy of impact avoidance (by changes to project planning and/or design) and impact reduction (to reduce impacts that cannot be avoided to acceptable levels). What follows, is a description of the potential residual impacts and the mitigation measures proposed to reduce them to acceptable levels. These mitigation measures essentially comprise the “management plan” to address air quality-related impacts.

The following sections will:

- Identify potential impacts associated with each phase of the proposed Project;
- Identify the objectives and targets related to the impacts;
- Describe the management measure(s) to minimise the impact; and
- Assign responsibilities for the management measures.

4.2 MANAGEMENT DURING CONSTRUCTION

4.2.1 *Potential Impacts*

The key impacts during the construction phase relate to the potential for the raising and emission of significant quantities of dust.

4.2.2 *Objectives and Targets*

Site specific action levels are set out below. These are based upon real-time air quality monitoring, real time meteorological monitoring and the recording of visible dust emissions.

Real time monitoring of PM₁₀ will be undertaken upwind and downwind of construction activities with the use of appropriate active techniques (i.e. Osiris monitor or similar, as discussed in detail in *Section 5.2*). This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. The monitoring data will be reviewed on a daily basis to ascertain any activities taking place on site that are resulting in elevated emissions of dust, i.e. where the difference between the upwind and downwind site is greater than 150µg/m³. Where elevated PM₁₀ concentrations

are recorded, these will be considered in light of on-site activities, and if these activities are likely to be prolonged or repeated consideration will be made of additional mitigation or controls.

Real time monitoring of meteorological conditions will be undertaken at the construction site, at an upwind location. When wind speeds are elevated consideration will be made of potential dust raising activities being undertaken on site and the need for additional mitigation or controls. Consideration will also be made of wind direction, and when winds are blowing from the site towards sensitive receptors within 5km, consideration will be given to additional mitigation or controls.

In terms of long term monitoring using passive dust deposition monitoring, dust monitors (Bergerhoff gauges using dust buckets) will be placed at two upwind and two downwind locations, relative to the construction activities. The monitors will be placed at representative locations around the construction works, and will be relocated as required as construction works are undertaken in various locations. This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. In addition, monitoring will continue to be undertaken at sensitive receptors (ie villages), where these may be subject to significant impacts arising from construction activities or construction related traffic. The monitoring data will be reviewed on a monthly basis to ascertain whether long term dust depositions are unacceptable. Where the difference between the upwind and downwind site is greater than 350mg/m²/day, consideration will be made of additional mitigation or controls.

Action levels based upon real time monitoring:

- Where PM₁₀ concentrations are greater than 150 µg/m³ between an 'upwind' and downwind site; and
- Where 15 minute mean wind speed is greater than 10m/s.

Action levels based upon visual monitoring:

- Where dust raised on site is considered to be sufficient to result in nuisance at receptors.

Action levels based upon passive monitoring:

- Where long term (monthly) dust deposition at sensitive receptors exceeds 350 mg/m²/day, as the monthly average.

4.2.3

Management Actions

The control and mitigation of dust, PM₁₀ and PM_{2.5} emissions will be achieved by means of the following measures:

- With regard to impacts associated with road traffic, the paving of haul roads used by trucks is considered sufficient mitigation to render all residual impacts as negligible. The paving of haul roads will take place as early as possible in the construction phase. If appropriate, priority will be given to those sections of haul roads that are within 5km of sensitive receptors. As an interim consideration ahead of permanent paving, the use of salt encrusting of roads will be investigated, as sufficient salt encrusting will effectively attenuate dust emissions.
- During the early phases of construction works, where unpaved roads will be in use, the use of chemical surface binders or salt encrusting will be implemented to minimise emissions from the road surface. Surface watering may be appropriate for short term mitigation of dust emissions; however, due to the extreme climatic conditions in the Study Area, it is anticipated that evaporation rates will be very high and therefore, this technique largely ineffective on larger areas.
- In terms of construction activities, a number of mitigation measures will be implemented:
 - Vehicles will be kept clean and free of residual dirt and mud, and wash down should continue as is currently the case;
 - A speed limit of 45kph (28mph)⁽¹⁾ will be implemented on unpaved surfaces to minimise the potential for dust to be raised;
 - Wind breaks (these will consist of an impermeable barrier of some description) will be erected around the key construction activities (i.e. processing plant, staff village, power plant), and, if possible, in the vicinity of potentially dusty works;
 - All vehicles leaving and accessing the site carrying friable materials will be covered;
 - Where ground and earthworks are exposed, these areas will be covered as far as possible, for example with sheeting or boarding, or the use of chemical binders investigated;
 - Where ground and earthworks are covered or surface binders are used, the smallest possible area for working will be exposed;
 - Where practicable, surface binding agents will be used on exposed open earthworks and on open (unpaved) surfaces used by vehicles;
 - Use of localised dampening and activity specific dampening will be used to reduce localised emissions of dust;
 - Stockpiling of material, for example, wadi outwash, rocks, sand and soils will be minimised;
 - Drop heights of material when stockpiling will be minimised;
 - Where stockpiles are in use, the design will be optimised to retain a low profile with no sharp changes in shape;

(1) this speed is a balance between a reasonable site speed and the lowest speed for control of dust emissions.

- Stockpiles will be located as far away as possible from receptors; and
- Stockpiles will be enclosed or sheeted as far as practicable.

There are a number of surface binding agents available. These include natural based products, for example molasses, and mineral based oil and tar products. These act by binding surface fines to prevent escape and seal the surface.

The implementation of these measures is anticipated to control emissions to a sufficient level in the majority of cases. However, there may be activities that result in particularly elevated emissions of dust for short periods, for example earthworks, piling, stockpiling and export of materials. In addition, during periods of particularly elevated wind speeds, there is increased potential for dust to be raised. In these circumstances, the following additional measures will be implemented:

- The use of localised water sprays to attenuate dust emissions;
- The use of mobile wind breaks immediately around activities to reduce dust generation; and
- The temporary cessation of activities until improvements in wind conditions occur.

Vehicles will be maintained in good working order, to ensure that exhaust emissions are minimised. When idling or not in use, vehicles will be powered down, where practical.

4.2.4 Responsibility

The Allana ELCR Department will be responsible and accountable for implementing air quality management measures for the proposed Dallol Potash Project during the construction phase. Furthermore, overall accountability for auditing of air quality management lies with Allana's ELCR Department.

4.3 MANAGEMENT DURING OPERATION

4.3.1 Potential Impacts

During operations the key impacts are associated with:

- The movement of vehicles around the Study Area;
- The processing and handling of potash product; and
- The operation of the power plant.

In addition, one of the key assumptions with regard to construction activities is that the internal access roads will be paved at the earliest possible

opportunity to eliminate dust emissions from unpaved roads. This measure is not included here, as the assumption is made that this will be addressed during the early stages of the construction process and that the same roads will be used for during the operational phase.

4.3.2 *Objectives and Targets*

Site specific action levels are set out below. These are based upon real-time air quality monitoring, real time meteorological monitoring and the recording of visible dust emissions.

Action levels based upon *real time monitoring*:

- Where PM₁₀ concentrations are greater than 150 µg/m³ between an 'upwind' and downwind site.
- Where 15 minute mean wind speed is greater than 10m/s.

Action levels based upon *visual monitoring*:

- Where dust raised on site is considered to be sufficient to result in nuisance at receptors.

Action levels based upon *passive monitoring*:

- Where long term (monthly) dust deposition at sensitive receptors exceeds 350 mg/m²/day, as the monthly average.
- Where long term (monthly) concentrations of NO₂ and SO₂ exceed 40µg/m³ for NO₂ and 20µg/m³ for SO₂.

Real time monitoring of PM₁₀ will be undertaken upwind and downwind of the processing plant and activities that may result in significant dust emissions, including mine activities and haul roads. This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. The monitoring data will be reviewed on a monthly basis to ascertain any activities taking place on site that are resulting in elevated emissions of PM₁₀, i.e. where the difference between the upwind and downwind site is greater than 150µg/m³ for a period of 1 hour or more. Where elevated PM₁₀ concentrations are recorded, these will be considered in light of on-site activities, and if these activities are likely to be prolonged or repeated consideration will be made of additional mitigation or controls.

Real time monitoring of meteorological conditions will be undertaken upwind of the site. When wind speeds are elevated consideration will be made of potential dust raising activities being undertaken on site and the need for additional mitigation or controls. Consideration will also be made of wind direction, and when winds are blowing from the site towards sensitive

receptors within 5km, consideration will be given to additional mitigation or controls.

In terms of long term monitoring using passive deposition monitoring, monitors will be placed upwind and downwind of the processing plant, and dust raising activities, for example haul roads and mining areas. This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. The monitoring data will be reviewed on a monthly basis to ascertain whether long term dust deposition are unacceptable. Where the difference between the upwind and downwind site is greater than 350mg/m²/day, consideration will be made of additional mitigation or controls.

In terms of long term monitoring using passive diffusion tubes for monitoring NO₂ and SO₂, monitors will be placed upwind and downwind of the processing plant, specifically representative of sensitive receptor locations downwind of the power plant. The monitoring data will be reviewed on a monthly basis to ascertain whether long term impacts are acceptable. Where impacts are greater than the action levels, consideration will be made to modifying the operation of the power plant, modifications to emission points, and in the case of SO₂, reducing fuel sulphur content.

4.3.3 *Management Actions*

The following management actions will be implemented with respect to onsite operational vehicles:

- Vehicles will be maintained in good working order, to ensure that exhaust emissions are minimised. When idling or not in use, vehicles will be powered down, where practical.
- Trucks used to transport product will be sheeted or lidded.
- Truck wash down will be undertaken prior to departure from the site to minimise track out.

As discussed, there is the potential for significant dust, PM₁₀ and PM_{2.5} to be generated by the general movements of vehicles around the site, where these movements occur over unpaved surfaces. Therefore, the following mitigation measures will be adopted:

- Where practicable, surfaces will be permanently paved;
- Where impractical to pave surfaces, consideration will be given to the use of chemical binders to seal the surface and attenuate dust, and the use of salt encrusting for creating the road surface;

- Where short term or intermittent movements over unpaved surfaces are taking place, consideration will be made of the use of water sprays for short term dust suppression; and
- On site speeds will be limited to 45kph (28mph), as far as practicable, to reduce the potential for raising dust, PM₁₀ and PM_{2.5}.

The implementation of these measures is anticipated to control emissions to a sufficient level in the majority of cases. However, there may be activities that result in particularly elevated emissions of dust for short periods. In addition, during periods of particularly elevated wind speeds, there is increased potential for dust to be raised. In these circumstances, the following additional measures will be implemented:

- The use of localised water sprays to attenuate dust emissions;
- The use of mobile wind breaks immediately around activities to reduce dust generation; and
- The temporary cessation of activities until improvements in wind conditions occur.

With regard to the power plant, the following measures will be implemented:

- The power plant engines will be subject to routine maintenance to keep the engines in optimum working order; and
- The diesel fuel will contain no more than 350 ppm sulphur where there are sensitive receptors <350m from the plant; and 3,800ppm where there are sensitive receptors >600m, and where 3m stacks are in use, for the control of emissions of sulphur dioxide.
- Emissions of greenhouse gases from the power plant will be calculated using the methodology set out in the UK Government guidance ⁽¹⁾.

4.3.4

Responsibility

The Allana ELCR Department will be responsible and accountable for implementing air quality management measures for the proposed Dallol Potash Project during the operational phase. Furthermore, overall accountability for auditing of air quality management lies with Allana's ELCR Department.

¹ UK Government Department for Environment, Food and Rural Affairs (2012) 2012 Guidelines to Defra/DECCs GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors

4.4 MANAGEMENT FOR DECOMMISSIONING AND CLOSURE

4.4.1 *Potential Impacts*

The closure and decommissioning of the proposed Project has the potential to result in impacts to air quality. These impacts are primarily associated with decommissioning and removal of materials, demolition activities and the breaking of hardstanding. These activities will result in similar emissions as those that arise during the construction phase. The assumption is made that the internal haul roads will be removed but that the main haul road will remain. On this basis, the management and mitigation measures are similar to those for the construction phase.

4.4.2 *Objectives and Targets*

Site specific action levels are set out below. These are based upon real-time air quality monitoring, real time meteorological monitoring and the recording of visible dust emissions.

Action levels based upon *real time monitoring*:

- Where PM₁₀ concentrations are greater than 150 µg/m³ between an 'upwind' and downwind site.
- Where 15 minute mean wind speed is greater than 10m/s.

Action levels based upon *visual monitoring*:

- Where dust raised on site is considered to be sufficient to result in nuisance at receptors.

Action levels based upon *passive monitoring*:

- Where long term (monthly) dust deposition at sensitive receptors exceeds 350 mg/m²/day, as the monthly average.

Real time monitoring of PM₁₀ will be undertaken upwind and downwind of decommissioning activities. This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. The monitoring data will be reviewed on a daily basis to ascertain any activities taking place on site that are resulting in elevated emissions of dust, i.e. where the difference between the upwind and downwind site is greater than 150µg/m³. Where elevated PM₁₀ concentrations are recorded, these will be considered in light of on-site activities, and if these activities are likely to be prolonged or repeated consideration will be made of additional mitigation or controls.

Real time monitoring of meteorological conditions will be undertaken at areas where major decommissioning is taking place (processing plant, staff village

and evaporation ponds), at an upwind location. When wind speeds are elevated consideration will be made of potential dust raising activities being undertaken on site and the need for additional mitigation or controls. Consideration will also be made of wind direction, and when winds are blowing from the site towards sensitive receptors within 5km, consideration will be given to additional mitigation or controls.

In terms of long term monitoring using passive deposition monitoring, monitors will be placed upwind and downwind of the decommissioning activities. This approach takes into consideration the effect of naturally high baseline, and also emissions raised by activities at other sites. The monitoring data will be reviewed on a monthly basis to ascertain whether long term dust deposition is unacceptable. Where the difference between the upwind and downwind site is greater than 350mg/m²/day, consideration will be made of additional mitigation or controls.

4.4.3 *Management Actions*

The control and mitigation of dust, PM₁₀ and PM_{2.5} emissions will be achieved by means of the following measures:

- Where unpaved roads are in use, the use of chemical surface binders or salt encrusting will be implemented to minimise emissions from the road surface. Surface watering may be appropriate for short term mitigation of dust emissions; however, due to the extreme climatic conditions in the Study Area, it is anticipated that evaporation rates will be very high and therefore, this technique will be largely ineffective on larger areas.
- In terms of closure activities, a number of mitigation measures will be implemented:
 - Vehicles will be kept clean and free of residual dirt and mud;
 - A speed limit of 45kph (28mph)⁽¹⁾ will be implemented to minimise the potential for dust to be raised;
 - Wind breaks (these will consist of an impermeable barrier of some description) will be erected around particularly active areas of decommissioning during activities involving earthworks, concrete pad breaking, building and infrastructure removal and demolition and other activities that are likely to be particularly dust raising;
 - All vehicles leaving and accessing the site carrying friable materials will be covered;
 - Where ground and earthworks are exposed, these areas will be covered as far as possible, for example with sheeting or boarding, or the use of chemical binders investigated;
 - Where ground and earthworks are covered or surface binders are used, the smallest possible area for working will be exposed;

(1) this speed is a balance between a reasonable site speed and the lowest speed for control of dust emissions.

- Where practicable, surface binding agents will be used on exposed open earthworks and on open surfaces used by vehicles;
- Use of localised dampening and activity specific dampening will be used to reduce localised emissions of dust;
- Stockpiling of material will be minimised;
- Drop heights of material when stockpiling will be minimised;
- Where stockpiles are in use, the design will be optimised to retain a low profile with no sharp changes in shape;
- Stockpiles will be located as far away as possible from receptors; and
- Stockpiles will be enclosed or sheeted as far as practicable.

The implementation of these measures is anticipated to control emissions to a sufficient level in the majority of cases. However, there may be activities that result in particularly elevated emissions of dust for short periods. In addition, during periods of particularly elevated wind speeds, there is increased potential for dust to be raised. In these circumstances, the following additional measures will be implemented:

- The use of localised water sprays to attenuate dust emissions;
- The use of mobile wind breaks immediately around activities to reduce dust generation; and
- The temporary cessation of activities until improvements in wind conditions occur.

Vehicles will be maintained in good working order, to ensure that emissions are minimised. When idling or not in use, vehicles should be powered down, where practical.

4.4.4 Responsibility

The Allana ELCR Department will be responsible and accountable for implementing air quality management measures for the proposed Project during the decommissioning phase. Furthermore, overall accountability for auditing of air quality management lies with the Allana ELCR Department..

5.1 OVERVIEW

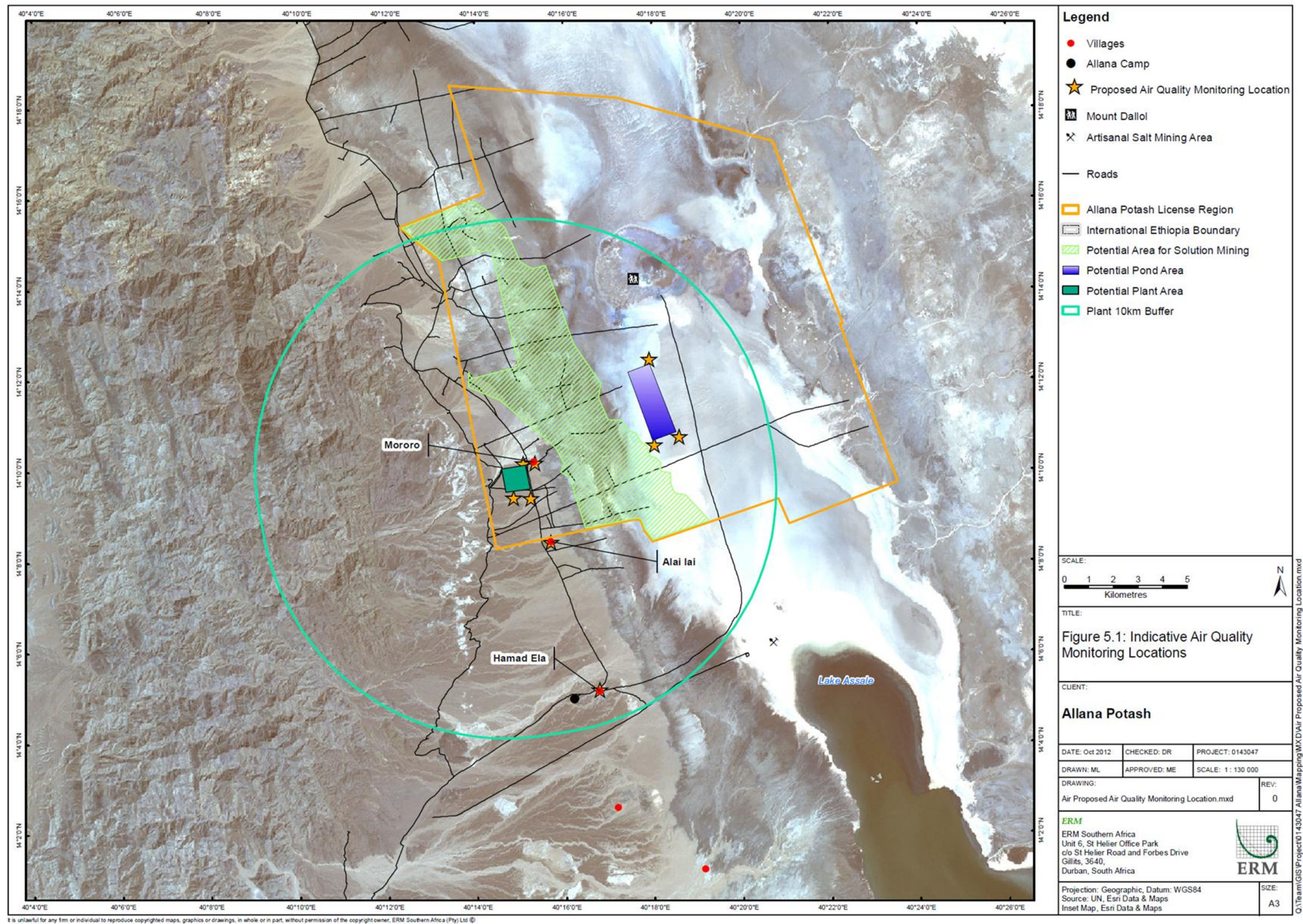
As discussed in the sections above, monitoring is required during construction, operation and decommissioning of the site. The monitoring programme is designed to assist in the decision making process around the implementation of mitigation, verify the efficiency of mitigation measures and ensure that unacceptable impacts are not arising at nearby sensitive receptors.

The monitoring programme includes the following elements:

- Real time monitoring of PM₁₀;
- Real time monitoring of meteorological parameters;
- Passive monitoring of dust deposition; and
- Passive monitoring of NO₂ and SO₂.

In addition to physical monitoring, monitoring will also be undertaken using visual inspections and by recording and acting upon substantiated complaints from local communities. Indicative monitoring locations, subject to finalisation following design finalisation of the proposed Project, are set out in *Figure 5.1* and discussed in more detail below.

Figure 5.1 Indicative Air Quality Monitoring Locations



5.2

PM₁₀ MONITORING

Real time monitoring of PM₁₀ should be undertaken upwind and downwind of the plant during construction, operational and decommissioning phases. The difference in the upwind and downwind concentrations of PM₁₀ should be used to ascertain the contribution to ambient PM₁₀ from the site. On this basis the site will be required to employ one upwind monitoring location and two downwind monitoring locations during construction and operation (refer to *Figure 5.1* for indicative monitoring locations). Given the variability in localised wind conditions, three monitoring sites at relevant locations on the site boundary are considered appropriate to adequately capture upwind and downwind PM₁₀ concentrations.

During the construction phase the monitoring data should be reviewed on a daily basis; and during the operational phase should be considered on a monthly basis. Where PM₁₀ emissions associated with the site are above the action levels investigations should be made into the sources of emissions and measures implemented to manage emissions.

PM₁₀ monitoring should be undertaken using devices that are recognised by a suitable international standard as being suitable for purpose. Examples include light scattering devices such as the Topas, Osiris, AirQual, and methods such as the Beta Attenuation Monitor. The equipment should be serviced by a competent party on a monthly basis to ensure effective operation, and should be overhauled by a qualified engineer on an annual basis.

There are a number of PM₁₀ monitoring techniques available that would be suitable for use at the site; however, techniques based upon the principle of light scattering are recommended. These have the benefit of providing short term real-time data upon which decisions around mitigation and control can be based. The use of filter based monitoring is not recommended as this technique requires the daily changing of filters in a hostile environment such as the Danakil Depression, and there is a 'lag time' as the filters require analysis from a certified laboratory. The use of devices utilising Tapered Element Oscillating Microbalance (TEOM) is also not recommended as these require highly specialised servicing.

5.3

METEOROLOGICAL MONITORING

Real time monitoring of meteorological conditions will continue at Hamad Ela and at the site of the proposed evaporation ponds. Both these sites are representative of site conditions, and are not subject to interference by the site itself, i.e. changes in wind patterns due to the interference of building structures. Meteorological data will be reviewed on a daily basis, during construction along with the PM₁₀ data to ascertain those conditions under which significant impacts arise; this will include consideration of wind direction in terms of the migration of emissions towards sensitive receptors in

addition to wind speed. During the operational phase, the meteorological data will be reviewed on a monthly basis, along with the PM₁₀ and dust deposition data. The review will identify those meteorological conditions when impacts are significant and the efficacy of any mitigation implemented.

5.4 *PASSIVE MONITORING OF DUST DEPOSITION*

Monitoring should be undertaken using passive deposition monitoring upwind and downwind of the plant during construction and operation phases. The difference in the upwind and downwind deposition should be used to ascertain the contribution to deposited dust from the site. On this basis the site will be required to employ one upwind monitoring location, and two downwind monitoring locations during construction and operation in the vicinity of the site boundary (refer to *Figure 5.1* for indicative monitoring locations). It is also recommended that for some reason the villages of Mororo and Alai lai not be resettled, then two additional sites be implemented at these two nearby sensitive receptors (refer to *Figure 5.1*). Given the variability in localised wind conditions, three monitoring sites at relevant locations on the site boundary are considered appropriate to adequately capture upwind and downwind dust deposition.

During the construction and operational phases the monitoring data should be reviewed on a monthly basis. Where dust emissions associated with the site are above the action levels investigations should be made into the sources of emissions and measures implemented to manage emissions.

The monitoring should be undertaken using an internationally recognised technique, for example with the use of Bergerhoff Gauges, or Frisbee Gauges. The analysis of samples should be undertaken by a suitably certified laboratory.

5.5 *PASSIVE MONITORING OF NO₂ AND SO₂*

Long term monitoring of NO₂ and SO₂ using passive diffusion tubes should be undertaken upwind and downwind of the power plant, specifically representative of sensitive receptor locations downwind of the power plant. Three locations on the site boundary adjacent to the power generation compound are considered adequate to capture impacts; in addition, two further monitoring locations should be implemented at nearby sensitive receptors in Mororo, Hamad Ela and Alai lai (refer to *Figure 5.1*). The monitoring data should be reviewed on a monthly basis.

The analysis of samples should be undertaken by a suitably certified laboratory.

Diffusion tubes utilise the principle of targeted diffusion of gases onto a reagent, in this case NO₂ and SO₂. In the laboratory the tubes are titrated to calculate a concentration in air, when taking into account exposure time.

5.6 *VISUAL INSPECTION*

During the construction, operation and decommissioning phase's commitment is made to undertake visual inspections of activities resulting in dust on-site. In the event that activities on site are observed to be generating significant airborne dust, the activity generating the emissions will be reviewed and as required, additional mitigation implemented, or if required, activities will be ceased. The visual inspections will be undertaken on a daily basis, and will reflect the ethos of 'see it, own it', in terms of identifying and addressing significant dust emissions. Where significant emissions are observed, these will be recorded. On the basis of the reports, where there are activities that repeatedly result in significant emissions, further investigations will be undertaken to reduce emissions.

This will be the role of the site environmental manager, or nominated representative.

5.7 *COMMUNITY COMPLAINTS*

A register of community complaints will be maintained (refer to the Stakeholder Engagement Strategy in *Annex M of Volume Three*). Where complaints are received these will be investigated and verified, where substantiated complaints are identified, an investigation into the cause of the complaint will be undertaken, and as required, measures implemented to reduce the future potential of such impacts reoccurring.

6.1 *GOVERNMENT/AUTHORITY REPORTING*

On the basis of the daily and monthly monitoring undertaken during construction and decommissioning phases, monthly reports will be generated and submitted to government agencies for consideration. During the operational phase, the monthly monitoring will be reported on a six monthly basis.

The reports will summarise the data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken. The reports will also include the findings of the visual observations, and will include a record of the activities resulting in the emission, the duration of the emission, any remedial actions taken, and the likelihood of a repetition of the dust raising activity. The reports will also summarise any complaints received from the local communities, setting out the complaint, whether it was substantiated and any actions taken to alleviate the impact. Emissions of greenhouse gases, calculated using the methodology set out in UK Government guidance ⁽¹⁾, will also be reported.

6.2 *LENDER REPORTING*

The outcomes of daily and monthly monitoring during all stages of the proposed Project will be summarised and included in the monitoring report submitted to the lenders on an annual basis. The summary will need to include the following:

- Data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken.
- Findings of visual observations, the activities resulting in emissions, the duration of the emission, remedial actions taken, and the likelihood of a repetition of the dust raising activity.
- Complaints received from the local communities and any actions taken to alleviate the impact.

¹ UK Government Department for Environment, Food and Rural Affairs (2012) 2012 Guidelines to Defra/DECCs GHG Conversion Factors for Company Reporting: Methodology Paper for Emission Factors

6.3 *INTERNAL REPORTING*

On the basis of the daily and monthly monitoring undertaken during construction and decommissioning phases, monthly reports will be generated and lodged with the Allana board of directors as part of Allana's Environmental and Social Monitoring. During the operational phase, the monthly monitoring will be reported on a six monthly basis.

The reports will summarise the data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken. The reports will also include the findings of the visual observations, and will include a record of the activities resulting in the emission, the duration of the emission, any remedial actions taken, and the likelihood of a repetition of the dust raising activity. The reports will also summarise any complaints received from the local communities, setting out the complaint, whether it was substantiated and any actions taken to alleviate the impact.

6.4 *COMMUNITY REPORTING*

On the basis of the monthly and six monthly reporting undertaken during the construction, operational and decommissioning phases, a summary report suitable for digestion by a non-technical community audience will be developed and disclosed on a six monthly basis. This report will focus upon graphical representation of information, and in particular outcomes of any community complaints and those actions taken to remedy significant impacts.

Table 7.1 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Emissions of PM ₁₀ and dust	Site emissions result in airborne concentrations of PM ₁₀ less than 150µg/m ³ . Site emissions do not result in substantiated nuisance issues at sensitive receptors, and daily average, as the monthly mean, dust deposition associated with site activities does not exceed 350mg/m ² /day	With regard to impacts associated with road traffic, the paving of haul roads used by trucks is considered sufficient mitigation to render all residual impacts as negligible. Paving of haul roads will take place as early as possible in the construction phase. If appropriate, priority will be given to those sections of haul roads that are within 5km of sensitive receptors. As an interim consideration ahead of permanent paving, the use of salt encrusting of roads will be investigated, as sufficient salt encrusting will effectively attenuate dust emissions	PM ₁₀ monitoring at three locations on the site boundary Meteorological monitoring at one location, unaffected by site buildings etc. Dust monitoring at three site boundary locations, and at two sensitive receptor locations	ELCR and ELCR Officers
		During the early phases of construction works, where unpaved roads will be in use, the use of chemical surface binders or salt encrusting will be implemented to minimise emissions from the road surface. Surface watering may be appropriate for short term mitigation of dust emissions; however, due to the extreme climatic conditions in the area, it is anticipated that evaporation rates will be very high and therefore, this technique largely ineffective on larger areas		
		Vehicles will be kept clean and free of residual dirt and mud		
		A speed limit of 45kph (28mph) will be implemented on the construction site to minimise the potential for dust to be raised		
		Wind breaks will be erected around activities with the potential to generate significant dust		
		All vehicles leaving and accessing the site carrying friable materials will be covered		
		Where ground and earthworks are exposed, these areas will be covered as far as possible		
		Where ground and earthworks are covered, the smallest possible area for working will be exposed		
		Where practicable, surface binding agents will be used on exposed open earthworks and on open surfaces used by vehicles		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		Use of localised dampening and activity specific dampening will be used to reduce localised emissions of dust		
		Stockpiling of material will be minimised		
		Drop heights of material when stockpiling will be minimised		
		Where stockpiles are in use, the design will be optimised to retain a low profile with no sharp changes in shape		
		Stockpiles will be located as far away as possible from receptors		
		Stockpiles will be enclosed or sheeted as far as practicable		
		The use of localised water sprays to attenuate dust emissions will be used		
		The use of mobile wind breaks immediately around activities to reduce dust generation will be used where practical		
		The temporary cessation of activities until improvements in wind conditions occur will take place if necessary		

Table 7.2 Operational Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Emissions of PM ₁₀ and dust	Site emissions result in airborne concentrations of PM ₁₀ less than 150µg/m ³ .	Vehicles will be maintained in good working order, to ensure that emissions are minimised. When idling or not in use, vehicles will be powered down, where practical	PM ₁₀ monitoring at three locations on the site boundary	ELCR and ELCR Officers
		Trucks used to transport product will be sheeted or lidded		
	Site emissions do not result in substantiated nuisance issues at sensitive receptors, and daily average, as the monthly mean, dust deposition associated with site activities does not exceed 350mg/m ² /day	Truck wash down will be undertaken prior to departure from the site to minimise track out	Meteorological monitoring at one location, unaffected by site buildings etc. Dust monitoring at three site boundary locations, and at two sensitive receptor locations	
		Where practicable, surfaces will be permanently paved		
		Where impractical to pave surfaces, consideration will be given to the use of chemical binders or salt encrusting to seal the surface and attenuate dust		
		Where short term or intermittent movements over unpaved surfaces are taking place, consideration will be made of the use of water sprays for short term dust suppression		
		On site speeds will be limited to 32kph, to reduce the potential for raising dust, PM ₁₀ and PM _{2.5}		
		The use of localised water sprays to attenuate dust emissions will be used		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		The use of mobile wind breaks immediately around activities to reduce dust generation will be used where practical		
		The temporary cessation of activities until improvements in wind conditions occur will take place if necessary		
Emissions of NO ₂ and SO ₂ from the power plant	Ensure that the air quality standards for NO ₂ (40µg/m ³) and SO ₂ (20µg/m ³) are not exceeded at sensitive receptors	The power plant engines will be subject to routine maintenance to keep the engines in optimum working order The diesel fuel will contain no more than 350 ppm sulphur where there are sensitive receptors <350m from the plant; and 3,800ppm where there are sensitive receptors >600m, and where 3m stacks are in use, for the control of emissions of sulphur dioxide	NO ₂ and SO ₂ monitoring at three site boundary locations, and at two sensitive receptor locations	ELCR and ELCR Officers

Table 7.3 Decommissioning Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Emissions of PM ₁₀ and dust	Site emissions result in airborne concentrations of PM ₁₀ less than 150µg/m ³ . Site emissions do not result in substantiated nuisance issues at sensitive receptors, and daily average, as the monthly mean, dust deposition associated with site activities does not exceed 350mg/m ² /day	Where unpaved roads will be in use, the use of chemical surface binders or salt encrusting will be implemented to minimise emissions from the road surface. Surface watering may be appropriate for short term mitigation of dust emissions; however, due to the extreme climate, it is anticipated that evaporation rates will be very high and therefore, this technique largely ineffective on larger areas Vehicles will be kept clean and free of residual dirt and mud A speed limit of 32kph will be implemented on the site to minimise the potential for dust to be raised Wind breaks will be erected around particularly active areas of decommissioning during activities involving earthworks, concrete pad breaking, building and infrastructure removal and demolition and other activities that are likely to be particularly dust raising All vehicles leaving and accessing the site carrying friable materials will be covered Where ground and earthworks are exposed, these areas will be covered as far as possible	PM ₁₀ monitoring at three locations on the site boundary Meteorological monitoring at one location, unaffected by site buildings etc. Dust monitoring at three site boundary locations, and at two sensitive receptor locations	ELCR and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		Where ground and earthworks are covered, the smallest possible area for working will be exposed		
		Where practicable, surface binding agents or salt encrusting will be used on exposed open earthworks and on open surfaces used by vehicles		
		Use of localised dampening and activity specific dampening will be used to reduce localised emissions of dust		
		Stockpiling of material will be minimised		
		Drop heights of material when stockpiling will be minimised		
		Where stockpiles are in use, the design will be optimised to retain a low profile with no sharp changes in shape		
		Stockpiles will be located as far away as possible from receptors		
		Stockpiles will be enclosed or sheeted as far as practicable		
		The use of localised water sprays to attenuate dust emissions will be used		
		The use of mobile wind breaks immediately around activities to reduce dust generation will be used where practical		
		The temporary cessation of activities until improvements in wind conditions occur will take place where necessary		

Volume III Annex B

Biodiversity Management Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana Potash for Review
0143047_V2.0_BMP	Andrew Cauldwell	Sally Olds/Dieter Rodewald	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AfDB	African Development Bank
BMP	Biodiversity Management Plan
ESHIA	Environmental, Social and Health Impact Assessment
ACMP	Archaeological and Cultural Management Plan
EIA	Environmental Impact Assessment
ELCR	Environmental Land and Community Relations Manager
EPE	Environmental Policy of Ethiopia
ESH-MS	Environmental, Social and Health Management System
IFC	International Finance Corporation
IMP	Influx Management Plan
PS1	Performance Standard 1: Assessment and Management of Environmental and Social Risk and Impacts
PS3	Performance Standard 3: Resource Efficiency and Pollution Prevention
PS6	Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
QHS	Quality, Health and Safety

DEFINITIONS

The following definitions are of relevance within this report:

Biodiversity Management Plan (BMP): A BMP is developed to collate information from the baseline, impact assessment and proposed mitigation into one implementable and auditable Management Plan. The BMP spells out the mitigation measures, parties responsible for their implementation, monitoring requirements and the monitoring schedule.

Critical Habitat: Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.

Natural Habitat: Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

Modified Habitat: Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition.

Red Data: The IUCN provides an online database of species that are threatened with extinction. These species are referred to as Red Data species.

Allana Potash Corp. (Allana) holds a consolidated concession covering approximately 158km² in the Danakil Depression in north-eastern Ethiopia and propose to develop a potash mine there. As part of the approval process for the Project a suite of management plans is needed to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). Several management plans have been developed to address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Several activities associated with the proposed Project will impact upon the biodiversity of the environment at a local and regional scale. This Biodiversity Management Plan (BMP) has been compiled to address the specific impacts that are anticipated to occur as a result of planned mining developments as identified in the ESHIA and associated impact assessment. This plan sets out a formal system by which Allana can manage mitigation measures that will reduce the impacts on biodiversity. Various mitigation measures have been developed that strive to achieve no net loss of the biodiversity values within natural habitats, but more importantly strive to achieve a net gain of the biodiversity values that have triggered the classification of Critical Habitats.

1.1 *POLICY STATEMENT AND OBJECTIVES*

1.1.1 *Policy Statement*

This BMP has been compiled within the context of the proposed Projects Environmental Policy Statement, as set out in *Box 1.1*.

Allan undertake to:

Evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment.

Require managers of all projects and operations to adhere to the Company Environmental Policy and to identify, evaluate, and minimize risks to the environment.

Conduct regular audits of environmental performance and emergency response plans to verify compliance with the Company's policy and applicable regulations. Identify revisions or improvements to current practices in order to minimize environmental impacts. Report findings to the Board of Directors on a quarterly basis.

Educate employees in environmental matters and responsibilities relating to performance of their assigned tasks. Entrust all employees to maintain necessary environmental performance for their activities.

Work pro-actively with government and the public to define environmental priorities. Participate in the development of responsible laws for the protection of the environment.

1.1.2

Objectives

The objectives of this BMP are as follows:

1. Protect and conserve biodiversity,
2. Maintain the benefits from ecosystem services, and
3. Promote the sustainable management of living natural resources through managing the biodiversity risk of the land it occupies and the lands it sources from.

1.2

PURPOSE AND SCOPE

The purpose of the BMP is to provide a clear set of actions and responsibilities for the control of impacts affecting the biodiversity within the Project's area of influence.

The scope of this BMP covers construction, operational and decommissioning phases of the proposed Project. Mitigation measures are presented to ensure that ecological processes are maintained and are not disrupted through the development of potash mining and related activities. Specific measures relate to minimising the unavoidable loss and fragmentation of both Critical and Natural Habitats, to have control on the influx of people, to ensure stable management practices of the pastoral areas and prevent the contamination of natural water flows.

1.3

LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS

This BMP should be read in the context of the ESH-MS (discussed in *Chapter 13 of the ESHIA*), which has been structured to provide a vehicle for the integrated management of the suite of management plans described in *Volume III* which have been designed to address a broad range of social and environmental risks.

It is recognised that the ESH-MS and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

The BMP links with the Influx Management Plan. Details of this link are described in *Table 1.1* below.

Table 1.1 *Details of Linkages between the BMP and Other Management Plans associated with the Allana Project*

Management Plan	Overlap of the BMP with Content of Other Plans
SOCIAL MANAGEMENT PLAN	
Influx Management Plan (IMP)	An uncontrolled influx of people attracted to the perceived economic opportunities provided by the project presents a threat to the biodiversity of the area.

A summary of the legal requirements and standards relevant to the ERP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

The following Ethiopian regulation informed the development of this BMP:

- *Constitution of the Federal Democratic Republic of Ethiopia*

The constitution sets out the concept of sustainable development and provides the rights around living in a clean and healthy environment.

- *The Environmental Policy of Ethiopia, 1997*

The Environmental Policy of Ethiopia (EPE), 1997 was established by the EPA of Ethiopia in collaboration with the Ministry of Economic Development and Cooperation. Key elements of this policy that are of relevance to this project include the following:

- **Section 3.6: Mineral Resources:** The policy acknowledges that mineral resources are not renewable resources. The policy promotes environmental protection, environmental education and awareness for the public and safe mining methodologies. Terms and conditions of a contract should be utilised to ensure that all pre-development environmental impact studies, appropriate mitigation and reclamation measures are taken during and after the operations.
- **Section 4.9:** Requires an EIA to consider the physical, biological, social, socio-economic, political and cultural impacts and conditions of a development. For private sector developments, the developer has the ultimate responsibility to ensure that a preliminary and a full EIA are performed. Mitigation and contingency plans are compulsory elements in an EIA. The policy also requires that the EIA process involves independent review and public comments.
- *The Ethiopian Water Sector Policy, 2001*

The overall goal of the policy is to enhance and promote all national efforts towards the efficient, equitable utilisation of water resources of Ethiopia. Furthermore, the policy aims for optimised utilisation that allows for sustainable socioeconomic development.

- *Environmental Impact Assessment Proclamation (no. 299/2002)*

The EIA Proclamation n^o 299/ 2002 came into force on 3rd December 2002. Any project listed in any directive issued pursuant to this Proclamation is to be subjected to an EIA. Project impacts must be assessed based on the size, location, nature, cumulative effect with other concurrent impacts or phenomena, trans-regional effects, duration, reversibility or irreversibility or other related effects of the project.

2.2

IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 1 (PS1) – Assessment and Management of Environmental and Social Risk and Impacts*

PS1 aims to identify and assess environmental and social risks and impacts of any given project. The project must adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. PS1 promotes improved environmental and social performance of clients through the effective use of management systems. Furthermore, the standard promotes and provides a means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

- *Performance Standard 3 (PS3) – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

- *Performance Standard 6 (PS6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources*

PS6 has the greatest relevance to this study. Performance Standard 6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living and natural resources are fundamental to sustainable development. This standard covers the following aspects:

- To protect and conserve biodiversity;
- To maintain the benefits from ecosystem services; and

- To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

2.3

AFRICAN DEVELOPMENT BANK PROCEDURES, GUIDELINES AND POLICIES

The African Development Bank (AfDB) founded in 1964 provides funds to African governments and private companies investing in Africa. The objective of the overarching AfDB Group is to spur sustainable economic development and social progress in its regional member countries, and thus contributing to poverty reduction. AfDB policies procedures and guidelines relevant to ecological aspects of this Project include:

- *Environmental and Social Assessment Procedures for AfDB's Public Sector Operation (June, 2001)*

The environmental and social assessment (ESIA) procedures set out by the AfDB's ensure that the Banks projects, programmes and plans have been designed to make them environmentally and socially sustainable.

- *Integrated Environmental and Social Impact Assessment Guidelines (October 2003)*

The AfDB completed a review of its environmental assessment procedures and integrated the bank's new vision and emerging priorities, particularly crosscutting themes. The new procedures, entitled Environmental and Social Assessment Procedures were produced and adopted in June 2001. Crosscutting issues prioritised and deemed relevant to the BMP include the following:

- *Environment* - encompassing air, water, soil, flora, fauna, landscape, cultural heritage and human interactions and impacts on the biosphere.
- *Participation* - the goal of actively involving the project stakeholders, particularly those who stand to gain or to lose from a project.

Projects should enhance positive impacts and, in the following order, on prevention, minimise, mitigate or compensate adverse impacts. This approach implies that most of the measures should be related to project design, location and implementation rather than curative interventions that handle adverse outcomes after the emergence of the anticipated problems.

With respect to this Plan, Allana have the responsibility to provide biodiversity management and to structure and coordinate biodiversity management procedures for the proposed Dallol Potash Project.

Furthermore, Allana have the responsibility for ensuring that specific biodiversity responsibilities allocated to them are organised and implemented. Allana have the responsibility to ensure that their employees and contracted third parties are trained and aware of all required biodiversity procedures.

The roles and responsibilities within Allana for the implementation of the BMP are presented in *Table 3.1*.

Table 3.1 *Responsible Parties and Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Mine Manager	<ul style="list-style-type: none"> • Review monthly biodiversity reporting • Work with ELCR Manager to identify necessary improvements
Environmental Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> • Support QHS manager as required in emergency response planning • Support QHS manager in development of training and management plans to ensure environmental concerns are addressed • Provide regular spill and accident reporting
ELCR Manager and Environmental Control Officer/s (on-site)	<ul style="list-style-type: none"> • Schedule monthly inspections and audits and resolve issues identified • Schedule biodiversity training sessions for relevant staff • Prepare monthly biodiversity report
Environmental Control Officers (on-site)	<ul style="list-style-type: none"> • Provide biodiversity information at local level and liaise with potentially affected communities • Keep detailed records of stakeholder communication and actions • Perform inspections after major events (i.e. heavy rains, earthquakes, etc.)
Identified Community Representatives	<ul style="list-style-type: none"> • Participate in Community Biodiversity Training

4.1 SUMMARY OF IMPACT MANAGEMENT

As with any project of this scale and nature, there are impacts on biodiversity that cannot be entirely eliminated, i.e. residual impacts after implementing mitigation measures. With respect to impact mitigation, the proposed Project subscribes to the philosophy of impact avoidance (by changes to Project planning and/or design) and impact reduction (to reduce impacts that cannot be avoided to acceptable levels). What follows, is a description of the potential impacts and the mitigation measures proposed to reduce them to acceptable levels. These mitigation measures essentially comprise the BMP to address ecologically-related impacts.

The following sections will:

- Identify potential impacts associated with each phase of the proposed Project;
- Identify the objectives and targets related to the impacts;
- Describe the management measure(s) to minimise impacts; and
- Assign responsibilities for the management measures.

An overview of the impacts assessed in this plan is presented in *Table 4.1* showing those phases of the proposed Project that have mitigation measures presented to minimise the effects of these impacts.

Table 4.1 *Impacts Assessed in this Plan and their Applicability to the Various Phases of the Proposed Project*

IMPACT	PHASE		
	Construction	Operation	Closure
Habitat loss and fragmentation within the salt pan fringe habitat	✓	✓	✓
Loss of critical aquatic habitats due to groundwater extraction		✓	✓
Habitat loss and fragmentation of the alluvial habitats	✓	✓	✓
Loss of terrestrial Red Data species	✓	✓	✓
Reduced water quality of aquatic systems, particularly within the Sabah River	✓	✓	✓

4.2 *MANAGEMENT DURING THE CONSTRUCTION PHASE*

4.2.1 *Potential Impacts*

The prominent impacts resulting from the construction phase relate to habitat loss of the Salt Pan Fringe habitat, habitat loss of the alluvial habitats, loss of terrestrial Red Data species and reduced water quality of aquatic systems.

4.2.2 *Objectives and Targets*

Key objectives for the construction phase are:

- To ensure that proper planning of mine activities takes place and recognise the importance of minimising the footprint of development activities and avoidance of sensitive areas;
- To ensure the survival of Killifish populations within their natural habitats;
- Prevent the loss of Red Data birds and mammals; and
- To promote the continuation of normal drainage patterns.

4.2.3 *Management Measures*

Numerous management actions have been developed to guide the implementation of mitigation measures presented in the ESHIA. Many of these actions are also relevant to the Operation and Decommissioning phases described later in this report. Responsibilities and verification requirements for these actions are presented at the end of this document. Actions have thus been grouped and numbered below to provide links to the mitigation measures and to provide a simple reference through this document.

Action Group A.: Establish Baseline State for Palm Density and Health

A baseline count and assessment of the health of Doum Palms present in the Salt Pan Fringe habitat will be undertaken prior to the start of construction works, which will allow the future state of the habitat to be compared. This will include carrying out the following activities:

- Coordinates of all large (mature) palm clusters within a 300 meter x 300 meter area within the Salt Pan Fringe habitat will be marked with a GPS. These coordinates will then be forwarded to an Allana appointed GIS facility.
- A GIS operator will then confirm the presence of large palm clusters through an assessment (remote sensing) of detailed satellite imagery. These locations will then be mapped throughout the Project Area.

- Mapping of palm clusters must be followed by a ground-truthing exercise to confirm their presence and classify these into the following size/health categories:

	Small	Medium	Large	Very large
Healthy	Cat01	Cat02	Cat03	Cat04
Unhealthy	Cat05	Cat06	Cat07	Cat08
Dead	Cat09	Cat10	Cat11	Cat12

- The above GIS mapping exercise will separate the Salt Pan Fringe habitat into development zones, and data must be consolidated per zone to determine the total number of palm clusters per size/health category and their density per zone. This will provide a detailed baseline from which the future health of the palms can be compared. A monitoring programme is described in *Section 5.1*.

Action Group B.: Avoid Development of Infrastructure and Borrow Pits in Salt Pan Fringe Habitat

The construction footprint must be minimised within the Salt Pan Fringe habitat (which is the habitat that supports numerous mature palm clusters) through adoption of the following measures:

- Proper planning in advance of any linear developments passing through this habitat (or within a 150m buffer thereof if practical) will be undertaken. Planning will determine the minimum required footprint of the disturbance.
- Linear infrastructure that passes through this habitat will be grouped, for example pipelines, powerlines and roads will (as far as possible) follow the same route and occupy the minimum possible width.
- Developments within this habitat will be restricted to essential linear infrastructure that needs to cross over this habitat.
- Any activities that can be conducted elsewhere will be shifted away from this habitat. Housing, offices, warehouses, workshops etc. will not be constructed in this habitat.
- All construction activities will be clearly demarcated on the ground under the supervision of a surveyor.
- The outer limits of the construction work will be demarcated using rolls of brightly-coloured plastic tape on raised stakes.
- Construction office and any containers that are temporarily required will be located outside of the Salt Pan Fringe habitat.

- Vehicle parking and turning bays will not be located in the Salt Pan Fringe habitat.
- Borrow pits required for excavating gravel for road construction must be located outside of the buffer zones designated the Salt Pan Fringe habitat in the Baseline.
- All surplus materials, equipment and any redundant infrastructure, mixed concrete and broken equipment will be promptly removed once immediate works have been completed.

Action Group C.: Initiate and Operate a Doum Palm Nursery

- A qualified horticulturalist with experience in palm propagation will be sourced by Allana.
- The horticulturalist will advise and lead the most cost efficient approach of propagating large numbers of young Doum Palm plants either through seed germination or tissue culture techniques. A combination of techniques may be best to ensure success and genetic diversity is maintained.
- Genetic material for propagating palms will be sourced from within or nearby the Project site to preserve the genetic purity of the palm species that are present there.
- Allana will replace palms that have been determined by an appointed botanist to have been lost within the Salt Pan Fringe as a result of mining activities (see *Section 5.1*). Lost palms will be replaced with young plants at a ratio in excess of 10:1.
- A policy will be developed by Allana for the distribution of palm fronds to communities.
- Allana will provide young palm plants within two years of the start of the construction phase to local schools, community organisations and members of the local communities willing to grow plants in areas of suitable habitat within the vicinity of the project area.

Action Group D.: Transplanting Palms to Other Areas

- Infrastructure will need to be put in place that will require established palms to be removed. Wherever possible, these plants will be carefully dug out of the ground with their roots intact and transplanted in appropriate locations.
- Adequate areas for transplanting palms within the greater project area or further afield will be identified prior to any construction activities in the Salt Pan Fringe habitat.

- Small specimens will be easier to transplant. As such, initial efforts will focus on smaller plants to assess the capacity required and build experience for moving larger specimens.
- Experience will be gained in transplanting plants and it may be possible to break larger palm clumps into a number of individual plants. Transplanting activities will however attempt to recreate the palm clump structure that traps windblown sands.

Action Group E.: Avoid Development within Alluvial Habitats where practically possible

Alluvial habitats have been classified as ecologically sensitive habitats and developments there will be minimised. This will be done by carrying out the following:

- Infrastructural development within the sandy grassland alluvial habitat around the existing airstrip and the former BHP Billiton camp will be avoided as far as is practically possible.
- Linear infrastructure that passes through this habitat will be grouped, for example pipelines, powerlines and roads will (as far as possible) follow the same route and occupy the minimum possible width.
- Adequate drainage structures will be installed under roads and pipelines to allow unimpeded movement of storm water flow/flood waters.
- The minimum footprint that will be disturbed will be clearly demarcated so that staff and contractors know to restrain their activities within the demarcations.

Action Group F.: Protection of a Set Aside Area

A Set-aside has been proposed for the Salt Pan Fringe habitat. The following actions will guide the establishment and management of a Set-aside area within the concession boundaries:

- The biodiversity present in this area will be protected through a prohibition on any development activities, settlement, and disturbance of the habitat and hunting of wildlife. The success of these efforts will be monitored and protection of the area will be enforced as required.
- A clear set of rules defining what activities are acceptable and what activities are not allowed in the Set Aside area will be compiled. For example community harvesting of Doum palm products such as leaves and fruit can be tolerated but the cutting of wood from trees must be prevented.

- Development plans will clearly identify the Set Aside area.
- Boundaries of the Set Aside area will be defined on the ground, in the form of beacons at regular intervals of approximately 500m. Spacing should be such that beacons are visible from one another.
- Signboards will be erected to identify the Set Aside area where roads intersect the boundaries.
- Rules of the Set Aside will be advertised on signboards when entering the prescribed area, and also in areas where communities are made aware of the concept.
- A reporting system will be put in place to allow contraventions of the Set Aside rules to be raised by concerned parties.
- Awareness of the successes of the protected environment will be disseminated to local community organisations such as schools.
- Patrols will be conducted by security personnel at irregular intervals to monitor the occurrence of unwanted activities described above, such as the presence of snares, evidence of hunting activities revealed by empty bullet casings and off road vehicle activity.

Action Group G.: Protection of Killifish Populations

The groundwater fed pools at Mororo and in the vicinity of Hamad Ela will be monitored through the following procedure:

- The full extent of the pools will be mapped and measured from a focussed aerial image.
- A minimum of three base points per pond will be established before any construction activities begin. These points will be selected on gently sloping banks where alteration in water levels will reveal prominent horizontal shrinkage or expansion. These points will be permanently marked on the ground by placement of large metal stakes.
- A record of whether stakes are standing in the water or on dry land, and the shortest distance to the water's edge will be measured from each pole every two weeks.
- On site measurements of water quality will be recorded every two weeks covering the following parameters:
 - Temperature;
 - Salinity;
 - pH;
 - Dissolved oxygen;

- Electrical conductivity; and
 - Total dissolved solids.
- Water samples (quantity = 1 litre in a sealed bottle) will be analysed on a monthly basis for measurement of the following parameters:
 - Heavy metals;
 - Sulphates;
 - Orthophosphates;
 - Alkalinity (CaCO₃);
 - Nitrates (NH₄); and
 - Organic Carbon.
 - The size of fish populations in each pool will be estimated using non-destructive methods that do not involve the physical catching of any fish. This will be achieved by taking a photo of large shoals of fish on a monthly basis throughout the current phase with a camera fitted with a polarizing filter to avoid glare off the water surface. The number of fish will then be counted in the photo. Furthermore, the date and time function on the camera must be set to reflect on each picture taken.
 - The minimum estimated size of fish populations per pool will be allocated to one of the following categories:
 - Greater than 10 fish;
 - Greater than 50 fish;
 - Greater than 100 fish;
 - Greater than 500 fish; or
 - Greater than 1000 fish.
 - The pond name and the observer(s) names will be recorded and archived with the photographs.
 - Data will be analysed at least every two months to determine whether there is a noticeable trend of a declining or growing population of fish.
 - Evidence of any dead or deformed fish will be noted. If such observations occur frequently or are affecting more than 1% of the population, affected specimens will be taken and submitted to an ichthyological laboratory for further investigation of possible causes.

Please Note - dead or damaged live fish with evidence of severe injuries could be the result of predatory attacks from large water beetles that co-exist with the fish or fish-eating birds such as kingfishers or cormorants. This is a natural phenomenon and is not necessarily a cause for concern. Action must not be taken against natural predators of these fish.

- If it is found that water levels are dropping differently from baseline conditions that have been determined for these ponds, then additional water must be provided with an appropriate salinity and pH.
- If it is found that there are changes to the water's chemical composition or that fish are dying, the cause must be investigated and remedied.

Action Group H.: Develop an Improved Understanding of the Killifish

Allana will provide financial and logistical support to an aquatic ecologist with a minimum of a Master's degree in aquatic ecology from an appropriate academic institution to study the Killifish species in the greater vicinity of the Project area. It is anticipated that at least a 2-year research project will be required.

- The presence of high-salinity pools in the greater area of the Danakil Depression will be investigated and known sites mapped.
- The presence of Killifish populations within the above mapped high-salinity pools and within Lake Assale will be investigated, and their level of protection from development impacts will be assessed.
- If additional Killifish populations can be located in the greater area, then similarity between these populations will be compared to those Killifish within the Project area.
- Genetic comparisons will be made between the different Killifish populations within the Project area and those within the freshwater habitats of the Sabah River.
- Availability of alternative water sources will be investigated. Allana will demonstrate and justify the availability / non-availability of alternative water sources.
- The tolerance of fish under controlled environments to survive various water quality changes, such as salinity and temperature changes will be investigated through an internationally accredited laboratory committed to ethical conduct of research projects.
- The Critical Habitat classification, mitigation measures and actions presented in the Baseline Assessment, the Impact Assessment and this management plan are to be reassessed based on outcomes of further studies into the killifish *Aphanius dispar*. If robust and secure populations can be shown to be present, then the Critical Habitat classification provided for the Killifish population within the Project area can be lifted, thus alleviating expense and effort for Allana. However if the results indicating a unique range-restricted species exists, then more stringent conservation measures are required.

- Results of ecological studies must be published in appropriate peer-reviewed scientific journals to contribute a greater understanding of this species.

Action Group I.: Prevent the Loss of Egyptian Vultures and Striped Hyaena

Red Data birds and mammals namely Egyptian Vultures (*Neophron percnopterus*) and Striped Hyaena (*Hyaena hyaena*), are at risk of being lost due to mining related activities within their environment. These species are scavengers and a significant component of their diet is thought to originate from camel carcasses. The following actions are required to minimise the known risks faced by these species:

- The awareness of the presence of Egyptian Vultures and Striped Hyena will be raised by placing pictures which clearly show their identifying features in places frequented by people. These people would include the workforce, their families and local communities.
- Well-illustrated posters will be produced that explain the recognising features and the ecology of these birds and animals. These posters will be circulated among schools, community halls and mining facilities.
- Any powerlines installed will be done so with a range of devices such as spirals and flappers to improve the visibility of the electrical wires for birds. Areas in the vicinity of surface water are most sensitive to collisions with large flying birds and a higher density of visibility devices will be required there.
- Bird-friendly electrical pylon designs that include safe perching facilities and which keep the live wires widely separated will be used. These designs save large numbers of raptors and also avoid frequent electrical disruptions. A variety of appropriate designs have been tested under African conditions by the Eskom power utility in South Africa.

Action Group J.: Promote the Camel-based Culture for the Salt Trade

Continuation of a camel-based culture for the local salt trade will be promoted through the following actions:

- Allana, its staff and contractors will not trade salt by-products obtained from the solution mining processes. Surplus salt will be disposed of within the salt pan.
- Large camel trains will be allowed continuous access to areas of high-quality salt resources within the salt pan. Pathways suitable for guided trains of camels to walk along will be maintained.

- The greatest danger to the camel-based culture of salt trade is the use of trucks or trains to transport salt to distant markets. Access for trucks to the salt pan will therefore be restricted.
- Allana will consult with the Ethiopian government with respect to removing the BHP Billiton road that enters into the indigenous salt mining area.
- Roads leading into the Salt Pan built by Allana will include numerous culverts that allow the natural spread of rising waters within the pan. This is important to ensure the annual replenishment of salt resources for the Salt Trade.

Action Group K.: Monitoring of Egyptian Vultures and Striped Hyena

Red Data birds and mammals are at risk of being lost due to mining related activities within their environment. As such the following monitoring techniques will be adopted:

- Evidence of the presence of Egyptian Vultures and Striped Hyaena will be recorded wherever possible. Records will be based on photographs of individuals, spoor or reliable reports of sightings by staff and/or subcontractors.
- Attempt to acquire at least one record per species per month to ensure that sufficient records are acquired over a period of time and to reduce the possibility of a species disappearing or declining unnoticed.
- Records will be associated with a GPS coordinate and date and time of observation were possible.
- A search for evidence of presence will be conducted when no records have been acquired for one of these species over a two month period. Disappearance of either these species will be investigated through liaison with communities to determine if there is any knowledge of poisoning or persecution taking place.

Please Note - Egyptian Vultures may be nomadic and their absence for a period of six months is not necessarily cause for concern.

- Communities will be consulted if there is concern for the disappearance of a species to determine if poisoning or persecution is taking place and rectify accordingly.
- Locations of camel carcasses will be recorded in the greater Study Area of influence. Records will include the following data wherever possible:

- Estimated date of death of the camel;
 - GPS-recorded location;
 - Date of first observation;
 - Observer's name;
 - Evidence of any scavengers feeding on the carcass including Egyptian Vultures, other vultures, Crows, Striped Hyaena, Jackal, Fox and domestic dogs; and
 - Additional data including cause of death, approximate age of camel and any evidence of poisoning would be useful but extremely difficult to determine in most situations.
- Some form of recognition should be provided to communities for reporting the above information when the presence of carcasses can be verified.

Action Group L.: Protection of Wildlife

Allana will develop and implement a Wildlife Protection Policy. All staff and contractors will be required to abide by the policy. This policy will cover the following aspects:

- Hunting of wildlife will be strictly prohibited by staff and contractors;
- Collection of any wildlife products such as ostrich eggs from the wild will be prohibited;
- Trade (including transport) in any wildlife products will be prohibited. This includes purchase of any products of wildlife origin from local communities, or the sale to communities of tourists.
- Development of any form of trade in wildlife products by local communities to tourists will be discouraged and products will not be transported on their behalf;
- Penalties for breaking the rules of the Wildlife Protection Policy will be specified within the policy and enforced.

Action Group M.: Generating Pride in the Local Presence of Wildlife

Allana will promote local pride in the presence of wildlife within the Study Area through implementation of the following:

- Staff and contractors will be encouraged to report interesting wildlife sightings and observations.
- Recognition for reporting worthwhile wildlife observations will be publicised accordingly.

- Conservation efforts for the local wildlife will be included into Allana's reporting systems.
- Lambing season of the local Dorcas Gazelles will be a notable event each year.
- Internal wildlife photography competitions will be supported and rewarded by Allana.
- Additional means of generating pride will be explored.

Action Group N.: Recognise Land Tenure for Afar Pastoralists

- Some form of land tenure will be locally recognised for the established Afar pastoralists to protect their grazing lands and cultural heritage.
- Formal land tenure for pastoralist communities may be difficult to achieve, however Allana will internally recognise and support their rights.

Action Group O.: Additional Conservation Actions

The Ethiopian Regional Conservation Authorities (ERCA) have expressed a willingness to collaborate with Allana and opportunities for joint ventures will be investigated, these may include:

- The African Wild Ass is Critically Endangered and the area to the south of Allana is one the few remaining wild populations. Allana may collaborate with the ERCA to find ways to secure this population.
- Beisa Oryx formerly occurred within the Study Area. This antelope could represent a flagship species for Allana and efforts to reintroduce a herd may be investigated in collaboration with the ERCA.
- Collaborative training between Allana Security and ERCA game scouts may be investigated. An exchange of skills will be mutually beneficial.

Action Group P.: Maintaining Good Water Quality in the Sabah River

The Sabah River is the only source of fresh water into the Study Area. In order to maintain water quality in this system the following will be implemented:

- Erosion control measures will be installed wherever erosion risks might occur as a result of Allana's activities. Erosion control measures will include the following:
 - Construction of wire gabions filled with waste rock to create retaining walls that prevent erosion.

- Installation of concrete aprons on the downside of culverts to dissipate the flow of water exiting a pipe.
 - The creation of continuous steep slopes will be avoided along areas where large quantities of storm water flows could gain momentum.
 - The continuation of natural drainage patterns wherever possible will be promoted.
- Signs will be erected at the Sabah River clearly stating in the local language that washing of vehicles in the river is not allowed.
 - Appropriate dirty water management systems will be installed and properly managed by Allana as required.
 - Freshwater will be provided to local communities only at locations that have been pre-approved by the various local authorities.

Action Group Q.: Monitoring of Water Quality in the Sabah River

To ensure that a water quality in the Sabah River is maintained the following will be implemented:

- Water quality within the Sabah River will be monitored and will be done as per the water quality monitoring procedures described earlier in this Plan.
- Two fixed monitoring points will be identified in different locations where there is easy access to the river and on site measurements taken every two weeks for the following parameters using a hand-held meter:
 - Temperature;
 - Salinity;
 - pH;
 - Dissolved oxygen;
 - Electrical conductivity; and
 - Total dissolved solids.
- Water samples (one litre quantity in sealed sample bottles) should be taken on a monthly basis and analysed in an appropriate laboratory for the following parameters:
 - Heavy metals,
 - Sulphates,
 - Orthophosphates,
 - Alkalinity (CaCO₃),
 - Nitrates (NH₄), and
 - Organic Carbon.

Action Group R.: Discourage Settlement along the Sabah River

Increased settlement along the Sabah River will lead to greater levels of pollution and contamination there. Development of the proposed Project is expected to attract significant numbers of people to the area, and the abundant freshwater provided by the Sabah River provides an attractive area for settlement. As such Allana will carry out the following:

- Allana will collaborate with the local authorities where possible and assist them to implement a land use plan that has settlement areas identified.
- Settlement will be encouraged around existing towns where facilities such as schooling, medical care, waste removal etc. can be provided.

4.3 **MANAGEMENT DURING THE OPERATIONAL PHASE**

4.3.1 **Potential Impacts**

The prominent impacts affected by the operational phase relate to habitat loss of the Salt Pan Fringe habitat, loss of critical habitats due to groundwater extraction, habitat loss of the alluvial habitats, loss of terrestrial Red Data species and reduced water quality of aquatic systems.

4.3.2 **Objectives and Targets**

Key objectives for the operational phase include the following:

- To ensure that the development of mining activities is in accordance with mine development plans and that the footprint of activities is minimised, particularly within sensitive natural habitats;
- To ensure the survival of Killifish populations within their natural habitats through the natural supply of adequate quantities of groundwater to the highly-saline pools on the edges of the salt pan;
- Controls are exercised on inward migration of people to the area in response to economic opportunities presented there;
- Prevent the loss of Red Data birds and mammals; and
- To promote the continuation of normal drainage patterns.

Management Measures

Action Group S.: Translocate Seed Populations of Killifish to Newly Created Artificial Water Bodies

Small numbers, approximately 20 fish, will be translocated from the groundwater fed saline pools to each artificially created water body that supports a water quality suitable for these fish to survive. Results of the water quality monitoring implemented during the construction phase must be used to determine the required salinity levels and other parameters such as pH, Total Dissolved Solids and Electrical Conductivity must be matched for the water to be supplied.

Such actions will not jeopardise the current populations of these fish, but potentially increase their numbers considerably and provide a buffer against loss of the species. It must be noted that such actions do not replace *in situ* conservation efforts of the species.

Translocation of fish to other naturally occurring water bodies where fish already occur will **not** take place. For example, fish will not be moved from the Mororo pools to the Hamad Ela pools or to Lake Assale. Fish populations are naturally isolated by different drainage systems or pools, and Killifish in particular have evolved considerable genetic differences. The Killifish in the Sabah River have evolved different patterns from those in the Salt Water pools.

Action Group T.: Artificial Habitat Maintenance

If ponds are at risk of drying out due to a shortage of natural groundwater seepage, water will be provided artificially. Results of the water quality monitoring implemented during the construction phase must be used to determine the required salinity levels and other parameters such as pH, Total Dissolved Solids and Electrical Conductivity must be matched for the water to be supplied.

Large water tanks will be installed outside of the Salt Pan Fringe habitat in which a sufficient quantity of water will be stored and the quality matched to the required levels a few days before being slowly dispensed to the pools. The temperature will then be approximately correct and a gradual provision will allow the dissolved oxygen levels to balance within normal parameters.

Actions presented within the Construction Phase will be continued during the Operational Phase. The numbered action groups are presented in *Table 4.2* overleaf.

Table 4.2 *Overview of Action Groups from the Construction Phase Applicable to the Operational Phase*

Action Group	Description	Number of Actions Required
Construction Phase		
B	Avoid Development of Infrastructure and Borrow Pits in Salt Pan Fringe Habitat	11
C	Initiate and Operate a Doum Palm Nursery	5
D	Transplanting Palms to Other Areas	4
E	Avoid Development in Alluvial Habitats where practically possible	5
F	Protection of a Set Aside Area	9
G	Protection of Killifish Populations	12
H	Develop an Improved Understanding of the Killifish	7
I	Prevent the Loss of Egyptian Vultures and Striped Hyaena	5
J	Promote the Camel-based Culture for the Salt Trade	5
K	Monitoring of Egyptian Vultures and Striped Hyaena	11
L	Protection of Wildlife	5
M	Generating Pride in the Local Presence of Wildlife	6
N	Recognise Land Tenure for Afar Pastoralists	2
O	Additional Conservation Actions	3
P	Maintaining Good Water Quality in the Sabah River	5
Q	Monitoring of Water Quality in the Sabah River	3
R	Discourage Settlement along the Sabah River	2

4.4 *MANAGEMENT DURING THE DECOMMISSIONING PHASE*

4.4.1 *Potential Impacts*

The prominent impacts affected by the decommissioning phase relate to habitat loss of the Salt Pan Fringe habitat, loss of critical habitats due to groundwater extraction, habitat loss of the alluvial habitats, loss of terrestrial Red Data species and reduced water quality of aquatic systems.

4.4.2 *Objectives and Targets*

Key objectives for the closure and decommissioning phase include:

- To ensure that infrastructure is removed and areas are rehabilitated, particularly in sensitive habitats;
- To ensure that the pools that support Killifish populations are not unexpectedly altered through an abrupt discontinuation of groundwater extraction, and that their future groundwater supply will be secured; and
- Former workers are repatriated and discouraged from remaining in the area.

4.4.3 *Management Measures*

Numerous actions are presented for the Construction and Operation Phases. Some but not all of these actions are relevant to the Decommissioning Phase. Actions have been grouped and numbered within the Construction and Operation Phases. To avoid unnecessary repetition, Action groups relevant to the Decommissioning Phase are presented in *Table 4.3*.

Table 4.3 *Overview of Action Groups from the Construction and Operational Phases Applicable to the Decommissioning Phase*

Action Group	Description	Number of Actions Required
Construction Phase		
B	Avoid Development of Infrastructure in Salt Pan Fringe Habitat	11
E	Avoid Development in Alluvial Habitats where practically possible	5
F	Protection of a Set Aside Area	9
G	Protection of Killifish Populations	12
I	Prevent the Loss of Egyptian Vultures and Striped Hyaena	5
J	Promote the Camel-based Culture for the Salt Trade	5
K	Monitoring of Egyptian Vultures and Striped Hyaena	11
L	Protection of Wildlife	5
M	Generating Pride in the Local Presence of Wildlife	6
N	Recognise Land Tenure for Afar Pastoralists	2
O	Additional Conservation Actions	3
P	Maintaining Good Water Quality in the Sabah River	5
Q	Monitoring of Water Quality in the Sabah River	3
R	Discourage Settlement along the Sabah River	2
Operational Phase		
T	Artificial Habitat Maintenance	2

4.5 *TRAINING REQUIREMENTS*

Training requirements for employees, contractors and community liaison staff to implement the actions presented for the Construction, Operation and Decommissioning Phases are outlined in this Section.

Water Quality Monitoring

Environmental staff must be trained in the use of hand held meters which are required to provide basic water quality measures including temperature, salinity, pH, dissolved oxygen, electrical conductivity and total dissolved solids. Training will be provided on the correct use of these meters as well as their maintenance requirements.

Fish Identification

Environmental staff will be trained to be able to correctly recognise the Killifish species that occurs in the Mororo and the Hamad Ela pools and be able to distinguish these from other fish species in the Sabah River.

Furthermore, environmental staff will be trained to be able to differentiate between healthy fish, deformed fish, sick fish and injured fish.

Identification of Key Red Data Species

Environmental staff will be trained in the correct identification of Egyptian Vultures and Striped Hyenas. It is essential that staff are able to differentiate hyenas from similar species such as Jackals and foxes, and distinguish Egyptian Vultures from other large white birds such as Sacred Ibis and Egrets. Capacity will however be further developed to correctly identify these species from evidence of the presence such as spoor, bite marks on bones and feathers.

Using GPS

Environmental staff will be trained in the correct use of GPS to record locations in the field.

Community Liaison Skills

Environmental staff must be trained in the correct approaches to conduct community liaison exercises.

Patrolling within Natural Areas

Security personnel will be familiar with the necessary field craft to conduct patrols within natural areas and observe signs of wrong doing, particularly illegal hunting of wildlife. Security personnel will be trained in appropriate responses to being exposed to an armed attack from unfriendly adversaries. Collaboration with the Ethiopian Conservation Authorities will reveal opportunities for such training.

Opportunities to boost the training of government conservation personnel can be investigated at the same time.

Verification and monitoring the effectiveness of actions taken to alleviate impacts is important. As discussed in the sections above, monitoring is required throughout the life of the proposed Project. A Biodiversity monitoring programme is presented here to assist in the decision-making process around the implementation of mitigation, verification the efficiency of mitigation measures and to ensure that unacceptable impacts are not arising at nearby sensitive receptors.

The monitoring programme includes the following elements which are discussed in detail thereafter:

- Monitoring the protection success of a Set-aside in the Salt Pan Fringe habitat;
- Monitoring water supply to the groundwater fed pools;
- Monitoring fish populations;
- Monitoring the presence of Red Data bird and mammal species; and
- Monitoring water quality and quantity in the Sabah River.

5.1

SURVIVAL AND HEALTH OF PALM TREES IN THE SALT PAN FRINGE HABITAT

A suitably qualified and experienced botanist must be appointed to conduct monitoring programmes. Areas of the Salt Pan Fringe habitat covering approximately 3 ha will be randomly selected and all Doum Palm plants allocated to the same size/health categories used for the baseline palm assessment (refer to Action group A of the Construction Phase). Results will then be compared against the results initially obtained in the Palm Baseline Report to determine and quantify if there has been a loss of palm plants. These assessments must be conducted within three locations of 3 ha each at least four times per year.

	Small	Medium	Large	Very large
Healthy	Cat01	Cat02	Cat03	Cat04
Unhealthy	Cat05	Cat06	Cat07	Cat08
Dead	Cat09	Cat10	Cat11	Cat12

The botanist will assess the numbers of palm plants that have died or are in a reduced state of health since the last survey. The extent to which these losses are attributed to Allana's operations will be determined by the botanist, who will then determine where and how many young palm plants need to be

planted in compensation for these losses. A recommended ratio is 10 planted palms per individual lost.

Survival rates of planted palms and translocated palms must be assessed by the appointed botanist during subsequent assessments.

5.2 SET-ASIDE AREA IN THE SALT PAN FRINGE HABITAT TYPE

A Set-aside has been proposed for the Salt Pan Fringe habitat. The following brief monitoring measures (including *Table 5.1*) can guide the establishment of a Set-aside area within the concession boundaries:

- The biodiversity present in this area will be protected through a prohibition on any development activities, settlement, and disturbance of the habitat and hunting of wildlife. The success of these efforts will be monitored and protection of the area will be enforced as required during the lifespan of the project.
- The area will be inspected on an irregular basis to monitor the occurrence of unwanted activities described above, such as the presence of snares, evidence of hunting activities revealed by empty bullet casings and off road vehicle activity. Community harvesting of Doum palm products such as leaves and fruit will be tolerated but the cutting down of trees will be prevented.

Table 5.1 Monitoring Requirements for the Set-aside Habitat

Monitoring Protection Efforts of the Set Aside Habitat	
Monitoring Action	Patrol of the area to observe any evidence of ecologically destructive activities within the Set Aside habitat
Frequency	Frequent but irregular basis to avoid following a routine that can be predicted by external parties
Response	Discourage destruction of the habitat through appropriate actions. Persuasive discouragement of unwanted activities is the preferred approach to deal with local community members engaged in minor destructive activities. Support from the conservation authorities, police or military may be required if hunting with rifles occurs.
Responsibility	Allana security, coordinated by the ELCR Manager / Officer

5.3 WATER SUPPLY TO GROUNDWATER FED POOLS

Survival of the small Killifish in the groundwater fed pools at Mororo and Hamad Ela is necessary to meet the requirements of the IFC Performance Standard 6. Various mitigation measures have been presented to achieve this goal.

Various parameters will be monitored to ensure the survival of the Killifish as outlined below.

5.3.1 *Extraction and Changes in Groundwater Levels*

Water extracted from the underground resources will need to be monitored and used to calibrate the groundwater model that is being developed. Changes to the ground water levels will be correlated to extraction data and climate data to develop a predictable model that can be used to avoid a sudden collapse of groundwater resources.

5.3.2 *Monitoring the Extent of the Killifish Habitat*

Extent of the Killifish habitat, i.e. the actual groundwater fed pools will be monitored. This includes the water depth and the surface area.

A mitigation measure presented in the Impact Assessment and within this report requires that an accurate baseline estimate of the extent of the pools needs to be determined using a high resolution aerial image and GIS tools. The water edge will be physically marked at a few key points (minimum of three points per pond) at the time of this baseline measurement. These points will be selected on gently sloping banks where alteration in water levels will reveal prominent horizontal shrinkage or expansion. Changes in the extent of the habitat will in future be monitored based on these few points around each pond. The parameters to be monitored are presented in *Table 5.2*.

Table 5.2 *Monitoring Requirements for the Extent of the Groundwater Seepage Pools Habitat*

Monitoring the Extent of the Groundwater-fed Pools	
Monitoring Action	Measuring the distance of the water's edge from a few key points established around the various groundwater pools at Mororo and Hamad Ela to determine if these pools are growing or shrinking.
Frequency	Fortnightly (every 2 weeks)
Response	Groundwater extraction to be reduced in accordance with the hydrologists model if continued shrinkage of the pools occur.
Responsibility	ELCR Manager / Officer

5.3.3 *Water Quality within the Killifish Habitat*

Monitoring of water quality in the groundwater fed pools at Mororo and Hamad Ela is as important as water quantity. These monitoring requirements will be implemented during the construction, operation and decommissioning phases. Reduced water levels would be expected to correspond to increased temperature and salinity and reduced dissolved oxygen. These three variables are key parameters to be monitored and can be measured *in situ* quickly and easily with hand-held meters. Fluctuations during the day can be expected due to climate effects and a fixed time of day is required for these measurements. Additional parameters such as pH, dissolved oxygen, electrical conductivity and total dissolved solids will also be measured concurrently using a simple hand-held meter.

Water samples will be analysed in an appropriate laboratory for the presence of heavy metals, sulphates, Orthophosphates, Alkalinity (CaCO₃), Nitrates (NH₄) and Organic Carbon to monitor possible changes as a result of mining activities in the vicinity. Water quality monitoring requirements and procedures are presented in *Table 5.3*.

Table 5.3 *Monitoring Requirements for Water Quality of the Groundwater-fed Pools*

Monitoring the Water Quality of the Groundwater Pools		
Monitoring Action	<i>In situ</i> measurements of water quality including temperature, salinity, pH, dissolved oxygen, electrical conductivity and total dissolved solids.	Water samples submitted for measurement of heavy metals, sulphates, Orthophosphates, Alkalinity (CaCO ₃), Nitrates (NH ₄) and Organic Carbon.
Frequency	Fortnightly (every 2 weeks)	Monthly
Response	If a trend of increasing temperature and salinity is detected and corresponds to reduced water quantity in the pools, then groundwater extraction needs to be reduced in accordance with the geohydrologists model.	Investigate the cause of any dramatic changes in water quality parameters and rectify as appropriate.
Responsibility	ELCR Manager / Officer	

5.3.4 *Changes and Health of the Killifish Populations*

Size of the fish populations will be estimated to detect declining trends so that measures can be implemented before the populations disappear. Any methods used to estimate the numbers of fish will be non-destructive and will not involve the physical catching of any fish.

The pools are small, the water is clear and the fish are easily observed from the edge of the pools. Fish shoals will be photographed with a camera fitted with a polarizing filter to avoid glare off the water surface. Numbers of fish can be counted in selected photos. A precise estimate of the population size is not necessary but it will be a simple exercise to estimate if the population exceeds one of the following threshold levels:

- Greater than 10 fish;
- Greater than 50 fish;
- Greater than 100 fish;
- Greater than 500 fish; or
- Greater than 1000 fish.

Evidence of any dead fish or deformed fish will be noted. If such observations occur frequently or are affecting more than 1% of the population, affected specimens will be taken and submitted to an ichthyological laboratory for further investigation of possible causes.

Monitoring requirements and procedures are presented in *Table 5.4*.

Table 5.4 Monitoring Requirements for Killifish Population Size and Health

Monitoring the Population Size and Health of the Killifish Populations		
Monitoring Action	Estimate the minimum fish population per pond through photographing prominent shoals of fish. Data records to include: <ul style="list-style-type: none"> • Minimum fish population estimate; • Date of observation; • Photographs; and • Observer’s names. 	Observe any evidence of poor health through presence of sick, deformed fish or death from unknown causes. These observations are to be separated from injuries as a result of natural predation.
Frequency	Monthly	Fortnightly (every 2 weeks)
Response	Investigate the cause of a trend in declining populations.	Specimens to be submitted for analysis if sick, deformed fish or dead fish are detected regularly or exceeding 1% of the population.
Responsibility	ELCR Manager / Officer	ELCR Manager / Officer

5.4 PRESENCE AND HEALTH OF RED DATA BIRDS AND MAMMAL SPECIES

Persecution of Red Data birds and mammals has been identified as a potential risk. The threatened species at risk are Egyptian Vultures (*Neophron percnopterus*) and Striped Hyaena (*Hyaena hyaena*). Determining accurate estimates of their populations is difficult to achieve and is not a viable monitoring requirement. However evidence of their presence at a particular location and time can be easily recorded.

Evidence of the presence of Egyptian Vultures and Striped Hyaena will be recorded wherever possible. Records will be based on photographs of individuals, spoor or reliable reports of sightings by staff and/or subcontractors. Records will be associated with a GPS coordinate and date and time of observation. A search for evidence of presence will be conducted when no records have been acquired for one of these species over a two month period. Disappearance of either these species will be investigated through liaison with communities to determine if there is any knowledge of poisoning or persecution is taking place.

Note that Egyptian Vultures may be nomadic and their absence for a period of six months is not necessarily cause for concern. Sick or dead individuals will be recorded. Animals get old and die and such observations may be a natural occurrence.

GPS locations of camel carcasses and the estimated date of death will be recorded for the greater area around the Study Area. Evidence of carcasses being visited by scavengers will be noted if possible. Monitoring requirements and procedures for Red Data birds and mammals are presented in

Table 5.5.

Table 5.5 Monitoring Requirements for Red Data Birds and Mammals

Monitoring the Presence and Health of Red Data Birds and Mammals		
Monitoring Action	Recording the presence or evidence thereof of Egyptian Vultures and Striped Hyaena on an opportunistic basis through field observations and interaction with staff and subcontractors. Records to include: <ul style="list-style-type: none"> • Date and time; • Photographs (where possible); • GPS-recorded location; and • Observer’s name. Evidence of sick or dead individuals must be recorded as described in the bulleted points above.	Record locations of camel carcasses in the greater project area of influence. Records to include: <ul style="list-style-type: none"> • Estimated date of death • GPS-recorded location • Date of first observation • Observer’s name • Evidence of scavengers Additional data including cause of death, approximate age of camel and any evidence of poisoning would be useful but extremely difficult to determine in most situations.
Frequency	Ongoing Attempt to acquire at least 1 record per species per month	Opportunistic
Response	Search for evidence of presence if no records acquired opportunistically for a species over a two month period. Frequent occurrence of sick or dead individuals must be investigated in an appropriate manner by a qualified veterinarian or pathologist. Liaise with communities if there is concern for the disappearance of a species to determine if poisoning or persecution is taking place and rectify accordingly.	Data storage, assimilation and analysis to determine baseline frequency and trends in the occurrence of carcasses.
Responsibility	ELCR Manager / Officer with support from staff, contractors and community members.	

5.5 WATER QUALITY IN THE SABAH RIVER

Water quality within the Sabah River will be monitored and carried out in conjunction with water quality monitoring procedures described earlier in this Plan. Two fixed monitoring points will be identified in different locations where there is easy access to the river and *in situ* measurements taken for the following parameters using a hand-held meter:

- Temperature;
- Salinity;
- pH;
- Dissolved oxygen;
- Electrical conductivity; and
- Total dissolved solids.

Water samples will be taken and analysed in an appropriate laboratory for the presence of heavy metals, sulphates, Orthophosphates, Alkalinity (CaCO₃), Nitrates (NH₄) and Organic Carbon to monitor possible changes as a result of

mining activities in the vicinity. Parameters and procedures for water quality monitoring in the Sabah River are presented in *Table 5.6*.

Table 5.6 *Monitoring Requirements for Water Quality in the Sabah River*

Monitoring the Water Quality of the Groundwater Pools		
Monitoring Action	In situ measurements of water quality including temperature, salinity, pH, dissolved oxygen, electrical conductivity and total dissolved solids.	Water samples submitted for measurement of heavy metals, sulphates, Orthophosphates, Alkalinity (CaCO ₃), Nitrates (NH ₄) and Organic Carbon.
Frequency	Fortnightly (every 2 weeks)	Monthly
Response	Investigate the cause of any dramatic changes in water quality parameters and rectify as appropriate.	
Responsibility	ELCR Manager / Officer	

6.1 *GOVERNMENT/AUTHORITY REPORTING*

On the basis of the daily and monthly monitoring undertaken during construction and decommissioning phases, the ELCR Department shall prepare monthly reports related to biodiversity matters that will be generated and submitted to government agencies for consideration. During the operational phase, the monitoring will be reported on a six monthly basis.

The reports will summarise the data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken. The reports will also include the findings of the visual observations, and will include a record of the activities resulting in the biodiversity impact, if relevant the duration of the effect, any remedial actions taken, and the likelihood of repetition of the event. The reports will also summarise any complaints received from the local communities, setting out the complaint, whether it was substantiated and any actions taken to alleviate the impact.

6.2 *LENDER REPORTING*

On the basis of the daily and monthly monitoring undertaken during construction and decommissioning phases, the ELCR Officer shall prepare monthly reports related to biodiversity matters will be generated and submitted to lenders for consideration. During the operational phase, the monitoring will be reported on a six monthly basis.

The reports will summarise the data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken. The reports will also include the findings of the visual observations, and will include a record of the activities resulting in the biodiversity impact, if relevant the duration of the effect, any remedial actions taken, and the likelihood of repetition of the event. The reports will also summarise any complaints received from the local communities, setting out the complaint, whether it was substantiated and any actions taken to alleviate the impact.

6.3 *INTERNAL REPORTING*

On the basis of the daily and monthly monitoring undertaken during construction and decommissioning phases, the ELCR shall prepare monthly reports detailing observed impacts and measures taken to protect the local biodiversity will be generated and lodged with the Allana board of directors. During the operational phase, the monitoring will be reported on a six monthly basis.

The reports will summarise the data collected through the monitoring programme, identifying any occasions when the action levels were triggered and the remedial action that was taken. The reports will also include the findings of the visual observations, and will include a record of the activities resulting in the biodiversity impact, if relevant the duration of the effect, any remedial actions taken, and the likelihood of repetition of the event. The reports will also summarise any complaints received from the local communities, setting out the complaint, whether it was substantiated and any actions taken to alleviate the impact.

6.4

COMMUNITY REPORTING

On the basis of the monthly and six monthly reporting undertaken during the construction, operational and decommissioning phases, a summary report suitable for digestion by a non-technical community audience will be developed. This report will focus upon graphical representation of information, and in particular outcomes of any community complaints and those actions taken to remedy significant impacts.

7 BIODIVERSITY MANAGEMENT PLAN SUMMARY TABLES

Table 7.1 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan/ Verification	Responsibility
Loss of habitat within the Salt Pan Fringe	Protect existing natural habitat and minimise the loss of this habitat.	Action Group A: Establish Baseline State for Palm Density and Health		
		<ul style="list-style-type: none"> Acquire coordinates of palm clusters within 300 x 300 meter square 	Set of coordinates	<ul style="list-style-type: none"> ELCR Manager Junior Research Team
		<ul style="list-style-type: none"> Map palm clusters throughout project area and vicinity through desktop GIS 	Map of palm clusters produced	<ul style="list-style-type: none"> GIS operator
		<ul style="list-style-type: none"> Ground-truthing to allocate palm clusters to size health categories 	Raw data and summary report	<ul style="list-style-type: none"> ELCR Manager Junior Research Team
		<ul style="list-style-type: none"> Consolidate data to develop baseline report on palm status prior to the onset of mining activities 	Baseline report on palm status	<ul style="list-style-type: none"> ELCR Manager
		Action Group B: Avoid Development of Infrastructure and Borrow Pits in Salt Pan Fringe Habitat		
		<ul style="list-style-type: none"> Proper planning is required in advance of any linear developments passing through this habitat or a 150 meter buffer thereof to determine the minimum required footprint of the disturbance must be determined. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Every effort possible should be made to ensure that linear infrastructure that passes through this habitat must be grouped, for example pipelines, powerlines and roads should follow the same route and occupy the minimum possible width. 	Grouping of infrastructure to be shown on mine development plans	<ul style="list-style-type: none"> Planning Engineers; Contractors; Environmental Control Officer
		<ul style="list-style-type: none"> Developments within this habitat must be restricted to essential linear infrastructure that needs to cross over this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Any activities that can be conducted elsewhere must be shifted away from this habitat. Housing, offices, warehouses, workshops etc. must not be constructed in this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat Ongoing enforcement will be required.	<ul style="list-style-type: none"> Planning Engineers; Contractors ELCR Manager
<ul style="list-style-type: none"> Activities must be clearly demarcated on the ground under the supervision of a surveyor 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Land surveyor 		
		<ul style="list-style-type: none"> The outer limits of the construction work must be demarcated using 		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		rolls of plastic tape on raised stakes		
		• Laydown of materials and equipment prior to construction must not occur within the Salt Pan area	Undisturbed habitat exists in close proximity to developments	• Allana appointed Contractor
		• Construction office & temporary containers must be located outside of the Salt Pan Fringe habitat.	Undisturbed habitat exists in close proximity to developments	• Allana appointed Contractor
		• Vehicle parking and turning bays must be located in the Salt Pan.	Salt Pan Fringe habitat must show no signs of trampling by vehicles	• Planning Engineers • Appointed Contractor
		• Gravel borrow pits must be located outside of the 150 meter buffer designated around the Salt Pan Fringe habitat.	Undisturbed habitat exists in close proximity to developments	• Planning Engineers • Appointed Contractor
		• All surplus materials, equipment, redundant infrastructure, mixed concrete and broken equipment must be promptly removed once the immediate works are completed.	Clean project area	• Appointed Contractor • ELCR Manager
		Action Group C: Initiate and Operate a Doum Palm Nursery		
		• A qualified horticulturalist with experience in palm propagation must be sourced by Allana	Appointment	• Allana Human Resources
		• The horticulturalist will be able to advise and lead cost efficient approach to propagate Doum Palms plants	Nursery established	• Horticulturalist
		• Genetic material for propagating palms must be sourced locally.	Nursery established	• Horticulturalist
		• A palm distribution policy to be developed by Allana.	Policy document	• ELCR Manager
		• Allana to provide young palm plants within two years to local schools, community organisations etc.	Palms planted by communities	• Nursery manager
		Action Group D: Transplanting Palms to Other Areas		
		• Palms that are displaced by infrastructure to be transplanted to alternative appropriate locations.	Palms identified to be transplanted	• ELCR Manager • Appointed Contractor
		• Adequate areas for transplanting palms must be identified prior to construction activities.	Maps showing transplant areas	• ELCR Manager
		• Initial efforts should focus on smaller plants to assess the capacity required and build experience for moving larger specimens.	Transplanted palms established	• Appointed Contractor
		• Transplanting activities must attempt to recreate the palm clump structure that traps windblown sands.	Transplanted palms established	• Appointed Contractor • ELCR Manager
		Action Group E: Avoid Development within Alluvial Habitats where practically possible		
		• Development within the sandy grassland alluvial habitat around the airstrip and the old BHP Billiton camp must be avoided where	Mine development plans to reflect no plans for development in the alluvial	• Planning Engineers • ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		practically possible.	pastures as illustrated in the Baseline Assessment.	
		<ul style="list-style-type: none"> Adequate drainage structures must be installed under roads and pipelines to storm water flows to pass normally. 	Evidence of natural drainage patterns	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		<ul style="list-style-type: none"> The minimum footprint that will be disturbed must be clearly demarcated so that staff, contractors know to restrain their activities within the demarcations. 	Natural habitat must be seen to be intact in close vicinity of developments that pass through this habitat.	<ul style="list-style-type: none"> Planning Engineers; Appointed Contractor ELCR Manager
		<ul style="list-style-type: none"> Installation of adequate drainage with linear developments infrastructure to allow unimpeded movement of flood waters. 	Mine development plans should reflect drainage requirements; Evidence of normal drainage patterns should be visible on the ground	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		Action Group F: Protection of a Set Aside Area		
		<ul style="list-style-type: none"> The biodiversity needs to be protected through a prohibition on any development activities, settlement, habitat disturbance or hunting of wildlife. 	Development plans and reports	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager Planning Engineers Ethiopian Environmental Protection Agency
		<ul style="list-style-type: none"> A clear set of rules defining what activities are acceptable and what activities are not allowed to be conducted in the Set Aside area. 	Policy documents	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager
		<ul style="list-style-type: none"> Development plans must clearly identify the Set Aside area. 	Development plans and reports	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Boundaries of the Set Aside area must be defined on the ground, in the form of beacons at regular intervals of approximately 500 meters. 	Visible boundaries on the ground	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Signboards must be erected to identify the Set Aside area where roads intersect the boundaries. 	Visible signboards	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Rules of the Set Aside must be advertised on signboards when entering the prescribed area, and elsewhere. 	Visible signboards	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> A reporting system for contraventions of the Set Aside rules to be raised by concerned parties. 	Reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Awareness of the successes of the protected environment disseminated to local community organisations. 	Local communities demonstrate that they are aware of the Set Aside and why it is there	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Patrols must be conducted by security personnel at irregular intervals. 	Evidence of wildlife within Set Aside area	<ul style="list-style-type: none"> Allana Security

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
Loss of Groundwater Fed Aquatic Habitats due to Lowering of the Water Table	Ensure the continued survival of Killifish populations in their natural habitat of salt water pools on the edge of the Salt Pan.	Action Group G: Protection of Killifish Populations		
		<ul style="list-style-type: none"> Map and measure the full extent of the pools of water from a focussed aerial image. 	Accurate maps to be produced showing baseline conditions of water coverage and fluctuations monitored over time.	<ul style="list-style-type: none"> ELCR Manager Surveyors and/or GIS Department
		<ul style="list-style-type: none"> Establish base points per pond to mark the water's edge that are permanently marked on the ground by placement of a metal stake. 	Evidence of base points in the field	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Record whether each stake is standing in the water or on dry land and measure the shortest distance to the water's edge will be measured from each pole every two weeks. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> On site measurements of water quality must be recorded every two weeks covering various parameters. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Water samples must be submitted on a monthly basis for measurement of various parameters. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Photograph large shoals of fish on a monthly basis. Allocate the minimum estimated size of the fish population to categories. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Record the date, the pond, observers names and store copies of photographs. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Analyse data at least every two months to determine whether there is a noticeable trend of a declining or growing population of fish. 	Summary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Observe any evidence of any dead fish or deformed fish. If frequent observations occur or are affecting > 1% of population, affected specimens to be taken and submitted to an ichthyological laboratory for investigation. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager
		Action Group H: Develop an Improved Understanding of the Killifish		
		<ul style="list-style-type: none"> The presence of high-salinity pools in the greater area of the Danakil Depression needs to be investigated and mapped. 	Research reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
		<ul style="list-style-type: none"> The presence of Killifish populations within the above mapped high-salinity pools and within Lake Assale must be investigated, and their level of protection from development impacts must be assessed. 	Research reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
		<ul style="list-style-type: none"> Genetic comparisons must be made between the different Killifish populations within the project area and those within the freshwater habitats of the Sabah River. 	Laboratory reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> If robust and secure populations can be shown to be present, then the Critical Habitat classification provided for the Killifish population within the project area can be lifted, thus alleviating considerable expense and effort for Allana. 	Revision of ESIA	<ul style="list-style-type: none"> ERM
		<ul style="list-style-type: none"> Availability of alternative water sources must be investigated (if not already done so). Allana will need to demonstrate and justify the availability / non-availability of alternative water sources. 	Reports	<ul style="list-style-type: none"> Allana Senior Management Planning Engineers Ethiopian Environmental Protection Agency
		<ul style="list-style-type: none"> Establish the tolerance of the fish under controlled environments o survive various water quality changes, such as salinity and temperature changes. 	Initiation of studies and regular progress reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
Loss of Terrestrial Red Data Species	Prevent the loss of individual Red Data birds and mammals.	Action Group I: Prevent the Loss of Egyptian Vultures and Striped Hyaena		
		<ul style="list-style-type: none"> Raise awareness of Egyptian Vultures and Striped Hyaena by placing pictures which clearly show their identifying features in places frequented by people. 	Staff, contractors and community show some awareness of these species	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Produce well-illustrated posters that explain the recognising features and the ecology of these birds and animals and circulate among schools, community halls and mining facilities. 	Evidence of posters; No evidence of persecution; Continued survival of vultures and hyaenas.	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> The use of veterinary drugs that are locally available must be monitored and screened for possible poisons that could be toxic to vultures that consume carcasses. 	Reports with results of monitoring	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> All new powerlines to be installed with a range of visibility devices such as spirals and flappers to improve the visibility of the electrical wires for birds. 	Evidence of visibility devices on powerlines	<ul style="list-style-type: none"> ELCR Manager Appointed contractor
		<ul style="list-style-type: none"> Bird-friendly electrical pylon designs that include safe perching facilities and are which keep the live wires widely separated must be used. 	Evidence of bird-friendly pylon designs	<ul style="list-style-type: none"> Appointed contractor ELCR Manager
		Action Group J: Promote the Camel-based Culture for the Salt Trade		
		<ul style="list-style-type: none"> Allana its staff and contractors must be prohibited from trading the salt by-products obtained from the solution mining processes to avoid competition to the indigenous salt trade. Surplus salt must be disposed of within the salt pan. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management Ethiopian Environmental Protection Agency ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> The large camel trains must be allowed continuous access to areas of high-quality salt resources within the salt pan. Pathways suitable for guided trains of camels to walk along must be available for their use. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager Allana Security
		<ul style="list-style-type: none"> Access for trucks to the salt pan must be restricted. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> ELCR Manager Allana Security
		<ul style="list-style-type: none"> Allana will consult with the Ethiopian government with respect to removing the BHP Billiton road that enters into the indigenous salt mining area. 	Evidence of road closure and removal	<ul style="list-style-type: none"> Allana Senior Management
		<ul style="list-style-type: none"> Roads leading into the Salt Pan built by Allana must include numerous culverts that allow the natural spread of rising waters within the pan. 	No evidence of unnatural spread of flood waters within the salt pan	<ul style="list-style-type: none"> Appointed Contractor
		<ul style="list-style-type: none"> Avoidance of grazing lands for development 	Mine development plans to not reflect plans for development in the alluvial pastures as illustrated in the Baseline Assessment.	<ul style="list-style-type: none"> Planning Engineers Contractors ELCR Manager
Action Group K: Monitoring of Egyptian Vultures and Striped Hyaena				
		<ul style="list-style-type: none"> Evidence of the presence of Egyptian Vultures and Striped Hyaena must be recorded wherever possible. 	Evidence of records	<ul style="list-style-type: none"> ELCR Manager and environmental staff
		<ul style="list-style-type: none"> Attempt to acquire at least one record per species per month. 	Numerous records available	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Records must be associated with a GPS coordinate and date & time of observation. 	Quality of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> A search for evidence of presence should be conducted when no records have been acquired for one of these species over a two month period. Disappearance of either these species should be investigated through liaison with communities to determine if there is any knowledge of poisoning or persecution is taking place. 	Quality and quantity of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Sick or dead vultures must be recorded. Animals get old and die and such observations may be a natural occurrence, but must be investigated by a qualified veterinarian or pathologist if two or more such observations occur within the period of a month. 	Veterinary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Liaise with communities if there is concern for the disappearance of a species to determine if poisoning or persecution is taking place and rectify accordingly. 	Reports	<ul style="list-style-type: none"> ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> Record locations of camel carcasses in the greater project area of influence. Records must include comprehensive data wherever possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Provide an incentive scheme for reporting the above information when the presence of carcasses can be verified. 	Quality and quantity of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> GPS locations of camel carcasses and the estimated date of death should be recorded for the greater area around the Allana project's area of influence. Evidence of carcasses being visited by scavengers should be noted if possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> ELCR Manager
		Action Group L: Protection of Wildlife		
		<ul style="list-style-type: none"> Hunting of wildlife must be strictly prohibited by staff and contractors; 	Policy documents Evidence of presence of wildlife.	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Collection of any wildlife products such as ostrich eggs from the wild must be prohibited; 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Trade in any wildlife products must be prohibited. This includes purchase of any products of wildlife origin from local communities, or the sale to communities of tourists. 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Development of any form of trade in wildlife products by local communities to tourists must be discouraged; 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Penalties for breaking the rules of the Wildlife Protection Policy must be severe and specified within the policy. 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		Action Group M: Generating Pride in the Local Presence of Wildlife		
		<ul style="list-style-type: none"> Staff and contractors must be encouraged to report interesting sightings and observations. 	Reporting of sightings	<ul style="list-style-type: none"> ELCR Manager Allana staff & contractors
		<ul style="list-style-type: none"> Recognition for reporting worthwhile wildlife observations must be publicised accordingly. 	Locally publicised articles	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Conservation efforts for the local wildlife must be included into Allana's reporting systems. 	Reported conservation efforts	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Lambing season of the local Dorcas Gazelles should be a notable event each year. 	Enthusiasm of staff and contractors to protect wildlife	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Local wildlife photography competitions should be supported and rewarded by Allana. 	Artistic photographs submitted Established competition initiated	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Additional means of generating pride must be explored. 	Innovative ideas	<ul style="list-style-type: none"> ELCR Manager
		Action Group N: Recognise Land Tenure for Afar Pastoralists		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility	
		<ul style="list-style-type: none"> Some form of land tenure needs to be locally recognised for the established Afar pastoralists to protect their grazing lands and cultural heritage. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Formal land tenure for pastoralist communities may be difficult to achieve, however the Allana Corporation could internally recognise and support their rights. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager 	
		Action Group O: Additional Conservation Actions (possible examples)			
		<ul style="list-style-type: none"> Allana should collaborate with the ERCA to find ways to secure the African Wild Ass population. 	Signed Memoranda of Agreement and implementation of projects with involvement of both parties.	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager 	
		<ul style="list-style-type: none"> Allana collaborate with the ERCA to introduce Beisa Oryx. Collaborative training between Allana Security and ERCA game scouts to be investigated, and promote exchange of skills. 			
Reduced Water Quality of Aquatic Systems, Particularly the Sabah River	Sustain a natural flow of high quality water.	Action Group P: Maintaining Good Water Quality in the Sabah River			
		<ul style="list-style-type: none"> Construction of wire gabions filled with waste rock to create retaining walls that prevent erosion to be installed throughout the project area wherever appropriate. 	Mine development plans to reflect erosion control requirements; Visible evidence of effective erosion control measures	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	
		<ul style="list-style-type: none"> Installation of concrete aprons on the downside of all culverts to dissipate the flow of water exiting a pipe 			
		<ul style="list-style-type: none"> Avoid the creation of continuous steep slopes along which large quantities of storm water flows could gain momentum 			
		<ul style="list-style-type: none"> Culverts and small bridges will need routine inspections following major flood events to ensure they are not blocked with branches or other debris. 	Clean culverts and evidence of natural drainage patterns	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Promote the continuation of natural drainage patterns wherever possible. 	Evidence of natural drainage patterns	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	
		<ul style="list-style-type: none"> Signs must be erected at the Sabah River clearly stating in the local language that washing of vehicles in the river is not allowed. 	Reduced evidence of vehicle washing in the Sabah River	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Vehicle washing facilities must be created away from the Sabah River and installed with appropriate dirty water management systems that avoid contamination of the Sabah River. 	Evidence of vehicle washing facilities	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	
		<ul style="list-style-type: none"> Appropriate dirty water management systems must be installed and properly managed as required throughout the project area. 	No dirty water originating from Allana operations entering the Sabah River	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> Freshwater must be provided to local communities only at locations that have been pre-approved by the various local authorities. 	Limited uncontrolled spread of settlements	<ul style="list-style-type: none"> ELCR Manager
		Action Group Q: Monitoring of Water Quality in the Sabah River		
		<ul style="list-style-type: none"> Two fixed monitoring points to be identified in different locations where there is easy access to the river and on site measurements taken every two weeks using a hand-held meter: 	Water Quality raw data and summary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Water samples to be taken on a monthly basis and analysed in an appropriate laboratory for a variety of parameters 	Laboratory reports and summary reports	<ul style="list-style-type: none"> ELCR Manager
		Action Group R: Discourage Settlement along the Sabah River		
		<ul style="list-style-type: none"> Allana to collaborate with the local authorities and assist the implementation of a land use plan with settlement areas identified. 	Natural habitat remaining along the banks of the Sabah River	<ul style="list-style-type: none"> ELCR Manager Ethiopian Environmental Protection Agency
		<ul style="list-style-type: none"> Settlement to be encouraged around existing towns where facilities such as schooling, medical care, waste removal etc. can be provided. 		

Table 7.2 Operational Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
Loss of Groundwater Fed Aquatic Habitats due to Lowering of the Water Table	Ensure the continued survival of Killifish populations in their natural habitat of salt water pools on the edge of the Salt Pan.	Action Group S: Translocate Seed Populations of Killifish to Newly Created Artificial Water Bodies		
		<ul style="list-style-type: none"> Small numbers, approximately 20 fish, to be translocated to each artificially created water body that supports a water quality suitable for these fish to survive. 	Introduced fish populations	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Do not translocate any fish to other naturally occurring water bodies where fish already occur. 	Naturally-occurring fish populations present	<ul style="list-style-type: none"> ELCR Manager
		Action Group T: Artificial Habitat Maintenance		
		<ul style="list-style-type: none"> If ponds are at risk of drying out due to a shortage of natural groundwater seepage, water must be provided artificially. Results of the water quality monitoring implemented during the construction phase must be used to determine the required salinity levels and other parameters such as pH, Total Dissolved Solids and Electrical Conductivity must be matched for the water to be supplied. 	Ponds sustained with Killifish populations	<ul style="list-style-type: none"> ELCR Manager Appointed contractor
		<ul style="list-style-type: none"> Large water tanks must be installed outside of the Salt Pan Fringe habitat in which a sufficient quantity of water is stored and the quality matched to the required levels a few days before being slowly dispensed to the pools. 	Ponds sustained with Killifish populations	<ul style="list-style-type: none"> ELCR Manager Appointed contractor
Loss of habitat within the Salt Pan Fringe	Protect existing natural habitat and minimise the loss of this habitat.	Action Group B: Avoid Development of Infrastructure and Borrow Pits in Salt Pan Fringe Habitat		
		<ul style="list-style-type: none"> Proper planning is required in advance of any linear developments passing through this habitat or a 150 meter buffer thereof to determine the minimum required footprint of the disturbance must be determined. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Linear infrastructure that passes through this habitat must be grouped, for example pipelines, powerlines and roads should follow the same route and occupy the minimum possible width. 	Grouping of infrastructure to be shown on mine development plans	<ul style="list-style-type: none"> Planning Engineers; Contractors; ELCR Manager
		<ul style="list-style-type: none"> Developments within this habitat must be restricted to essential linear infrastructure that needs to cross over this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Any activities that can be conducted elsewhere must be shifted away from this habitat. Housing, offices, warehouses, workshops etc. must not be constructed in this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers; Contractors ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
			Ongoing enforcement will be required.	
		<ul style="list-style-type: none"> Activities must be clearly demarcated on the ground under the supervision of a surveyor The outer limits of the construction work must be demarcated using rolls of plastic tape on raised stakes 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Land surveyor
		<ul style="list-style-type: none"> Dumping of materials and equipment prior to construction must occur within the Salt Pan area 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Allana appointed Contractor
		<ul style="list-style-type: none"> Construction office & temporary containers must be located outside of the Salt Pan Fringe habitat. 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Allana appointed Contractor
		<ul style="list-style-type: none"> Vehicle parking and turning bays must be located in the Salt Pan. 	Salt Pan Fringe habitat must show no signs of trampling by vehicles	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		<ul style="list-style-type: none"> Gravel borrow pits must be located at least 500 meters away from the Salt Pan Fringe habitat. 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		<ul style="list-style-type: none"> All surplus materials, equipment, redundant infrastructure, mixed concrete and broken equipment must be promptly removed once the immediate works are completed. 	Clean project area	<ul style="list-style-type: none"> Appointed Contractor ELCR Manager
Action Group C: Operate a Doum Palm Nursery				
		<ul style="list-style-type: none"> The horticulturalist will be able to advise and lead cost efficient approach to propagate Doum Palms plants 	Nursery established	<ul style="list-style-type: none"> Horticulturalist
		<ul style="list-style-type: none"> Genetic material for propagating palms must be sourced locally. 	Nursery established	<ul style="list-style-type: none"> Horticulturalist
		<ul style="list-style-type: none"> A palm distribution policy to be developed by Allana. 	Policy document	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Allana to provide 2000 young palm plants within two years to local schools, community organisations etc. plus 2000 plants per year thereafter for local distribution. 	Palms planted by communities	<ul style="list-style-type: none"> Nursery manager
Action Group D: Transplanting Palms to Other Areas				
		<ul style="list-style-type: none"> Palms that are displaced by infrastructure to be transplanted to alternative appropriate locations. 	Palms identified to be transplanted	<ul style="list-style-type: none"> ELCR Manager Appointed Contractor
		<ul style="list-style-type: none"> Adequate areas for transplanting palms must be identified prior to construction activities. 	Maps showing transplant areas	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Initial efforts should focus on smaller plants to assess the capacity required and build experience for moving larger specimens. 	Transplanted palms established	<ul style="list-style-type: none"> Appointed Contractor
		<ul style="list-style-type: none"> Transplanting activities must attempt to recreate the palm clump 	Transplanted palms established	<ul style="list-style-type: none"> Appointed Contractor

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		structure that traps windblown sands.		• ELCR Manager
		Action Group E: Avoid Development within Alluvial Habitats where practically possible		
		• Development within the sandy grassland alluvial habitat around the airstrip and the old BHP Billiton camp must be avoided as far as is practically possible.	Mine development plans to not reflect plans for development in the alluvial pastures as illustrated in the Baseline Assessment.	• Planning Engineers • ELCR Manager
		• Adequate drainage structures must be installed under roads and pipelines to storm water flows to pass normally.	Evidence of natural drainage patterns	• Planning Engineers • Appointed Contractor
		• The minimum footprint that will be disturbed must be clearly demarcated so that staff, contractors know to restrain their activities within the demarcations.	Natural habitat must be seen to be intact in close vicinity of developments that pass through this habitat.	• Planning Engineers; • Appointed Contractor • ELCR Manager
		• Installation of adequate drainage with linear developments infrastructure to allow unimpeded movement of flood waters.	Mine development plans should reflect drainage requirements; Evidence of normal drainage patterns should be visible on the ground	• Planning Engineers • Appointed Contractor
		Action Group F: Protection of a Set Aside Area		
		• The biodiversity needs to be protected through a prohibition on any development activities, settlement, habitat disturbance or hunting of wildlife.	Development plans and reports	• Allana Senior Management • ELCR Manager • Planning Engineers • Ethiopian Environmental Protection Agency
		• A clear set of rules defining what activities are acceptable and what activities are not allowed to be conducted in the Set Aside area.	Policy documents	• Allana Senior Management • ELCR Manager
		• Development plans must clearly identify the Set Aside area.	Development plans and reports	• Planning Engineers
		• Boundaries of the Set Aside area must be defined on the ground, in the form of beacons at regular intervals of approximately 500 meters.	Visible boundaries on the ground	• ELCR Manager
		• Signboards must be erected to identify the Set Aside area where roads intersect the boundaries.	Visible signboards	• ELCR Manager
		• Rules of the Set Aside must be advertised on signboards when entering the prescribed area, and elsewhere.	Visible signboards	• ELCR Manager
		• A reporting system for contraventions of the Set Aside rules to be raised by concerned parties.	Reports	• ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> Awareness of the successes of the protected environment disseminated to local community organisations. 	Local communities demonstrate that they are aware of the Set Aside and why it is there	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Patrols must be conducted by security personnel at irregular intervals. 	Evidence of wildlife within Set Aside area	<ul style="list-style-type: none"> Allana Security
Loss of Groundwater Fed Aquatic Habitats due to Lowering of the Water Table	Ensure the continued survival of Killifish populations in their natural habitat of salt water pools on the edge of the Salt Pan.	Action Group G: Protection of Killifish Populations		
		<ul style="list-style-type: none"> Map and measure the full extent of the pools of water from a focussed aerial image. 	Accurate maps showing baseline conditions of water coverage and fluctuations monitored over time.	<ul style="list-style-type: none"> ELCR Manager Surveyors and/or GIS Department
		<ul style="list-style-type: none"> Establish base points per pond to mark the water's edge that are permanently marked on the ground by placement of a metal stake. 	Evidence of base points in the field	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Record whether each stake is standing in the water or on dry land and measure the shortest distance to the water's edge will be measured from each pole every two weeks. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> On site measurements of water quality must be recorded every two weeks covering various parameters. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Water samples must be submitted on a monthly basis for measurement of various parameters. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Photograph large shoals of fish on a monthly basis. Allocate the minimum estimated size of the fish population to categories. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Record the date, the pond, observers names and store copies of photographs. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Analyse data at least every two months to determine whether there is a noticeable trend of a declining or growing population of fish. 	Summary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Observe any evidence of any dead fish or deformed fish. If frequent observations occur or are affecting > 1% of population, affected specimens to be taken and submitted to an ichthyological laboratory for investigation. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager
		Action Group H: Develop an Improved Understanding of the Killifish		
		<ul style="list-style-type: none"> The presence of high-salinity pools in the greater area of the Danakil Depression needs to be investigated and mapped. 	Research reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
		<ul style="list-style-type: none"> The presence of Killifish populations within the above mapped high-salinity pools and within Lake Assale must be investigated, and their 	Research reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		level of protection from development impacts must be assessed.		
		<ul style="list-style-type: none"> Genetic comparisons must be made between the different Killifish populations within the project area and those within the freshwater habitats of the Sabah River. 	Laboratory reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
		<ul style="list-style-type: none"> If robust and secure populations can be shown to be present, then the Critical Habitat classification provided for the Killifish population within the project area can be lifted, thus alleviating considerable expense and effort for Allana. 	Revision of ESIA	<ul style="list-style-type: none"> ERM
		<ul style="list-style-type: none"> Availability of alternative water sources must be investigated (if not already done so). Allana will need to demonstrate and justify the availability / non-availability of alternative water sources. 	Reports	<ul style="list-style-type: none"> Allana Senior Management Planning Engineers Ethiopian Environmental Protection Agency
		<ul style="list-style-type: none"> Establish the tolerance of the fish under controlled environments o survive various water quality changes, such as salinity and temperature changes. 	Initiation of studies and regular progress reports	<ul style="list-style-type: none"> Aquatic Science Researcher with support from Allana
Loss of Terrestrial Red Data Species	Prevent the loss of individual Red Data birds and mammals.	Action Group I: Prevent the Loss of Egyptian Vultures and Striped Hyaena		
		<ul style="list-style-type: none"> Raise awareness of Egyptian Vultures and Striped Hyaena by placing pictures which clearly show their identifying features in places frequented by people. 	Staff, contractors and community show some awareness of these species	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Produce well-illustrated posters that explain the recognising features and the ecology of these birds and animals and circulate among schools, community halls and mining facilities. 	Evidence of posters; No evidence of persecution; Continued survival of vultures and hyaenas.	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> The use of veterinary drugs that are locally available must be monitored and screened for possible poisons that could be toxic to vultures that consume carcasses. 	Reports with results of monitoring	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> All newly Powerlines to be installed with a range of visibility devices such as spirals and flappers to improve the visibility of the electrical wires for birds. 	Evidence of visibility devices on powerlines	<ul style="list-style-type: none"> ELCR Manager Appointed contractor
		<ul style="list-style-type: none"> Bird-friendly electrical pylon designs that include safe perching facilities and are which keep the live wires widely separated must be used. 	Evidence of bird-friendly pylon designs	<ul style="list-style-type: none"> Appointed contractor ELCR Manager
		Action Group J: Promote the Camel-based Culture for the Salt Trade		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> Allana , its staff and contractors must be prohibited from trading the salt by-products obtained from the solution mining processes to avoid competition to the indigenous salt trade. Surplus salt must be disposed of within the salt pan. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management Ethiopian Environmental Protection Agency ELCR Manager
		<ul style="list-style-type: none"> The large camel trains must be allowed continuous access to areas of high-quality salt resources within the salt pan. Pathways suitable for guided trains of camels to walk along must be available for their use. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager Allana Security
		<ul style="list-style-type: none"> Access for trucks to the salt pan must be restricted. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> ELCR Manager Allana Security
		<ul style="list-style-type: none"> Allana will consult with the Ethiopian government with respect to removing the BHP Billiton road that enters into the indigenous salt mining area. 		<ul style="list-style-type: none"> Allana Senior Management
		<ul style="list-style-type: none"> Roads leading into the Salt Pan built by Allana must include numerous culverts that allow the natural spread of rising waters within the pan. 	No evidence of unnatural spread of flood waters within the salt pan	<ul style="list-style-type: none"> Appointed Contractor
		<ul style="list-style-type: none"> Avoidance of grazing lands for development 	Mine development plans to not reflect plans for development in the alluvial pastures as illustrated in the Baseline Assessment.	<ul style="list-style-type: none"> Planning Engineers Contractors ELCR Manager
Action Group K: Monitoring of Egyptian Vultures and Striped Hyaena				
		<ul style="list-style-type: none"> Evidence of the presence of Egyptian Vultures and Striped Hyaena must be recorded wherever possible. 	Evidence of records	<ul style="list-style-type: none"> ELCR and environmental staff
		<ul style="list-style-type: none"> Attempt to acquire at least one record per species per month. 	Numerous records available	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Records must be associated with a GPS coordinate and date & time of observation. 	Quality of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> A search for evidence of presence should be conducted when no records have been acquired for one of these species over a two month period. Disappearance of either these species should be investigated through liaison with communities to determine if there is any knowledge of poisoning or persecution is taking place. 	Quality and quantity of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Sick or dead vultures must be recorded. Animals get old and die and such observations may be a natural occurrence, but must be investigated by a qualified veterinarian or pathologist if two or more such observations occur within the period of a month. 	Veterinary reports	<ul style="list-style-type: none"> ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> • Liaise with communities if there is concern for the disappearance of a species to determine if poisoning or persecution is taking place and rectify accordingly. 	Reports	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Record locations of camel carcasses in the greater project area of influence. Records must include comprehensive data wherever possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Provide an incentive scheme for reporting the above information when the presence of carcasses can be verified. 	Quality and quantity of records	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • GPS locations of camel carcasses and the estimated date of death should be recorded for the greater area around the Allana project's area of influence. Evidence of carcasses being visited by scavengers should be noted if possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> • ELCR Manager
Action Group L: Protection of Wildlife				
		<ul style="list-style-type: none"> • Hunting of wildlife must be strictly prohibited by staff and contractors; 	Policy documents Evidence of presence of wildlife.	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Collection of any wildlife products such as ostrich eggs from the wild must be prohibited; 	Policy documents	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Trade in any wildlife products must be prohibited. This includes purchase of any products of wildlife origin from local communities, or the sale to communities of tourists. 	Policy documents	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Development of any form of trade in wildlife products by local communities to tourists must be discouraged; 	Policy documents	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Penalties for breaking the rules of the Wildlife Protection Policy must be severe and specified within the policy. 	Policy documents	<ul style="list-style-type: none"> • ELCR Manager
Action Group M: Generating Pride in the Local Presence of Wildlife				
		<ul style="list-style-type: none"> • Staff and contractors must be encouraged to report interesting sightings and observations. 	Reporting of sightings	<ul style="list-style-type: none"> • ELCR Manager • Allana staff & contractors
		<ul style="list-style-type: none"> • Recognition for reporting worthwhile wildlife observations must be publicised accordingly. 	Locally publicised articles	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Conservation efforts for the local wildlife must be included into Allana's reporting systems. 	Reported conservation efforts	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Lambing season of the local Dorcas Gazelles should be a notable event each year. 	Enthusiasm of staff and contractors to protect wildlife	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Local wildlife photography competitions should be supported and 	Artistic photographs submitted	<ul style="list-style-type: none"> • ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility	
		rewarded by Allana.	Established competition initiated		
		<ul style="list-style-type: none"> Additional means of generating pride must be explored. 	Innovative ideas	<ul style="list-style-type: none"> ELCR Manager 	
		Action Group N: Recognise Land Tenure for Afar Pastoralists			
		<ul style="list-style-type: none"> Some form of land tenure needs to be locally recognised for the established Afar pastoralists to protect their grazing lands and cultural heritage. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Formal land tenure for pastoralist communities may be difficult to achieve, however the Allana Corporation could internally recognise and support their rights. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager 	
		Action Group O: Additional Conservation Actions (possible examples)			
		<ul style="list-style-type: none"> Allana should collaborate with the ERCA to find ways to secure the African Wild Ass population. 	Signed Memoranda of Agreement and implementation of projects with involvement of both parties.	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager 	
		<ul style="list-style-type: none"> Allana collaborate with the ERCA to introduce Beisa Oryx. 			
		<ul style="list-style-type: none"> Collaborative training between Allana Security and ERCA game scouts to be investigated, and promote exchange of skills. 			
		Reduced Water Quality of Aquatic Systems, Particularly the Sabah River	Sustain a natural flow of high quality water.	Action Group P: Maintaining Good Water Quality in the Sabah River	
<ul style="list-style-type: none"> Construction of wire gabions filled with waste rock to create retaining walls that prevent erosion to be installed throughout the project area wherever appropriate. 	Mine development plans to reflect erosion control requirements; Visible evidence of effective erosion control measures			<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	
<ul style="list-style-type: none"> Installation of concrete aprons on the downside of all culverts to dissipate the flow of water exiting a pipe 					
<ul style="list-style-type: none"> Avoid the creation of continuous steep slopes along which large quantities of storm water flows could gain momentum 					
<ul style="list-style-type: none"> Culverts and small bridges will need routine inspections following major flood events to ensure they are not blocked with branches or other debris. 	Clean culverts and evidence of natural drainage patterns			<ul style="list-style-type: none"> ELCR Manager 	
<ul style="list-style-type: none"> Promote the continuation of natural drainage patterns wherever possible. 	Evidence of natural drainage patterns			<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	
<ul style="list-style-type: none"> Signs must be erected at the Sabah River clearly stating in the local language that washing of vehicles in the river is not allowed. 	Reduced evidence of vehicle washing in the Sabah River			<ul style="list-style-type: none"> ELCR Manager 	
<ul style="list-style-type: none"> Vehicle washing facilities must be created away from the Sabah River and installed with appropriate dirty water management systems that 	Evidence of vehicle washing facilities			<ul style="list-style-type: none"> Planning Engineers Appointed Contractors 	

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		avoid contamination of the Sabah River.		
		<ul style="list-style-type: none"> Appropriate dirty water management systems must be installed and properly managed as required throughout the project area. 	No dirty water originating from Allana operations entering the Sabah River	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors
		<ul style="list-style-type: none"> Freshwater must be provided to local communities only at locations that have been pre-approved by the various local authorities. 	Limited uncontrolled spread of settlements	<ul style="list-style-type: none"> ELCR Manager
		Action Group Q: Monitoring of Water Quality in the Sabah River		
		<ul style="list-style-type: none"> Two fixed monitoring points to be identified in different locations where there is easy access to the river and on site measurements taken every two weeks using a hand-held meter: 	Water Quality raw data and summary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Water samples to be taken on a monthly basis and analysed in an appropriate laboratory for a variety of parameters 	Laboratory reports and summary reports	<ul style="list-style-type: none"> ELCR Manager
		Action Group R: Discourage Settlement along the Sabah River		
		<ul style="list-style-type: none"> Allana to collaborate with the local authorities and assist the implementation of a land use plan with settlement areas identified. Settlement to be encouraged around existing towns where facilities such as schooling, medical care, waste removal etc. can be provided. 	Natural habitat remaining along the banks of the Sabah River	<ul style="list-style-type: none"> ELCR Manager Ethiopian Environmental Protection Agency

Table 7.3 Decommissioning and Closure Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
Loss of habitat within the Salt Pan Fringe	Protect existing natural habitat and minimise the loss of this habitat.	Action Group B: Avoid Development of Infrastructure and Borrow Pits in Salt Pan Fringe Habitat		
		<ul style="list-style-type: none"> Proper planning is required in advance of any linear developments passing through this habitat or a 150 meter buffer thereof to determine the minimum required footprint of the disturbance must be determined. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Linear infrastructure that passes through this habitat must be grouped, for example pipelines, powerlines and roads should follow the same route and occupy the minimum possible width. 	Grouping of infrastructure to be shown on mine development plans	<ul style="list-style-type: none"> Planning Engineers; Contractors; ELCR Manager
		<ul style="list-style-type: none"> Developments within this habitat must be restricted to essential linear infrastructure that needs to cross over this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat	<ul style="list-style-type: none"> Planning Engineers
		<ul style="list-style-type: none"> Any activities that can be conducted elsewhere must be shifted away from this habitat. Housing, offices, warehouses, workshops etc. must not be constructed in this habitat. 	Mine development plans must reflect minimum infrastructure development within this habitat Ongoing enforcement will be required.	<ul style="list-style-type: none"> Planning Engineers; Contractors ELCR Manager
		<ul style="list-style-type: none"> Activities must be clearly demarcated on the ground under the supervision of a surveyor 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Land surveyor
		<ul style="list-style-type: none"> The outer limits of the construction work must be demarcated using rolls of plastic tape on raised stakes 		
		<ul style="list-style-type: none"> Dumping of materials and equipment prior to construction must occur within the Salt Pan area 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Allana appointed Contractor
		<ul style="list-style-type: none"> Construction office & temporary containers must be located outside of the Salt Pan Fringe habitat. 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Allana appointed Contractor
		<ul style="list-style-type: none"> Vehicle parking and turning bays must be located in the Salt Pan. 	Salt Pan Fringe habitat must show no signs of trampling by vehicles	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		<ul style="list-style-type: none"> Gravel borrow pits must be located at least 500 meters away from the Salt Pan Fringe habitat. 	Undisturbed habitat exists in close proximity to developments	<ul style="list-style-type: none"> Planning Engineers Appointed Contractor
		<ul style="list-style-type: none"> All surplus materials, equipment, redundant infrastructure, mixed concrete and broken equipment must be promptly removed once the immediate works are completed. 	Clean project area	<ul style="list-style-type: none"> Appointed Contractor ELCR Manager
		Action Group E: Avoid Development within Alluvial Habitats where practically possible		
<ul style="list-style-type: none"> Development within the sandy grassland alluvial habitat around the 	Mine development plans to not reflect	<ul style="list-style-type: none"> Planning Engineers 		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		airstrip and the old BHP Billiton camp must be avoided where possible.	plans for development in the alluvial pastures as illustrated in the Baseline Assessment.	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Adequate drainage structures must be installed under roads and pipelines to storm water flows to pass normally. 	Evidence of natural drainage patterns	<ul style="list-style-type: none"> • Planning Engineers • Appointed Contractor
		<ul style="list-style-type: none"> • The minimum footprint that will be disturbed must be clearly demarcated so that staff, contractors know to restrain their activities within the demarcations. 	Natural habitat must be seen to be intact in close vicinity of developments that pass through this habitat.	<ul style="list-style-type: none"> • Planning Engineers; • Appointed Contractor • ELCR Manager
		<ul style="list-style-type: none"> • Installation of adequate drainage with linear developments infrastructure to allow unimpeded movement of flood waters. 	Mine development plans should reflect drainage requirements; Evidence of normal drainage patterns should be visible on the ground	<ul style="list-style-type: none"> • Planning Engineers • Appointed Contractor
		Action Group F: Protection of a Set Aside Area		
		<ul style="list-style-type: none"> • The biodiversity needs to be protected through a prohibition on any development activities, settlement, habitat disturbance or hunting of wildlife. 	Development plans and reports	<ul style="list-style-type: none"> • Allana Senior Management • ELCR Manager • Planning Engineers • Ethiopian Environmental Protection Agency
		<ul style="list-style-type: none"> • A clear set of rules defining what activities are acceptable and what activities are not allowed to be conducted in the Set Aside area. 	Policy documents	<ul style="list-style-type: none"> • Allana Senior Management • ELCR Manager
		<ul style="list-style-type: none"> • Development plans must clearly identify the Set Aside area. 	Development plans and reports	<ul style="list-style-type: none"> • Planning Engineers
		<ul style="list-style-type: none"> • Boundaries of the Set Aside area must be defined on the ground, in the form of beacons at regular intervals of approximately 500 meters. 	Visible boundaries on the ground	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Signboards must be erected to identify the Set Aside area where roads intersect the boundaries. 	Visible signboards	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Rules of the Set Aside must be advertised on signboards when entering the prescribed area, and elsewhere. 	Visible signboards	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • A reporting system for contraventions of the Set Aside rules to be raised by concerned parties. 	Reports	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Awareness of the successes of the protected environment disseminated to local community organisations. 	Local communities demonstrate that they are aware of the Set Aside and why it is there	<ul style="list-style-type: none"> • ELCR Manager
		<ul style="list-style-type: none"> • Patrols must be conducted by security personnel at irregular intervals. 	Evidence of wildlife within Set Aside	<ul style="list-style-type: none"> • Allana Security

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility	
			area		
Loss of Groundwater Fed Aquatic Habitats due to Lowering of the Water Table	Ensure the continued survival of Killifish populations in their natural habitat of salt water pools on the edge of the Salt Pan.	Action Group G: Protection of Killifish Populations			
		<ul style="list-style-type: none"> Map and measure the full extent of the pools of water from a focussed aerial image. 	Accurate maps showing baseline conditions of water coverage and fluctuations monitored over time.	<ul style="list-style-type: none"> ELCR Manager Surveyors and/or GIS Department 	
		<ul style="list-style-type: none"> Establish base points per pond to mark the water's edge that are permanently marked on the ground by placement of a metal stake. 	Evidence of base points in the field	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Record whether each stake is standing in the water or on dry land and measure the shortest distance to the water's edge will be measured from each pole every two weeks. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> On site measurements of water quality must be recorded every two weeks covering various parameters. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Water samples must be submitted on a monthly basis for measurement of various parameters. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Photograph large shoals of fish on a monthly basis. Allocate the minimum estimated size of the fish population to categories. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Record the date, the pond, observers names and store copies of photographs. 	Raw monitoring data	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Analyse data at least every two months to determine whether there is a noticeable trend of a declining or growing population of fish. 	Summary reports	<ul style="list-style-type: none"> ELCR Manager 	
		<ul style="list-style-type: none"> Observe any evidence of any dead fish or deformed fish. If frequent observations occur or are affecting > 1% of population, affected specimens to be taken and submitted to an ichthyological laboratory for investigation. 	Laboratory reports	<ul style="list-style-type: none"> ELCR Manager 	
		Action Group U: Artificial Habitat Maintenance			
		<ul style="list-style-type: none"> If ponds are at risk of drying out due to a shortage of natural groundwater seepage, water must be provided artificially. Results of the water quality monitoring implemented during the construction phase must be used to determine the required salinity levels and other parameters such as pH, Total Dissolved Solids and Electrical Conductivity must be matched for the water to be supplied. 	Ponds sustained with Killifish populations	<ul style="list-style-type: none"> ELCR Manager Appointed contractor 	
		<ul style="list-style-type: none"> Large water tanks must be installed outside of the Salt Pan Fringe habitat in which a sufficient quantity of water is stored and the quality 	Ponds sustained with Killifish populations	<ul style="list-style-type: none"> ELCR Manager Appointed contractor 	

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		matched to the required levels a few days before being slowly dispensed to the pools.		
Loss of Terrestrial Red Data Species	Prevent the loss of individual Red Data birds and mammals.	Action Group I: Prevent the Loss of Egyptian Vultures and Striped Hyaena		
		<ul style="list-style-type: none"> Raise awareness of Egyptian Vultures and Striped Hyaena by placing pictures which clearly show their identifying features in places frequented by people. 	Staff, contractors and community show some awareness of these species	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Produce well-illustrated posters that explain the recognising features and the ecology of these birds and animals and circulate among schools, community halls and mining facilities. 	Evidence of posters; No evidence of persecution; Continued survival of vultures and hyaenas.	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> The use of veterinary drugs that are locally available must be monitored and screened for possible poisons that could be toxic to vultures that consume carcasses. 	Reports with results of monitoring	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> All newly Powerlines to be installed with a range of visibility devices such as spirals and flappers to improve the visibility of the electrical wires for birds. 	Evidence of visibility devices on powerlines	<ul style="list-style-type: none"> ELCR Manager Appointed contractor
		<ul style="list-style-type: none"> Bird-friendly electrical pylon designs that include safe perching facilities and are which keep the live wires widely separated must be used. 	Evidence of bird-friendly pylon designs	<ul style="list-style-type: none"> Appointed contractor ELCR Manager
		Action Group J: Promote the Camel-based Culture for the Salt Trade		
		<ul style="list-style-type: none"> The Allana Company, its staff and contractors must be prohibited from trading the salt by-products obtained from the solution mining processes to avoid competition to the indigenous salt trade. Surplus salt must be disposed of within the salt pan. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management Ethiopian Environmental Protection Agency ELCR Manager
		<ul style="list-style-type: none"> The large camel trains must be allowed continuous access to areas of high-quality salt resources within the salt pan. Pathways suitable for guided trains of camels to walk along must be available for their use. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> Allana Senior Management ELCR Manager Allana Security
		<ul style="list-style-type: none"> Access for trucks to the salt pan must be restricted. 	Continuation of camel caravans visiting the area.	<ul style="list-style-type: none"> ELCR Manager Allana Security
		<ul style="list-style-type: none"> Allana will consult with the Ethiopian government with respect to removing the BHP Billiton road that enters into the indigenous salt mining area. 		<ul style="list-style-type: none"> Allana Senior Management
<ul style="list-style-type: none"> Roads leading into the Salt Pan built by Allana must include numerous 	No evidence of unnatural spread of	<ul style="list-style-type: none"> Appointed Contractor 		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		culverts that allow the natural spread of rising waters within the pan.	flood waters within the salt pan	
		<ul style="list-style-type: none"> Avoidance of grazing lands for development 	Mine development plans to not reflect plans for development in the alluvial pastures as illustrated in the Baseline Assessment.	<ul style="list-style-type: none"> Planning Engineers Contractors ELCR Manager
Action Group K: Monitoring of Egyptian Vultures and Striped Hyaena				
		<ul style="list-style-type: none"> Evidence of the presence of Egyptian Vultures and Striped Hyaena must be recorded wherever possible. 	Evidence of records	<ul style="list-style-type: none"> ELCR Manager and environmental staff
		<ul style="list-style-type: none"> Attempt to acquire at least one record per species per month. 	Numerous records available	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Records must be associated with a GPS coordinate and date & time of observation. 	Quality of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> A search for evidence of presence should be conducted when no records have been acquired for one of these species over a two month period. Disappearance of either these species should be investigated through liaison with communities to determine if there is any knowledge of poisoning or persecution is taking place. 	Quality and quantity of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Sick or dead vultures must be recorded. Animals get old and die and such observations may be a natural occurrence, but must be investigated by a qualified veterinarian or pathologist if two or more such observations occur within the period of a month. 	Veterinary reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Liaise with communities if there is concern for the disappearance of a species to determine if poisoning or persecution is taking place and rectify accordingly. 	Reports	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Record locations of camel carcasses in the greater project area of influence. Records must include comprehensive data wherever possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Provide an incentive scheme for reporting the above information when the presence of carcasses can be verified. 	Quality and quantity of records	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> GPS locations of camel carcasses and the estimated date of death should be recorded for the greater area around the Allana project's area of influence. Evidence of carcasses being visited by scavengers should be noted if possible. 	Records and map of camel carcasses	<ul style="list-style-type: none"> ELCR Manager
Action Group L: Protection of Wildlife				
		<ul style="list-style-type: none"> Hunting of wildlife must be strictly prohibited by staff and contractors; 	Policy documents	<ul style="list-style-type: none"> ELCR Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
			Evidence of presence of wildlife.	
		<ul style="list-style-type: none"> Collection of any wildlife products such as ostrich eggs from the wild must be prohibited; 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Trade in any wildlife products must be prohibited. This includes purchase of any products of wildlife origin from local communities, or the sale to communities of tourists. 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Development of any form of trade in wildlife products by local communities to tourists must be discouraged; 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Penalties for breaking the rules of the Wildlife Protection Policy must be severe and specified within the policy. 	Policy documents	<ul style="list-style-type: none"> ELCR Manager
Action Group M: Generating Pride in the Local Presence of Wildlife				
		<ul style="list-style-type: none"> Staff and contractors must be encouraged to report interesting sightings and observations. 	Reporting of sightings	<ul style="list-style-type: none"> ELCR Manager Allana staff & contractors
		<ul style="list-style-type: none"> Recognition for reporting worthwhile wildlife observations must be publicised accordingly. 	Locally publicised articles	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Conservation efforts for the local wildlife must be included into Allana's reporting systems. 	Reported conservation efforts	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Lambing season of the local Dorcas Gazelles should be a notable event each year. 	Enthusiasm of staff and contractors to protect wildlife	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Local wildlife photography competitions should be supported and rewarded by Allana. 	Artistic photographs submitted Established competition initiated	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Additional means of generating pride must be explored. 	Innovative ideas	<ul style="list-style-type: none"> ELCR Manager
Action Group N: Recognise Land Tenure for Afar Pastoralists				
		<ul style="list-style-type: none"> Some form of land tenure needs to be locally recognised for the established Afar pastoralists to protect their grazing lands and cultural heritage. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Formal land tenure for pastoralist communities may be difficult to achieve, however the Allana Corporation could internally recognise and support their rights. 	Afar pastoralists continue to live a traditional lifestyle	<ul style="list-style-type: none"> ELCR Manager
Action Group O: Additional Conservation Actions (possible examples)				
		<ul style="list-style-type: none"> Allana should collaborate with the ERCA to find ways to secure the African Wild Ass population. 	Signed Memoranda of Agreement and implementation of projects with	<ul style="list-style-type: none"> Allana Senior Management

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		<ul style="list-style-type: none"> Allana collaborate with the ERCA to introduce Beisa Oryx. Collaborative training between Allana Security and ERCA game scouts to be investigated, and promote exchange of skills. 	involvement of both parties.	<ul style="list-style-type: none"> ELCR Manager
Reduced Water Quality of Aquatic Systems, Particularly the Sabah River	Sustain a natural flow of high quality water.	Action Group P: Maintaining Good Water Quality in the Sabah River		
		<ul style="list-style-type: none"> Construction of wire gabions filled with waste rock to create retaining walls that prevent erosion to be installed throughout the project area wherever appropriate. 	Mine development plans to reflect erosion control requirements; Visible evidence of effective erosion control measures	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors
		<ul style="list-style-type: none"> Installation of concrete aprons on the downside of all culverts to dissipate the flow of water exiting a pipe 		
		<ul style="list-style-type: none"> Avoid the creation of continuous steep slopes along which large quantities of storm water flows could gain momentum 		
		<ul style="list-style-type: none"> Culverts and small bridges will need routine inspections following major flood events to ensure they are not blocked with branches or other debris. 	Clean culverts and evidence of natural drainage patterns	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Promote the continuation of natural drainage patterns wherever possible. 	Evidence of natural drainage patterns	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors
		<ul style="list-style-type: none"> Signs must be erected at the Sabah River clearly stating in the local language that washing of vehicles in the river is not allowed. 	Reduced evidence of vehicle washing in the Sabah River	<ul style="list-style-type: none"> ELCR Manager
		<ul style="list-style-type: none"> Vehicle washing facilities must be created away from the Sabah River and installed with appropriate dirty water management systems that avoid contamination of the Sabah River. 	Evidence of vehicle washing facilities	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors
		<ul style="list-style-type: none"> Appropriate dirty water management systems must be installed and properly managed as required throughout the project area. 	No dirty water originating from Allana operations entering the Sabah River	<ul style="list-style-type: none"> Planning Engineers Appointed Contractors
		<ul style="list-style-type: none"> Freshwater must be provided to local communities only at locations that have been pre-approved by the various local authorities. 	Limited uncontrolled spread of settlements	<ul style="list-style-type: none"> ELCR Manager
		Action Group Q: Monitoring of Water Quality in the Sabah River		
		<ul style="list-style-type: none"> Two fixed monitoring points to be identified in different locations where there is easy access to the river and on site measurements taken every two weeks using a hand-held meter: 	Water Quality raw data and summary reports	<ul style="list-style-type: none"> ELCR Manager
<ul style="list-style-type: none"> Water samples to be taken on a monthly basis and analysed in an appropriate laboratory for a variety of parameters 	Laboratory reports and summary reports	<ul style="list-style-type: none"> ELCR Manager 		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan / Verification	Responsibility
		Action Group R: Discourage Settlement along the Sabah River <ul style="list-style-type: none"> Allana to collaborate with the local authorities and assist the implementation of a land use plan with settlement areas identified. Settlement to be encouraged around existing towns where facilities such as schooling, medical care, waste removal etc. can be provided. 	Natural habitat remaining along the banks of the Sabah River	<ul style="list-style-type: none"> ELCR Manager Ethiopian Environmental Protection Agency

Volume III Annex C

Emergency Response Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana Potash for Review
0143047_V2.0_ERP	Dieter Rodewald	Mike Everett	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
APELL	Awareness and Preparedness for Emergencies at Local Level
EEC	Emergency Evacuation Plan
ELCR	Environment, Land and Community Relations
ERC	Emergency Response Coordinator
ERP	Emergency Response Plan
ESH-MS	Environmental, Social and Health Management System
ESHIA	Environmental, Social and Health Impact Assessment
IFC	International Finance Corporation
KPIs	Key Performance Indicators
PS	Performance Standard
QHSS	Quality, Health, Safety and Security
SPCCP	Spill Prevention, Control and Containment Plan
UNEP	United Nations Environment Programme

DEFINITIONS

Emergency: A situation where there is an immediate threat to communities, personnel or the environment.

Third Party Contractors: Contractors supplying a service to Allana Potash for any activity associated with the construction, operation or decommissioning phases of the proposed Project.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy) in the Danakil Depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Allana Potash Project.

The following Emergency Response Plan (ERP) presents a framework outlining procedures essential for effectively containing emergency situations for the proposed Project. The ERP provides an outline to ensure that systems are in place so as to react and appropriately manage unwanted outcomes. This ERP has been developed to address the general requirements associated with efficient response to these unwanted outcomes.

Allana will use this framework ERP to develop an operational plan based on identified hazards.

1.1 POLICY STATEMENT AND OBJECTIVES

1.1.1 Policy Statement

The ERP has been compiled within the context of the proposed Project's Environmental Policy Statement, as set out in *Box 1.1* below.

Box 1.1 Environmental Policy Statement

Allana require managers of all projects and operations to adhere to the Company Environmental Policy and to identify, evaluate, and minimize risks to the environment.

Allana require all operations to have site-specific emergency response plans as well as adequate management plans to mitigate impacts which meet or exceed all applicable regulations.

Allana will conduct regular audits of environmental performance and emergency response plans to verify compliance with the Company's policy and applicable regulations. Allana will identify revisions or improvements to current practices in order to minimize environmental impacts. Allana will report findings to the Board of Directors on a quarterly basis.

1.1.2 Objectives

The objectives of this Plan are as follows:

- Protect the communities and the environment through the development of emergency response strategies and capabilities.
- Set out the framework for hazard identification in order to define procedures for response to the situations including the development of contingency measures;
- Structure a process for rapid and efficient response to and manage emergency situations during the construction, operational and decommissioning and closure phases of the proposed Dallol Potash Project; and
- Assign responsibilities for responding to emergency situations.

1.2 PURPOSE AND SCOPE

The construction, operation and decommissioning phases of the proposed Project will result in activities that have the potential to result in unwanted outcomes and/or emergency situations. The ERP is aimed at defining the process and responsibilities for managing these situations, thus reducing likelihood and severity of inadequate management.

This Plan should be considered to be a “living” document that is amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.

1.3 LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS

This ERP should be read in the context of the ESH-MS (discussed in *Chapter 13 of the ESHIA*), which has been structured to provide a vehicle for the integrated management of the suite of management plans described in *Volume III* which have been designed to address social and environmental risks.

It is recognised that the ESH-MS and associated plans are also “living” tools that will be constantly updated to accommodate changing circumstances.

Specifically, this plan ties in closely with the Spill Prevention, Control and Containment Plan (SPCCP) (*Annex E in Volume III*). The SPCCP has reference with respect to the development of emergency response processes that are associated with spills and their management within the Dallol Potash Project and associated activities.

A summary of the legal requirements and standards relevant to the ERP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

The following Ethiopian regulation informed the development of this ERP:

- *Prevention of Industrial Pollution Council of Ministries Regulation (n° 159/2008)*

This regulation is directed to industry and in particular “factories”. Although the regulation and the aforementioned proclamation do not provide a clear definition of “factories” certain sections of the regulation can be deemed applicable to the proposed Dallol Potash Project. These sections include the need for emergency response systems and the need for monitoring of environmental safety.

2.2 IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 3 (PS3) – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

- *Performance Standard 4 (PS4) – Community Health, Safety and Security*

PS4 aims to avoid adverse impacts on the health and safety of affected community during the Project life from both routine and non-routine circumstances. Furthermore, the standard ensures that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the affected communities.

The UNEP APELL requires that all projects will have an Emergency Preparedness and Response Plan that is commensurate with the potential risks of the facility and that includes the following basic elements:

- Administration (policy, purpose, distribution, definitions, etc.);

- General Facility information including location, primary and alternate emergency response coordinator, physical description of facilities, surrounding and underlying geology and groundwater, description of operations and processes, wastewater systems, facility outfalls, protection of surface waters and personnel responsible for the development of the contingency plan for the facility;
- Organization of emergency areas (command centers, medical stations, etc.);
- Roles and responsibilities;
- Communication systems (such as a notification flow chart);
- Emergency response procedures to be used as guidelines to follow when a spill, fire, explosion, or other catastrophic event causes a release of oil or other hazardous materials to the environment;
- Emergency response procedures to be used as guidelines to follow when there are spills in diked or containment areas, spills in un-diked areas, spills to on-site lakes/lagoons, spills on soil, spills to receiving riverbeds, unplanned releases of compressed gases, releases from oil-filled electrical equipment;
- The identification and location of emergency response equipment, and emergency response contractors, as well as descriptions of the appropriate containment equipment to prevent spills from reaching water bodies;
- Emergency resources;
- Facility Evacuation Plan and diagrams;
- Training and updating requirements for facility operational and emergency response personnel; and
- Checklists (role and action list and equipment checklist including an inventory of hazardous substances, wastes, oils, and industrial gases that have a potential for spills or accidental releases into the environment).

With respect to this Plan, Allana have the responsibility to:

- Provide emergency response services and to structure and coordinate emergency response procedures for the proposed Dallol Potash Project;
- Ensure that specific emergency responsibilities allocated to them are organised and undertaken; and
- Ensure that employees and contractor third parties are trained and aware of all required emergency procedures.

The roles and responsibilities within Allana for the implementation of the ERP are presented in *Table 3.1*.

Table 3.1 *Responsible Parties and Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Mine Manager	<ul style="list-style-type: none"> • Review monthly and annual spill reporting • Review emergency response drill outcomes and work with Environmental, Land and Community Relations (ELCR) Manager to identify necessary improvements • Appoint an Emergency Response Coordinator tasked with responding to emergencies in order to minimize disparate utilization of resources
Emergency Response Coordinator (ERC)	<ul style="list-style-type: none"> • Respond to emergencies so as to minimise disparate utilization of resources
Quality, Health, Safety and Security (QHSS) Manager	<ul style="list-style-type: none"> • Distribution of the ERP to all parties with responsibilities in implementing the plan • Review monthly spill report • Review quarterly report of accidents/incidents and reviews of contractor practices • Plan emergency response drills with Mine Manager and Contractors • Develop Emergency Response Training • Lead any reviews or investigations into reported accidents/incidents • Review all contracts prior to signing and confirm these contain requirements to meet Allana emergency response standards • Receive all notifications of incidents/accidents and ensure proper response is being followed including reporting and review
Environmental, Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> • Support QHSS manager as required in emergency response planning • Support QHSS manager in development of training and management plans to ensure environmental concerns are addressed • Provide regular spill and accident reporting
ELCR and QHSS Support Staff	<ul style="list-style-type: none"> • Schedule monthly inspections and audits and resolve issues identified • Schedule emergency response training sessions for relevant staff • Prepare monthly spill report

	<ul style="list-style-type: none"> • Prepare quarterly accident/incident reports • Support QHSS Manager in emergency response drills
ELCR Officers (on-site)	<ul style="list-style-type: none"> • Provide emergency response information at local level and liaise with potentially affected communities • Identify and liaise with local community in case of emergency response actions • Keep detailed records of stakeholder communication and actions • Perform inspections after major events (i.e. heavy rains, etc.)
Identified Community Representatives	<ul style="list-style-type: none"> • Participate in Community Safety Training • Co-develop community emergency dissemination protocols • Participate in emergency response drills

4 *IMPACT MANAGEMENT*

4.1 *MANAGEMENT DURING CONSTRUCTION, OPERATION AND DECOMMISSIONING AND CLOSURE PHASES*

4.1.1 *Response Procedures*

Allana have developed an ERP that provides the appropriate response to incidents including:

- Fire;
- Explosion;
- Medical Emergency;
- Environmental Emergency;
- Climatic Emergency;
- Road Traffic Accidents;
- Missing Persons; and
- Armed Threats

This emergency management process will be documented within the Dallol Potash Project ESH-MS, and will be updated to include risks associated with:

- Pandemics;
- Civil unrest / conflict; and
- Bomb warnings.

In addition to the ERP, Allana have developed an Emergency Evacuation Plan (EEP) (V2.0, 2011), which details procedures to follow should an emergency evacuation from site be required.

Allana will update their existing ERP and EEP to develop specific operational emergency procedures and provide appropriate resources to respond to process upset, accidental, and emergency situations for their operations and activities during construction, operation and decommissioning and closure phases. The procedures will include plans for addressing training, resources, responsibilities, communication and all other aspects required to effectively respond to emergencies associated with their respective hazards.

Prior to updating the ERP, Allana will develop a hazard identification risk assessment programme, which will involve a baseline risk assessment of the entire Project, from construction through to decommissioning. This risk assessment will aid in thorough risk identification. This risk assessment programme will need be repeated to take into account non-routine tasks, new Project activities and changes made to the existing process.

Furthermore, Allana will co-ordinate the proposed Project emergency response process and will engage communities and local government agencies

to inform them of the emergency response planning and processes, and integrate as appropriate with available services.

4.1.2 *Emergency Communications and Coordination Plan*

In any emergency situation where there is an *immediate* threat to communities, personnel or the environment, the Mine Manager shall be notified immediately. The Mine Manager will dispatch the ERC who will determine the appropriate plan of action depending on the severity of the emergency, the people affected, and the need to evacuate.

If there is a *developing* emergency or unusual situation, where an emergency is not imminent, but could occur if no action is taken, the QHSS Manager (or if the QHSS Manager is absent the ELCR Manager) is to be informed immediately. Once the emergency or unusual situation has been managed, the correct incident/near miss must be reported on to the Mine Manager.

If an emergency situation poses a direct threat to communities in the area, the ELCR Officers will advise persons in the vicinity of the emergency to evacuate due to the potential risk. The appropriate government authorities will immediately be notified of such an emergency evacuation. The ERC will be tasked with responding to the potential risk. Should the emergency situation be such that it can be managed by Allana, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risk.

4.2 *COST FOR EMERGENCY RESPONSE*

Costs for emergency response and management will be included in the capital expenditure budget for during the construction phase and operational budgets for during the operational and decommissioning phases of the proposed Project.

4.3 *VERIFICATION AND MONITORING*

The QHSS Manager has been tasked with the responsibility for auditing the development and implementation of emergency response procedures associated with all phases of the proposed Project. The execution of emergency drills will be included in emergency response procedures for Allana. These will include the following:

- Fire Drills;
- Bomb Threat Drills;
- Armed Threat Drills;
- Emergency Evacuation Drills; and
- Medical and Environmental Drills.

Reporting and monitoring requirements for the ERP will include:

- Monthly inspections and audits;
- Quarterly report of accidents/incidents;
- Reporting at the time of the incident and monthly spill reporting developed by ELCR, QHSS departments;
- Bi-annual emergency response drills; and
- Annual reporting on training.

Emergency response drills and reporting maintained by the QHSS Manager will provide information regarding required revisions to training or the emergency response actions. Each incident reported will be reviewed and investigated upon occurring. Actions will be identified where possible to improve the site's overall response to emergencies.

Updates/revisions that are necessary to protect worker or community health and safety will be implemented immediately after approval by the Mine Manager. On a bi-annual (twice annually) basis Key Performance Indicators (KPIs) will be compared against past-performance and analyzed for trends to determine if there are areas that can be improved.

Changes as a result of the trend analysis and identified areas for improvement will be implemented following the Project's change management system as required.

4.3.1

Training

All employees and third party contractors will be trained in emergency response procedures within one month of their start-date. The QHSS Manager shall distribute the ERP and the EEP to all parties in charge of ensuring the plans implementation. All relevant information of the ERP and EEP shall be communicated to employees and independent contractors. This information shall include information on potential emergency risks/threats, appropriate first person response to incidents/emergencies and notification procedures.

All site personnel, including contractors, are to be trained in the appropriate responses for emergencies. The training is mandatory and is to be conducted on a regular basis. The frequency and timing of training is at the discretion of the Mine, QHSS and ELCR Managers, but is to take place at least once a month.

Training is to include, but not limited to the following:

- Firefighting;
- Emergency Evacuation;

- Bomb Threat;
- Armed Threat;
- Emergency Evacuation; and
- Medical and Environmental Emergencies.

4.4 *REPORTING AND DOCUMENTATION*

4.4.1 *External Reporting*

Allana will fulfil the necessary external (IFC, Federal Government) reporting requirements with respect to this Plan.

4.4.2 *Internal Reporting*

Monitoring reports against the Plan will be reported by the Allana QHSS Manager to the respective management boards as agreed. Monitoring documentation will be retained by Allana indefinitely.

Key Performance Indicators

The following KPIs will be measured and used to evaluate the Project's performance with respect to its stated objectives and commitments:

- Number of identified non-compliances with emergency prevention and preparedness measures identified in this plan;
- Number of incidents that have triggered the emergency response procedure; and
- Specific KPIs in relation to compliance with emergency prevention measures.

Table 5.1 ERP for Complete Project Lifecycle

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Potential negative impacts to the environment, workforce and community from emergencies	Updating and implementation of a suitable ERP and EEP	Review of the ERP and EEP to confirm specific procedures are in place to address, natural disasters, pandemics, medical emergencies, fires, explosions, traffic incidents, civil unrest, bomb warnings, and spills/releases of fuels and hazardous substances.	Annual review	QHSS and Mine Manager
	Update the ERP and EEP	Review of the ERP in the event of a change in process within the mining or support operations	Review of the ERP in the event of a change in process within the mining or support operations	QHSS Manager
	Manage the ERP and EEP processes	Maintenance of emergency contact information, emergency / evacuation instructions, location of response equipment	Annual review of processes	ELCR and QHSS Managers
	Manage the ERP and EEP processes	Maintenance of emergency response equipment	Annual inspection of equipment	QHSS Manager
	Provide emergency response and evacuation training	Provide emergency response and evacuation training to all employees and third party contractors, including first aid training	Document training Annual review of candidates	QHSS Manager
	Provide emergency response and evacuation training	Provide all personnel involved in mineral processing and process chemical management appropriate training on how to recognise and respond to situations which can result in a risk to them, communities or the environment	Document training Annual review of candidates	QHSS Manager

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	Provide ERP and EEP relevant training	Emergency Response Drills	Implementation of emergency response drills for relevant personnel monthly	QHSS Manager
	Report on emergencies	Carryout the appropriate internal and external reporting	Review of all incidents / accidents reports	QHSS Manager

Volume III Annex D

Integrated Mine Closure Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana Potash for Review
0143047_V2.0_IMCP	Dieter Rodewald	Mike Everett	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AfDB	African Development Bank
CHSSMP	Community Health, Safety and Security Management Plan
EHS	Environmental, Health and Safety
ERP	Emergency Response Plan
ESH-MS	Environmental, Social and Health Management System
ESHIA	Environmental, Social and Health Impact Assessment
IFC	International Finance Corporation
RDCP	Rehabilitation, Decommissioning and Closure Plan
SPCCP	Spill Prevention, Control and Containment Plan
WMP	Waste Management Plan

DEFINITIONS

Third Party Contractors: Contractors supplying a service to Allana Potash for any activity associated with the construction, operation or decommissioning phases of the proposed Project.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy) in the Danakil depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

This Integrated Mine Closure Plan (IMCP) has been compiled as a framework, which aims to address environmental issues related to the rehabilitation (which will occur progressively through the life of the proposed Allana Potash Mine), decommissioning and closure of the Dallol Potash site. Following detailed design of the proposed Project, Allana will develop a conceptual closure plan that will be based on this plan.

Unlike most other industrial activities, mining activities will eventually cease as a finite resource is exploited. Activities may also cease when costs associated with mining potash no longer make it profitable. It is also possible for both the proposed Project to be mothballed for a period of time due to economic reasons. Rehabilitation and closure during any of these scenarios will allow disturbed land to be rehabilitated to one or more sustainable post-Project land uses.

1.1 *POLICY STATEMENT AND OBJECTIVES*

1.1.1 *Policy Statement*

The IMCP has been compiled within the context of the proposed Projects Environmental Policy Statement, as set out in

Evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment.

Box 1.1 below.

Evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment.

1.1.2 *Objectives*

The overall closure objective is to leave the mine (and associated infrastructure) area in a condition that minimises adverse impacts on the social and natural environment and with a legacy that makes a positive contribution to sustainable development. The Allana closure objectives include:

- Leaving a safe environment for both humans and animals;
- Making all areas stable and sustainable;
- Implementing progressive rehabilitation measures, beginning during the construction phase if possible;
- Returning rehabilitated land-use to the pre-mining environment where possible;
- Maintaining and monitoring all rehabilitated areas and, if monitoring shows that the objectives have been met, making an application for closure;
- Preventing soil and surface/groundwater contamination by managing all water on site to acceptable and agreed standards;
- Cleaning up all affected areas and rehabilitate these to as close to the pre-mining environment as possible;
- Managing subsidence in such a way that lives will not be endangered or that environmental impacts are minimised;
- Complying with Local, Regional and Federal regulatory requirements;
- Following a process of closure that is progressive and integrated into the short and long term mine plans and that will assess the closure impacts proactively at regular intervals throughout Project life cycle;
- Managing the retrenchment of employees and the cessation of procurement contracts in such a way so as to avoid or minimise potential negative impacts of closure;
- Active partnerships with local communities, where possible; and
- The prevention, minimisation and mitigation of negative environmental impacts from operations.

1.2 *PURPOSE AND SCOPE*

This Plan applies to the rehabilitation, decommissioning and closure of the proposed Allana Potash Mine. Recommendations and commitments relating to the closure have been included based on the Project plan available at the time. It is expected that a more detailed closure plan will be prepared as the Project design is finalised. Accordingly, this Plan will be regularly reviewed

and updated to reflect revised Project design and learning experienced during its implementation.

Rehabilitation and closure planning is a complex and iterative process that involves interaction with a wide range of parties to ensure that it progresses smoothly. Closure objectives have been outlined so that the planning can ensure that all activities during construction, operation and decommissioning and closure are planned with the end use in mind.

This plan should be considered to be a “living” document that is amended in light of the learning experienced during its implementation.

1.3 *FACTORS INFLUENCING REHABILITATION PLANS*

During the preparation and review of rehabilitation plans a number of different factors need to be considered which may influence decisions about selecting a rehabilitation strategy. These include:

- The conservation value of a proposed environmental outcome;
- The importance to the local community of the economic productivity of the proposed future land capability;
- The consistency of the proposed land use with local and regional plans; and
- The long term ownership of the land.

Irrespective of the rehabilitation outcome, the environmental authority must ensure that the rehabilitation outcome will endure expected climatic variations and that the land will be sustained for a land use consistent with the surrounding area.

1.4 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

This IMCP should be read in the context of the ESH-MS (discussed in *Section 14 of the ESHIA*), which has been structured to provide a vehicle for the integrated management of the suite of management plans described in *Volume III* which have been designed to address social and environmental risks and impacts.

It is recognised that the ESH-MS and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

Specifically, this plan ties in closely with the following management plans.

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Stakeholder Engagement Strategy (SES)	Discusses the communication of rehabilitation measures and closure objectives to stakeholders.

Management Plan	Overlap of this Plan with Content of Other Plans
Community Development Plan (CDP)	Aspects of closure that affect the social environment are considered in this plan.
Sourcing, Recruitment and Procurement Management Plan (SRPMP)	Discusses the considerations of retrenchment to the workforce within Project planning.
ENVIRONMENTAL PLANS	
Waste Management Plan (WMP)	Rehabilitation of temporary waste storage facilities and the Waste Water Treatment Plant (WWTP) is a component of rehabilitation, decommission and closure.
Air Quality Management Plan (AQMP)	Dust emissions from activities associated with the decommissioning and closure phase of the proposed Project are considered in this plan.
Biodiversity Management Plan (BMP)	Mining related activities and the potential disturbance to land that is regarded sensitive/moderately sensitive would impact on biodiversity values and ecological processes. In such an event, a net gain in biodiversity values in the area of influence would need to be achieved.

A summary of the legal requirements and standards relevant to the IMCP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

There are no prescriptive requirements included in Ethiopian legislation for mine closure; however, the rehabilitation, decommissioning and closure of the proposed Allana Potash Mine will be governed by the Environmental Policy of Ethiopia (1997), which requires that appropriate mitigation and reclamation measures are taken during and after the operations. Furthermore, the Constitution of the Federal Democratic republic of Ethiopia requires that developments are sustainable (Article 43) and that projects do not damage or destroy the environment (Article 92). The Allana Potash Project will also be administered by Environmental Protection Authority representatives who form part of the Ministry of Mines. Because the proposed Project is mining related, the EPA has delegated review and decision making authority to the MoM.

2.2 IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 1 (PS1) – Assessment and Management of Environmental and Social Risk and Impacts*

PS1 aims to identify and assess environmental and social risks and impacts of any given project. The project must adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. PS1 promotes improved environmental and social performance of clients through the effective use of management systems. Furthermore, the standard promotes and provides a means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

- *Performance Standard 3 (PS3) – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

- *Performance Standard 6 (PS6) – Biodiversity Conservation and Sustainable Management of Living Natural Resources*

PS6 has the greatest relevance to this study. Performance Standard 6 recognises that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living and natural resources are fundamental to sustainable development. This standard covers the following aspects:

- To protect and conserve biodiversity;
- To maintain the benefits from ecosystem services; and
- To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

2.3 *IFC GENERAL ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINES*

2.3.1 *IFC Environmental Guidelines*

- **IFC General Environmental, Health and Safety (EHS) Guidelines: Environmental - 1.3 – Wastewater and Ambient Water Quality** (which applies to projects that have the potential to generate process wastewater, sanitary (domestic sewage) or storm water to the environment);
- **IFC General EHS Guidelines: Environmental - 1.5 – Hazardous Materials Management** (which applies to projects that use, store, or handle any quantity of hazardous materials, defined as materials that represent a risk to human health, property, or the environment due to their physical or chemical characteristics);
- **IFC General EHS Guidelines: Environmental - 1.6 – Waste Management** (which applies to projects that generate, store, or handle any quantity of waste across a range of industry sectors); and
- **IFC General EHS Guidelines: Environmental - 1.8 – Contaminated Land** (which provides a summary of management approaches for land contamination due to anthropogenic releases of hazardous materials, wastes, or oil, including naturally occurring substances).

2.3.2 *IFC Construction and Decommissioning Guidelines*

- **IFC General EHS Guidelines: Construction and Decommissioning - 4** (which provides specific guidance on prevention and control of community health and safety impacts that may occur during new project development or at the end of the project life-cycle).

2.4 *AFRICAN DEVELOPMENT BANK STANDARDS AND POLICIES*

The following African Development Bank (AfDB) procedures and guidelines are applicable to this Plan:

- *Environmental and Social Assessment Procedures for AfDB's Public Sector Operation (June, 2001)*

The environmental and social assessment (ESIA) procedures set out by the AfDB's ensure that the Banks projects, programmes and plans have been designed to make them environmentally and socially sustainable.

- *Integrated Environmental and Social Impact Assessment Guidelines (October 2003)*

The AfDB completed a review of its environmental assessment procedures and integrated the bank's new vision and emerging priorities, particularly crosscutting themes. The new procedures, entitled Environmental and Social Assessment Procedures were produced and adopted in June 2001.

Projects should enhance positive impacts and, in the following order, on prevention, minimise, mitigate or compensate adverse impacts. This approach implies that most of the measures should be related to project design, location and implementation rather than curative interventions that handle adverse outcomes after the emergence of the anticipated problems.

Overall accountability for rehabilitation, decommissioning and closure and setting and reviewing related targets will lie with Allana.

With respect to this Plan, Allana have the responsibility to ensure that adequate measures are developed and implemented by parties, including third parties, to ensure adequate rehabilitation, decommissioning and closure. Responsibilities are identified in the management and monitoring sections to follow. Furthermore, Allana have the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence with respect to spill management.

Overall accountability for rehabilitation, decommissioning and closure and setting and reviewing related targets will lie with Allana.

Table 3.1 outlines the roles and responsibilities related to implementing this management plan.

Table 3.1 *Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Site Manager	<ul style="list-style-type: none"> • Work with the Environmental, Land and Community Relations (ELCR) Manager to development of a Conceptual Closure Plan Review monthly and annual spill reporting • Ensure ongoing implementation of the Closure Plan and work with Environmental, Land and Community Relations (ELCR) Manager to identify necessary improvements • Ensure operational personnel have management systems in place to support ELCR commitments
Environmental Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> • Work with QHSS manager to ensure Conceptual Closure Plan is developed and implemented throughout the life of the proposed project
ELCR Officers	<ul style="list-style-type: none"> • Support the ELCR Manager in roll-out of the Closure Plan • Assist the ELCR Manager in monitoring onsite implementation of the Plan
Human Resources Manager	<ul style="list-style-type: none"> • Work with the ELCR Manager to ensure that employment cessation at closure of the proposed Project is carried out in a defensible and fair manner
Contractors	<ul style="list-style-type: none"> • Understand and implement ongoing closure activities throughout the life of the proposed Project

For the purposes of this IMCP, the final post-closure land use proposed for the MEP is as close to the pre-mining environment as possible. This proposed final land use may be amended as this closure plan is revised. Although closure occurs once operations cease, rehabilitation measures will take place from as soon as construction commences, and will continue through each phase of the proposed Project. The rehabilitation strategies and the necessary closure management measures for each phase of the proposed Project are discussed in this section.

A number of Management Plans have been drawn up for the proposed Allana Potash Mining Project, from which information has been extracted. For more detail please refer to these plans as referenced.

4.1

MANAGEMENT DURING CONSTRUCTION

The key factors to consider during the construction phase are to minimise the area affected by the development, minimise potential future contact of contaminating materials with the environment, and to maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process after the Project is complete. In other words construction should be carried out with closure in mind. The following management measures apply:

- Ensure that project planning has, where possible, minimised the area to be occupied by infrastructure. This area should be clearly demarcated on a map. In the event that additional areas are to be disturbed there should be necessity for this disturbance, and permission sought from the appropriate personnel (i.e. the Allana Environmental Function).
- Ensure that construction crews restrict their activities to the planned areas.
- Locate all soil and overburden stockpiles in areas where they will not require relocation prior to replacement for final rehabilitation.
- Ensure that all stockpiles are clearly and permanently demarcated and located in defined no-go areas.
- All infrastructure is designed with closure in mind – either for a clearly defined dual purpose (i.e. buildings to be used post closure) or for ease of deconstruction.
- All soil stripping in areas of surface disturbance will be carried out in strict compliance with the soil stripping guidelines in this Plan.

4.2

MANAGEMENT DURING OPERATION

Although closure planning should be conducted prior to the commencement of the Project, the long lifespan means that major environmental and societal

changes may have occurred that will affect the original planned land use. This is often the case where urban sprawl occurs; areas which were predominantly rural at the beginning of a project may later be located within town boundaries. Accordingly, closure plans will be revised periodically throughout the life of the Project and annually during the last seven years of the Project life cycle.

The closure plan will include an in-house risk assessment and risk management system, with relevant systems and protocols, maintenance and monitoring systems, and regular review of performance leading to correction of the system to eliminate non-conformances in respect of the rehabilitation risk.

With respect to ensuring the rehabilitation process is scheduled throughout the life of the project, the closure plan will include the following:

- A listing of the physical attributes of the Project site;
- A listing of the objectives with respect to rehabilitation and closure;
- A listing of all activities that are to be taken throughout the life of the Project;
- An assessment of how each activity may potentially impact on the proposed Project to achieve its rehabilitation objectives;
- An evaluation (rating) of the risk of rehabilitation failure occurring as a result of each action, or failure to act;
- For those risk items rated “high”, methods of avoidance, mitigation,- and if all else fails, treatment - will be identified and operational management procedures developed to manage each key risk;
- Proposals for monitoring performance in relation to these policies and procedures;
- A program for regularly assessing the effectiveness of the implementation of each procedure and the intrinsic effectiveness of the procedure (monitoring of effectiveness of the procedure to ensure achievement of the rehabilitation objectives);
- Provision for demonstrating how continuous improvement is being implemented for the Project, such that any future certification requirements can be met. This can either refer to improvement in performance in managing the key risks identified at each site, or a progressive incorporation of the lower-rank risks into the formal management, prevention and mitigation regime provided by the ESH-MS; and
- A program for regularly reviewing the system and its procedures to ensure that all objectives are being met.

With respect to ensuring that the closure plan effectively ensures that the rehabilitation activities will conform to the commitments made in the ESHIA, the following activities are required:

- A list of key items will be maintained during the life of the Project. These include soil stockpiles;

- Soil stockpiles will remain clearly identified and maintained (free from erosion and wind blow emissions through use of impermeable wind breaks); and
- All changes in Project planning will be fully assessed for their potential impact on land rehabilitation prior to their implementation.

4.2.1 *Rehabilitation throughout the Operational Phase*

Rehabilitation will commence during operations for some aspects of the mine, such as the solution mining areas and tailings stockpiles. Final rehabilitation will then take place during decommissioning and closure. The following rehabilitation guidelines apply to mining and associated activities during the operational phase. The rehabilitation guidelines described below will also apply during decommissioning and closure.

4.2.2 *Operations and Infrastructure Requiring On-going Rehabilitation*

While the majority of infrastructure related to the proposed Allana Potash Mining Project will be rehabilitated at decommissioning and closure, some of the operations will be progressively rehabilitated during operations. This infrastructure is discussed below.

Solution Mining

Activities prior to mining will include the drilling of a well from ground surface through to the deposit and the establishment of an underground cavern. The resulting overburden will then be stockpiled (tailing stockpiles) and mining operations follow. On completion of a well and associated cavern, all mining related infrastructure (leach string, well head etc.) are removed and used in future well developments. Overburden from tailing stockpiles will be replaced as far as possible; however, majority of the overburden will be deposited onto the tailings stockpile between the brine field and the evaporation ponds. The cavern/well will be sealed with a concrete plug.

These activities will be on-going as the solution mining progresses from one area to the next.

Well Overburden Stockpiles and Tailings

The rehabilitation of overburden stockpiles will occur continuously for each well/cavern mined. Overburden will be removed from drilling activities and stockpiled. A small portion of overburden will be used to backfill the mined well/cavern, whilst majority will be deposited onto the tailings stockpile between the brine field and the evaporation ponds.

Furthermore, tailings emanating from the evaporation process will be used (as far as possible) as backfill for wells and associated caverns. Because tailings purely consist of NaCl only, it will not result in contamination to ground- and surface water features when stockpiled and used as backfill.

Although tailings will be used as backfill in the wells and caverns as much as possible, there will still be a significant amount of excess tailings that will need to be permanently stockpiled on the site. As is mentioned before, because tailings purely consist of NaCl, contamination of groundwater/surface water features as a result of infiltration/runoff of the stockpile is not a concern.

4.3 *MANAGEMENT FOR DECOMMISSIONING AND CLOSURE*

Once operations cease decommissioning can commence. The sequence of decommissioning is vital to ensure that facilities that are required during decommissioning remain active until they can be finally rehabilitated and closed. This refers to the temporary waste storage facilities and the Waste Water Treatment Plant, which should remain open to receive waste from the Project site during decommissioning, as well as services and amenities such as provision of diesel, water and electricity. Once all infrastructure has been removed these sites can be rehabilitated.

4.3.1 *Impacts and Issues during Decommissioning and Closure*

Social and environmental impacts have been detailed in the ESHIA and associated management plans. A summary of the impacts and issues that apply to the decommissioning and closure phase include:

Environmental Impacts:

- Altered groundwater gradients associated with groundwater utilisation during the operational phase;
- Increased levels of dust and noise emissions;
- Impact on soil and surface water features as a result of hydrocarbon spills; and
- Impact on flora and fauna due to direct interference, hydrocarbon spills and/or deterioration in soil and water quality.

Social Impacts:

- Cessation of income generating opportunities from direct and indirect contracting for the proposed Project;
- Increased income generating opportunities related to in-migration;
- Reduced income generation opportunities from tourism;
- Increased cost of living due to localised inflation;
- Erosion of the traditional governance mechanism;
- Loss of sense of place and decreased social and cultural cohesion;
- Increased vector borne and communicable disease;
- Worsening of health profile related to spills emissions and contamination;
- Increased anti-social behaviours;
- Disturbance or damage to cultural heritage and archaeological sites;
- Pressure and overburdening of physical and social infrastructure;

- Exposure of workforce to insufficient health and safety conditions (during decommissioning);
- Exposure of workforce to insufficient labour and accommodation conditions (during decommissioning); and
- Improved transportation routes.

4.3.2 *Objectives and Targets*

Environmental Objectives and Targets

- To remove all mining infrastructure and seal all solution wells according to professionally engineered designs and authority's requirements;
- To shape disturbed areas in accordance to the mine plan;
- To ensure that water quality on site meets statutory requirements;
- To monitor runoff and drainage from rehabilitated sites and take remedial measures if necessary;
- To monitor dust levels emanating from recently rehabilitated areas; and
- To manage the post-mining water table and consequent impacts on groundwater use.

Social Objectives and Targets

- To avoid, mitigate and manage all social and health impacts related to the decommissioning and closure of the proposed Project;
- To work with relevant stakeholders to jointly design and define the processes of handover of infrastructure;
- To plan an 'exit strategy' for all community development activities;
- To plan for the retrenchment of employees and the cessation of procurement contracts; and
- To define the required engagement in preparation for decommissioning and closure.

4.4 **MANAGEMENT MEASURES**

This section describes management measures for Project related infrastructure, environmental aspects and social aspects. Further detail on mitigation and management measures can be found in the associated management plans in the ESHIA.

Management of Project Operations and Infrastructure during Decommissioning and Closure

Specific recommendations for the relevant operations and infrastructure associated with the mine are discussed in detail below.

Solution Mining

On cessation of mining, the final solution well(s)/cavern(s) mined must be backfilled with the overburden and tailings from the evaporation process (the tailings stockpile), and sealed with a concrete plug.

To reduce haulage costs, the overburden stockpiles should be placed in close proximity to wells.

Internal Access Roads and Conveyor Route

Prior to the construction conveyor routes outside of the salt flats, the ground surface will be stripped and stockpiled as a flattened linear windrow to the side of the road/conveyor route, on the upslope side of the route, for replacement over the route at closure. It will be necessary to ensure that the windrow does not impede any potential run-off water flow (which would cause erosion of the windrow). At closure, the conveyor structures including plinths will need to be removed. The routes will then be ripped on contour (even if this means ripping across the direction of the route), and the stockpiled topsoil replaced by pushing it back onto the route.

Access roads within the salt flats will be constructed by the placing of borrow material at an elevated height of approximately a meter. At closure, these roads will be left in place for communities for use by communities.

Processing Plant (including power plant)

For the purposes of this Plan, during the closure and decommissioning phase, it is assumed that the processing plant will be demolished. The following actions will apply:

- All infrastructure which cannot be used by alternative land users will be demolished and the following options can be considered for their viability:
 - Removal from site and disposal at a registered waste facility or landfill offsite; or
 - Equipment - sell and remove off site.
- The final site will be contoured so as to return the rehabilitated area to as close to the pre-mining environment as possible; and
- Erosion will be repaired if and when it occurs.

Evaporation Ponds

During the construction phase of the evaporation ponds, the ground surface within the footprint of the ponds will be stripped and stockpiled as a flattened linear windrow along the perimeter of the ponds. It will be necessary to ensure that the windrow does not impede any potential runoff water flow, which could result in erosion of the windrow. During closure, the stockpiled windrows will be replaced by pushing it back into the evaporation ponds,

likely resulting in a slightly domed platform in the salt flats. Any excess tailings from the evaporation ponds will also be used as fill in the evaporation ponds. Due to the nature of the salt flats, the platform will crystallise and “self-rehabilitate” overtime. The potential for erosion of the rehabilitated ponds will be monitored and repaired if and when it occurs.

Tailing Stockpiles

At closure, not all tailings from the tailings stockpile will be used as backfill for solution wells/caverns. As such, excess tailings (in the form of a stockpile) will require final rehabilitation. The tailings stockpile will be shaped down so that the top has a slightly domed surface form (it is assumed that the stockpile will take up an area of 12.5km² on the salt flats, with a height of approximately 2.5m). The potential for erosion of the rehabilitated stockpile will be monitored and repaired if and when it occurs.

Staff Village

For the purposes of this Plan, during the closure and decommissioning phase, it is assumed that the staff village will be demolished. The following actions will apply:

- All infrastructure which cannot be used by alternative land users will be demolished and the following options can be considered for their viability:
 - Removal from site and disposal at a registered waste facility or landfill offsite; and
 - Equipment - sell and remove off site.
- The final site will be contoured so as to return the rehabilitated area to as close to the pre-mining environment as possible; and
- Erosion will be repaired if and when it occurs.

Borrow Pits

Borrowed material used for the construction of internal access roads across the salt flats will (as far as is reasonably possible) be used as backfill during the rehabilitation of the borrow pits.

Furthermore, the side walls of the pits will be shaped down so as to produce a landform which grades into the surrounding landscape, while ensuring that the borrow pit is free draining.

The borrow pit floor and flattened side walls will be ripped on contour.

Temporary Waste Storage Facilities

The temporary waste storage facilities for hazardous and general waste are discussed in more detail in the WMP (*Annex F in Volume III*). Temporary waste storage facilities will be one of the final sites to be rehabilitated as they

need to remain open for the duration of the decommissioning phase in order to receive waste from the site.

Waste Water Treatment Plant

The waste water treatment plant (WWTP) is discussed in more detail in the WMP (*Annex F in Volume III*). The WWTP will be one of the final sites to be rehabilitated as they need to remain open for the duration of the decommissioning phase in order to receive waste water from the site.

Management of Environmental aspects during Decommissioning and Closure

Surface Water Management

During decommissioning and closure, the following management measures will be implemented:

- On gentle slopes, water will be encouraged to flow off the rehabilitated surface, as surface flow, as quickly as possible without causing erosion.
- Monitoring of surface water features will continue until a positive environmental trend is established. In the event that water quality is poor, an analysis will be performed to determine the possible sources of pollution and recommend mitigation measures.

Groundwater Management

During decommissioning and closure, the following management measures will be implemented:

- Water supply production boreholes will be sealed, decommissioned and abstraction area suitably rehabilitated. Furthermore, all pipeline and pumping infrastructure associated with these boreholes will be removed.
- The use and maintenance of all community water supply boreholes will be handed over to the local or regional authorities.
- Groundwater monitoring will continue until a positive environmental trend is established.
- In the event groundwater contamination relating to mining activities is established, an analysis will be performed to determine the possible sources of pollution. Once the source has been established remediation measures will be developed and implemented.
- When the water table reaches pre-mining elevations and no mining related groundwater contamination is detected, monitoring boreholes will be sealed and decommissioned, thus preventing consumption of water that is not suitable for human consumption.

Air Quality Management

Rehabilitation and mitigation will be continuous throughout the life of the project in order to result in minimal effort to apply final rehabilitation strategies.

Dust emissions are the most problematic air quality impact during decommissioning. Dust control measures for areas that are open and exposed during the decommissioning phase of the proposed Project are discussed in more detail in the AQMP (*Annex A in Volume III*). The measures are associated with vehicular movement around the site, and general good practice decommissioning and transportation measures.

Noise Management

Impacts associated with noise emissions during the decommissioning phase of the proposed Project are considered to be an impact of negligible significance. As such, other than good practice measures no further intervention for managing noise related impacts is necessary.

Biodiversity Management

During decommissioning and closure infrastructure no longer required will be removed from site. This will result in activities similar to those during the construction phase with regard to increased use of heavy machinery and trucks in the area. The use of these will remain in designated areas and on formal roads. Further biodiversity management measures are detailed in the BMP (*Annex B in Volume III*). These measures are associated with a gradual reduction of groundwater extraction to avoid sudden changes to the groundwater-fed pools that support endangered Killifish. Redundant boreholes should be filled thereafter to protect the groundwater table.

Environmental Awareness

Environmental awareness must be developed to make all individuals (contractors working on site during the various phases of the project, employees and the community at large) aware of the various social, health and environmental management plans that have been developed and their roles and responsibilities with respect to each of these plans.

The environmental awareness aspects related to the decommissioning and closure phase will need to be developed through the various practicable interventions developed during the construction and operational phases respectively. It is expected that these interventions together with international best practice environmental options at that given point in time, will form the basis of the strategy which will inform the closure of the proposed Allana Potash Mining Project.

Management of Social aspects during Decommissioning and Closure

Handover of Infrastructure

Allana will engage formal and traditional authorities and relevant partners surrounding the handover and management of Project-constructed infrastructure that is to be left in place. This may include potable water

boreholes, pipework, sanitation facilities, landfill etc. As part of a detailed closure plan Allana will record engagement and assessment that has been undertaken and who will manage infrastructure post-closure.

Retrenchment of Employees

Allana will begin a process of engagement with employees regarding retrenchment at least one year prior to the commencement of retrenchment activities. As part a retrenchment plan Allana will seek wherever possible alternatives to retrenchment, plan in consultation with workers, ensure a process of non-discrimination, ensure compliance with national law and any collective bargaining agreements, and ensure that all relevant payments are made to workers.

In preparation for any retrenchment Allana will provide certification for training received and letters of reference to all employees.

Exit Strategy for Community Development

As part of a detailed Community Development Implementation Plan Allana will consider methods for the cessation of community development funding during the decommissioning and closure phases. This may include the establishment of a locally administered Community Development Fund, partner funding for community development activities or planning for grant application and capacity development for local a locally administered Community Development Fund.

Stakeholder Engagement in Preparation of Closure

Allana will prepare for the decommissioning and closure phases by incorporating information around the decommissioning activities and post-closure land characteristics during routine engagement activities. During the transition from operations to decommissioning phases Allana will prepare a series of engagement workshops with relevant stakeholders at a regional, national and local level to inform them of the decommissioning activities and the anticipated changes and impacts it will cause.

4.5

POST CLOSURE

Post closure follows decommissioning and rehabilitation and is the phase during which monitoring continues to ensure that residual impacts are being managed and to ensure that necessary maintenance activities are carried out. Monitoring will continue until predictable trends are established. Residual impacts are expected to include impact associated with ground and surface water, visual impact of the rehabilitated area of the tailings stockpile and evaporation ponds and subsidence and potential socio-economic impacts which are currently difficult to quantify.

The criteria for post closure that are developed and agreed will fall into three broad categories:

- Surface and groundwater quality compliance with agreed conditions:
 - Ensuring water qualities meet the objectives.

- Reconstructed landform stability and ability to support the intended final landuse:
 - Ensure topography conforms to requirements of ultimate land user.

- Managing residual or latent risk:
 - Assessment of future risk.

Post closure is managed through a monitoring plan and liaison with the relevant authorities. Post closure objectives should comply with objectives and targets for closure. Towards the end of the life of the proposed Project, the post closure objectives will be refined to accommodate the site conditions at the time. Once it can be proven that the above categories satisfy the post closure objectives, an application for closure can be made. Monitoring plans have been included in the relevant management plans for the ESHIA.

5.1 ENVIRONMENTAL MONITORING

The objective of monitoring is to ensure that the agreed rehabilitation process remains on track. There is thus a need to carefully monitor the progress of the physical aspects of rehabilitation (soil stripping, overburden handling and landform development, and soil replacement) during the construction, operational and closure phase, and the progress of re-establishment of the desired final landuse.

The list of items that will be monitored will vary from site to site, and is usually based on the closure criteria that have been negotiated for the site. Typically, they may include several or all of the following items:

- Alignment of actual final topography to agreed planned landform;
- Depth of topsoil replaced;
- Chemical, physical and biological status of replaced soil;
- Erosion;
- Surface water drainage systems and surface water quality;
- Groundwater quality at agreed locations;
- Vegetation basal cover;
- Vegetation species diversity;
- Invasive species;
- Faunal re-colonisation; and
- Proportion of mined land that has been fully rehabilitated.

For more detail on monitoring programmes, see the relevant Monitoring sections in the various Management Plans.

Maintenance of rehabilitated sites is often the difference between the ultimate successes or failure of rehabilitation and monitoring of rehabilitation will determine whether rehabilitation objectives and requirements are being achieved. Post closure monitoring will be required to ensure rehabilitation is taking place and there are no residual impacts. This monitoring will take place in conjunction with other post closure monitoring programmes, such as biodiversity monitoring, groundwater and surface water monitoring and soil monitoring.

5.2 SOCIAL MONITORING

Monitoring of the social aspects will also take place during decommissioning and closure. For more detail on the indicators to be monitored, refer to the monitoring sections of the various social Management Plans.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

A final closure plan will need to be submitted to Ethiopian authorities for approval prior to closure.

Post closure monitoring results should be incorporated into a report and submitted to authorities for review.

6.2 *LENDER REPORTING*

Any reporting to the lenders will be stipulated in the conditions of approval.

6.3 *INTERNAL REPORTING*

The Allana environmental function will be required to ensure monitoring is on-going (until predictable trends are established) and are to liaise with the Allana board of directors.

Table 7.1 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Soil stripping, preparation of foundations, construction of buildings etc.	<ul style="list-style-type: none"> • Minimise the area affected by the proposed Project • Infrastructure design should minimise potential future contact of contaminating materials with the environment • Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process 	<ul style="list-style-type: none"> • Ensure project planning has, where possible, minimised the area to be occupied by infrastructure. This area will be clearly demarcated on a map • Ensure that construction crews restrict their activities to the planned areas • Locate all soil and overburden stockpiles in areas where they will not require relocating prior to replacement for final rehabilitation • Ensure that all stockpiles are clearly and permanently demarcated and located in defined no-go areas • All soil stripping in areas of surface disturbance will be done in strict compliance to the soil stripping guidelines 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Table 7.2 **Operational Phase**

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Soil stripping and stockpiling	<ul style="list-style-type: none"> • To strip soils in such a way so as to minimise erosion, compaction and dispersion • To maintain the fertility and capability of soils as far as possible during their storage 	<ul style="list-style-type: none"> • Where practical, strip and place soils when dry, and not when wet • Minimize the amount of soil/ stockpile handling • Avoid compaction of the soil during handling, during storage and during placement • Restrict the height of overburden stockpiles, where possible, to less than 4m • Where practical, soil stockpiles will be utilized on an on-going basis to reduce the length of time soils are stockpiled • Where practical stockpile should be screened after formation, to reduce risk of soil loss due to wind erosion 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Solution mining	<ul style="list-style-type: none"> • Leave a safe environment for both humans and animals • Make all areas stable and sustainable; • To prevent soil and groundwater contamination by managing all water on site to acceptable and agreed standards • Comply with local, district and national 	<ul style="list-style-type: none"> • Undertake continuous rehabilitation of the solution mining wells once mining at a particular well is complete 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Well overburden stockpiles and tailings	<ul style="list-style-type: none"> regulatory requirements Avoid long standing of well overburden stockpiles Reduce the amount of tailings that will have to permanently stockpiled 	<ul style="list-style-type: none"> Undertake continuous rehabilitation of well overburden stockpiles once mining at a particular well is complete Use tailings emanating from the evaporation process (as far as is possible) as backfill for wells/caverns 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Table 7.3 *Decommissioning and Closure Phase*

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Solution mining	<ul style="list-style-type: none"> Leave a safe environment for both humans and animals Make all areas stable and sustainable; To prevent soil and groundwater contamination by managing all water on site to acceptable and agreed standards Comply with local, district and national regulatory requirements 	<ul style="list-style-type: none"> On cessation of mining, the final solution well(s)/cavern(s) mined must be backfilled with the overburden and tailings from the evaporation process (the tailings stockpile), and sealed with a concrete plug. 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Haul roads, access roads and conveyor route	<ul style="list-style-type: none"> Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation 	<ul style="list-style-type: none"> At closure, the conveyor structures including plinths will need to be removed. The conveyor routes will 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	<ul style="list-style-type: none"> process Retain infrastructure that will benefit communities in the Study Area 	<ul style="list-style-type: none"> be ripped on contour and the stockpiled overburden replaced by pushing it back onto the route. At closure, borrow material will need to be removed from roads along the salt flats and used as backfill for borrow pits. 		
Processing plant (including power plant)	<ul style="list-style-type: none"> To ensure proper decommissioning, demolition and decontamination of building structures Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process 	<ul style="list-style-type: none"> All infrastructure which cannot be used by alternative land users will be demolished Remove equipment off site Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible Repair erosion if and when it occurs 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Evaporation ponds	<ul style="list-style-type: none"> Comply with local, regional and federal regulatory requirements Rehabilitate to reduce environmental and visual impacts 	<ul style="list-style-type: none"> Replace the stockpiled windrow along the perimeter of the evaporation pond by pushing it back into the evaporation ponds Contour the surface of the reclaimed stockpiled material so as to achieve an area that is as close to the pre-mining environment as possible Repair erosion if and when it occurs 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Tailing stockpiles	<ul style="list-style-type: none"> Comply with local, regional and federal regulatory requirements Rehabilitate to reduce environmental and visual impacts 	<ul style="list-style-type: none"> Shape down the tailings stockpile down so that the top has a slightly domed surface form Contour the surface of the reclaimed stockpiled material so as to achieve an area that is as close to the pre-mining environment as possible Repair erosion if and when it occurs 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Staff village	<ul style="list-style-type: none"> To ensure proper decommissioning, demolition and decontamination of building structures Maximise the recovery and effective storage of those profile materials that will be most useful during the rehabilitation process 	<ul style="list-style-type: none"> All infrastructure which cannot be used by alternative land users will be demolished Remove equipment off site Contouring of the final site to return the rehabilitated area to as close to the pre-mining environment as possible Repair erosion if and when it occurs 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Borrow pits	<ul style="list-style-type: none"> Comply with local, regional and federal regulatory requirements Rehabilitate to reduce environmental and visual impacts 	<ul style="list-style-type: none"> Borrowed material used to create roads along the salt flats to be used as backfill during the rehabilitation of the borrow pits The side walls of the pits will be shaped down so as to produce a landform which grades into the surrounding landscape Will ensure that the pit is free draining 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<ul style="list-style-type: none"> The pit wall and flattened side walls will be ripped on contour 		
Temporary waste storage facilities	To comply with the Waste Management Plan	The temporary waste storage facilities for hazardous and domestic waste are discussed in more detail in the Waste Management Plan (<i>Annex F in Volume III</i>). These temporary waste storage facilities will be one of the final sites to be rehabilitated as they need to remain open for the duration of the decommissioning phase in order to receive waste from the site.	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Waste water treatment plant	To comply with the Waste Management Plan	The waste water treatment plant is discussed in more detail in the Waste Management Plan (<i>Annex F in Volume III</i>). The plant will be one of the final sites to be rehabilitated as it needs to remain open for the duration of the decommissioning phase in order to receive waste water from the site.	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Surface water	Prevent contamination to surface water	<ul style="list-style-type: none"> On gentle slopes, water will be encouraged to flow off the rehabilitated surface, as surface flow, as quickly as possible without causing erosion If water quality is poor, an analysis will be performed to determine the possible sources of pollution and recommend mitigation 	<ul style="list-style-type: none"> Refer to <i>Section 5.1</i> above Monitoring of surface water features will continue until a positive environmental trend is established 	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Groundwater	<p>Rehabilitate to reduce environmental and visual impacts.</p> <p>Seal production boreholes to prevent usage as the water will not be suitable for human consumption,</p> <p>Seal monitoring boreholes to prevent usage as the water will not be suitable for human consumption</p> <p>Ensure that the water supply to the village is sustained.</p>	<p>measures</p> <ul style="list-style-type: none"> Decommissioning of production wells Handover of community water supply boreholes to local or regional authorities Continued groundwater monitoring until positive environmental trend is established Remediation of any contaminated groundwater Decommissioning of monitoring boreholes once water table reaches pre-mining conditions and no mining related groundwater contamination is detected 	<p>Refer to <i>Section 5.1</i> above</p> <p>Groundwater monitoring should continue until a positive environmental trend is established</p> <p>Ensure that the water supply to the village is sustained.</p>	ELCR Manager and ELCR Officers
Air quality	To comply with the Air Quality Management Plan	Management measures relating to air quality are discussed in more detail in the Air Quality Management Plan (<i>Annex A in Volume III</i>)	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Biodiversity	To comply with the Biodiversity Management Plan	<ul style="list-style-type: none"> The footprint of activities to remove infrastructure must be minimised through proper planning, on the ground demarcation of the outer acceptable limits of activities and respect for areas indicated as sensitive in the Baseline assessment. Pumping from boreholes 	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<p>must be phased out gradually to avoid sudden changes to the Killifish habitat.</p> <ul style="list-style-type: none"> • Redundant boreholes should be filled to avoid their use for other purposes and protect groundwater resources. • Management measures relating to biodiversity are discussed in more detail in the Biodiversity Management Plan (<i>Annex B in Volume III</i>) 		
Environmental awareness	Educate employees and communities of the impacts and effects associated with decommissioning and closure	The environmental awareness aspects related to the decommissioning and closure phase will need to be developed through the various practicable interventions developed during the construction and operational phases respectively. These interventions will form the basis of the strategy which will inform the closure of the proposed Project	Refer to <i>Section 5.1</i> above	ELCR Manager and ELCR Officers
Social Impacts	Handover of Infrastructure	<p>Engage formal and traditional authorities and relevant partners regarding infrastructure management post-closure.</p> <p>Record post-closure management responsibilities as part of detailed closure plan.</p>	Refer to <i>Section 5.2</i> above	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	Retrenchment of Employees	<p>Engage employees surrounding planned retrenchment one year prior to commencement.</p> <p>Plan retrenchment in consultation with employees through non-discriminatory process in compliance with national law and collective bargaining agreements.</p> <p>Make relevant severance and compensation payments as negotiated with workers.</p>		Human Resources Manager
	Exit Strategy for Community Development	Develop detailed community development plan that considers the cessation of funding for all development activities.		ELCR Manager and ELCR Officers
	Stakeholder Engagement	Undertake national, regional and local engagement programme surrounding the decommissioning activities and post-closure land uses.		ELCR Manager and ELCR Officers

Volume III Annex E

Spill Prevention, Control and Containment Plan

Version 2.0

December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
CHSSMP	Community Health, Safety and Security Management Plan
EHS	Environmental, Health and Safety
ELCR	Environmental, Land and Community Relations
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESH-MS	Environmental, Social and Health Management System
ESHIA	Environmental, Social and Health Impact Assessment
IFC	International Finance Corporation
KPIs	Key Performance Indicators
PS	Performance Standard
QHS	Quality, Health, and Safety
RDCP	Rehabilitation, Decommissioning and Closure Plan
SPCCP	Spill Prevention, Control and Containment Plan
WAMP	Water Management Plan
WMP	Waste Management Plan

DEFINITIONS

Third Party Contractors: Contractors supplying a service to Allana Potash for any activity associated with the construction, operation or decommissioning phases of the proposed Project.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers – 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy) in the Danakil depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Several activities associated with the proposed Project require focussed management to ensure that activities are appropriately controlled to prevent and mitigate unwanted outcomes. This Spill Prevention, Control and Containment Plan (SPCCP) has been developed to address the general requirements for management of unplanned spills of dangerous or hazardous materials. These may include spillages related to:

- Hydrocarbons (including diesel, petrol, greases, oils and other lubricants);
- Hazardous chemicals; and
- Waste water, including sewage.

The following SPCCP presents a system for reducing the potential for spills at the proposed Project, for responding to such events and for monitoring operations to confirm that preventative measures are in place and followed. The Plan is based on the mitigation measures recommended in the ESHIA.

1.1 POLICY STATEMENT AND OBJECTIVES

1.1.1 Policy Statement

The SPCCP has been compiled within the context of the proposed Project's Environmental Policy Statement, as set out in *Box 1.1* below.

Box 1.1 Environmental Policy Statement

Allana requires managers of all projects and operations to adhere to the Company Environmental Policy and to identify, evaluate, and minimize risks to the environment.

Allana require all operations to have site-specific emergency response plans as well as adequate management plans to mitigate impacts which meet or exceed all applicable regulations.

Conduct regular audits of environmental performance and emergency response plans to verify compliance with the Company's policy and applicable regulations. Identify revisions or improvements to current practices in order to minimize environmental impacts. Report findings to the Allana Board of Directors on a quarterly basis.

1.1.2 *Objectives*

The objectives of this Plan are as follows:

- Structure a process to identify the sources of potential land contamination associated with construction and operational phases of the proposed Allana Potash Mining Project;
- Categorise potential spill hazards;
- Identify and document management measures to prevent, control and mitigate spill events during all phases of the proposed Project and at all operations and facilities associated with the proposed Project;
- Assign responsibilities for implementing the management measures; and
- Describe verification, monitoring and reporting measures.

1.2 *PURPOSE AND SCOPE*

The construction, operation and decommissioning phases of the proposed Project will result in activities that have the potential to result in spills in the environment. The SPCCP is aimed at defining the process and responsibilities for managing spills, thus reducing likelihood and severity of realised events.

This management plan should be considered to be “living” document that is amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.

Given that the detailed design of the proposed Project is underway and not complete at this time this management plan presents conceptual measures for spill prevention and control and outlines the framework for developing a more comprehensive plan to be completed prior to various stages of construction, operation and decommissioning. The final plan will require consultation with mine engineers and contractors and will be led by the Allana team.

1.3 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

This SPCCP should be read in the context of the ESH-MS (discussed in *Chapter 13* of the ESHIA) which has been structured to provide a vehicle for the integrated management of the suite of management plans described in *Volume III* which have been designed to address social and environmental risks.

It is recognised that the ESH-MS and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

Specifically, this plan ties in closely with the Waste Management Plan (WMP) (*Annex F in Volume III*), the Water Management Plan (WAMP) (*Annex G in Volume III*) and the Emergency Response Plan (ERP) (*Annex C in Volume III*).

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Community Health, Safety and Security Management Plan (CHSSMP)	Undesired events and exposure to hazards has the potential to impact on individual's health and safety should onsite risks not be suitable managed.
ENVIRONMENTAL PLANS	
Waste Management Plan (WMP)	Management of all waste streams (including contaminated materials) produced by Allana must be in place so as to ensure protection to the communities and the environment.
Integrated Mine Closure Plan (IMCP)	The RDCP has reference with respect to evaluating and remedying potential contamination at the closure phase of the proposed Project.
Water Management Plan (WAMP)	The protection of water resources and monitoring of these with respect to contamination has reference.
OCCUPATIONAL HEALTH, SAFETY AND RISK PLANS	
Emergency Response Plan (ERP)	The ERP has reference with respect to the development of emergency response processes to ensure that health and safety of workers and protection of the receiving environment and communities is ensured.

A summary of the legal requirements and standards relevant to the SPCCP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

The following Ethiopian legislative and policy document informed the development of this SPCCP:

- *Constitution of the Federal Democratic Republic of Ethiopia*

The constitution sets out the concept of sustainable development and provides the rights around living in a clean and healthy environment.

- *Environmental Pollution Control Proclamation (n° 300/2002)*

The Environmental Pollution Control Proclamation came into force on 3 December 2002. The Proclamation advocates a “polluter pays” policy and the Environmental Protection Agency (EPA) or relevant regional environmental agency has the right to close or relocate any enterprise if the activity being carried out poses a risk to human health or to the environment.

- *Public Health Proclamation (n° 200/2000)*

This proclamation prohibits discharging of untreated liquid waste generated from septic tanks, seepage pits and industries into water bodies or water convergences. It also prohibits the disposal of solid or liquid or any other waste in a manner which contaminates the environment or affect the health of civil society.

2.2 IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 1 (PS1)- Assessment and Management of Environmental and Social Risks and Impacts*

PS1 aims to identify and assess environmental and social risks and impacts of the project, and to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.

- *Performance Standard 3 – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.

Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

2.3

IFC GENERAL ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINES, 2007

The IFC General Environmental, Health and Safety (EHS) Guidelines are applicable to this management plan. These guidelines are aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards, particularly in those aspects related to PS3: Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety.

With respect to this Plan, Allana have the responsibility to ensure that adequate measures are developed and implemented by parties, including third parties, to prevent, control and contain spills associated with their activities.

Furthermore, Allana have the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence with respect to spill management.

Table 3.1 outlines the roles and responsibilities related to implementing this management plan.

Table 3.1 *Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Mine Manager	<ul style="list-style-type: none"> Review monthly and annual spill reporting Review spill response drill outcomes and work with Environmental, Land and Community Relations (ELCR) Manager to identify necessary improvements Ensure operational personnel have management systems in place to support ELCR commitments
Quality, Health and Safety (QHS) Manager	<ul style="list-style-type: none"> Distribution of the SPCCP to all parties with responsibilities in implementing the plan Review monthly spill report Plan spill response drills with Mine Manager and Contractors Develop Spill Response Training
Environmental Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> Work with QHS manager to ensure SPCCP addresses environmental risks as well as Health and Safety Support QHS manager as required in SPCCP development
ELCR and QHS Staff	<ul style="list-style-type: none"> Schedule bi-weekly inspections Resolve issues identified in bi-weekly inspections Schedule chemical environmental and safety training sessions for relevant staff Prepare monthly spill report Support QHS Manager in planning Spill Response drills
Contractors	<ul style="list-style-type: none"> Deliver spill response training to employees Ensure all relevant employees receiving chemical environmental and safety, first aid and spill response training Develop, implement and report on preventative maintenance plan

4 IMPACT MANAGEMENT

4.1 MANAGEMENT DURING CONSTRUCTION, OPERATION AND DECOMMISSIONING PHASES

4.1.1 Spill Hazard Identification

Allana will maintain a register of spill hazards associated with all activities during the construction and operational phases.

All third party contractors will undertake spill hazard identification studies to identify spill hazards associated with their operations and pass these on to Allana.

The spill hazard identification will include approximate volumes, storage and transfer locations and risks associated with each chemical. It will also include an up-to-date plan or map of the proposed Project site and the locations of all managed chemical products.

Part of the process of developing the detailed spill hazard identification will be to assess the risk of spills. Risk will be evaluated based on likelihood of a spill including handling and transfer methods, presence of secondary containment, phase of chemical product (solid/liquid) preventative measures designed and in-place and the potential impacts of a spill based on toxicity, the potential for a spill to reach water courses, potential volumes available for spills, potential of a spill to affect human health.

Chemicals with a higher risk-rating will be evaluated to identify measures to risk associated with the contaminant.

4.1.2 Management Actions

Allana and their third party contractors will develop management procedures for all spill hazards to ensure the effective management of the hazards and include monitoring actions as well as emergency response procedures to be implemented in the event of a spill occurring.

Spill Prevention Measures

The following measures will be followed to prevent spills

- Training of operators regarding proper methods for transporting, transferring and handling substances that have the potential impact to human health or the environment.
- Institution of a preventative maintenance program including inspection schedules to confirm and maintain the mechanical integrity and operability of pressure tanks, piping systems, relief and vent valves

systems, containment infrastructure, shutdown systems, controls, pumps and associated process equipment.

- Implementation of Standard Operation Procedures for handling materials including refuelling vehicles, diesel tanks, and managing secondary containment areas.
- Provision of secondary containment, drip trays or other overflow and drop containment measures, for hazardous materials containers at connection points or other possible overflow points. Identification and provision of all equipment necessary to handle, transfer or transport materials properly.
- Use of transfer equipment that is compatible with and suitable for the characteristics of the materials transferred and designed to ensure safe transfer.
- Use of driplless hose connections for vehicle tank and fixed connections with storage tanks.
- Installation of gauges on tanks to measure volume inside.
- Review of all potential pollutants characteristics prior to introduction to site and establishment of proper storage, handling and transportation procedures and spill risk analysis and an update to the SPCCP as required.
- Monitoring sheets for all contaminants on-site will be attached to the SPCCP. These will include human health effects of chemicals handled and will be included in the required chemical environmental and safety training for all employees handling or otherwise exposed to the contaminants. All appropriate personal protective equipment, handling and response procedures identified in the monitoring sheets or otherwise recommended by the suppliers/manufacturers will be incorporated into the SPCCP and followed by the proposed Project staff.
- The Project will retain a qualified third-party to review and audit chemical storage and distribution systems, including appropriate testing every five years.
- Bulk transfers of chemicals during delivery will be observed by Allana personnel trained in preliminary hazard analysis methods.
- Standard Operating Procedures for chemical transportation, unloading, transfer, storage, handling, use and disposal shall be developed, kept current, effectively implemented by trained personnel.

Spill Control and Countermeasures

The following measures will be followed in the event of a spill:

- Maintenance of updated emergency contact information list at all spill response kits locations.
- Maintenance of spill route maps at potential spill locations.
- Documented availability of all spill response equipment that is capable of handling a large spill.
- Documented availability of specific personal protective equipment and the necessary training needed to respond to different potential spills.
- Maintenance of spill response kits on all Project fuel and lubrication vehicles.
- Maintenance of spill response guidelines at all spill response kit locations.
- Maintenance of an up-to-date plan of the proposed Project site showing the location of all contaminants, spill response kits and other response equipment.
- Maintenance of an updated table of all contaminants on-site and recommended spill response procedures.
- Development, implementation and regular training and testing of a facility-wide Spill Response Plan.
- First-aid training for all relevant mine personnel.
- All spills will be reported to ELCR and QHS.

Spill Response Sub-Plan

A site-specific spill response sub-plan will be developed by Allana and will address:

- Roles in the event of a spill including: spill coordinator (the person on the ground at the spill site, who is responsible for immediate actions taken to contain the spill, respond to immediate dangers, notify necessary responders) and the rest of the mine site and personnel.
- Internal and external notification procedures.
- Decision system for determining severity and risk and defining an appropriate response.
- Communication system to be followed during the spill, first response and clean-up and communication infrastructure required i.e. radios, telephone systems etc.

- Facility evacuation routes and procedures.
- Post-event activities such as clean-up and disposal, incident investigation, employee re-entry and restoration of spill-response equipment.
- Reporting requirements at the time of the spill and after the spill.

Transportation of Hazardous Materials or Chemicals

The transportation of certain substances presents the potential for spills due to traffic accidents or other accidents or incidents en-route to or from the proposed Project site. Precautions that will be followed include:

- Third party contractors will use transportation vehicles and tanks suitable for the materials and transportation routes used and maintained in adequate condition to insure proper handling and safety of chemicals.
- Contracts involving chemical transportation will require compliance with applicable laws as well as Allana policies and plans and will require responsible management of chemicals including emergency response and spill clean-up.
- Truck drivers will be required to notify the site of their departure time and arrival time and maintain a log of travel.
- All vehicles will be equipped with spill response kits appropriate to the materials being transported. The contractor will be required to maintain these in good condition and working order.
- Drivers will be trained in spill and emergency response and will have a means of communicating with the site, their administrative offices and emergency personnel for the entire transportation route.
- Up-to-date emergency contact information and monitoring sheets and manifests documenting the volume, phase and characteristics of the chemical being transported will be carried with each shipment.

Training

Chemical environmental and safety, spill response and first aid training will be delivered to all relevant employees. Training will be provided within one month of an employee's start-date. Chemical environmental and safety and first aid training will be provided by certified instructors. Spill response training will be provided by contractors (who supply the chemical) and QHS staff as necessary. Key personnel will be identified to receive preliminary hazard analysis training.

4.2 COSTS FOR SPILL PREVENTION, CONTROL AND CONTAINMENT

4.2.1 *Construction and Operational Phase*

Costs for implementation of preventative and containment measures will be borne by Allana for work carried out by Allana; however, costs for implementation of preventative and containment measures will be borne by contracting third parties where responsibility for hazards is apportioned to such parties.

The cost for auditing and verification of contracting third party performance will be included in operational budgets for Allana.

4.2.2 *Decommissioning and Closure Phase*

The costs associated with decommissioning and closure, as well as any post-closure, is covered by the amount accrued annually for the life of the Dallol Potash Project.

Effective implementation of the plan and underlying operational procedures will ensure only insignificant contamination is present at closure.

4.3 VERIFICATION AND MONITORING

4.3.1 *Verification and Monitoring Plan*

All high risk spill hazards will be monitored on a frequency to be determined in the appropriate management procedures for the identified hazards. Allana will include such monitoring into their auditing programs as developed as part of the Dallol Potash Project ESH-MS.

Allana will monitor (on an on-going basis) third party contractor performance against this Plan.

Monitoring will include:

- Bi-weekly inspections;
- Quarterly reporting by third party contractors regarding preventative maintenance programs;
- Spill reporting at the time of the incident and monthly spill reporting developed by QHS department;
- Bi-annual spill response drills; and
- Annual reporting on training.

During bi-weekly inspections any missing response equipment, personal protection equipment, or documentation will be replaced or improved as necessary.

Quarterly reporting will identify any upcoming required preventative maintenance required as well as what preventative maintenance performed over the quarter. The QHS Manager will track any outstanding maintenance and require the contractor to complete it in a timely fashion.

The spill response drills and spill reporting will provide information regarding required revisions to training, the spill response plan or other aspects of the SPCCP. Each spill reported will be reviewed by QHS Manager and actions identified where possible to improve the site's overall planning. Updates/revisions will be made on a bi-annual basis or sooner if the deficiency identified is considered urgent. On a bi-annual (twice annually) basis the Key Performance Indicators will be compared against past-performance and analyzed for trends to determine if there are areas that can be improved.

4.3.2 Key Performance Indicators

The following Key Performance Indicators (KPIs) will be measured and used to evaluate the proposed Project's performance with respect to its stated objectives and commitments:

- Monthly and annual volumes of materials transported and handled by the proposed Project that could result in harm to human health or the environment in the event of an accident or spill;
- Monthly and annual number of small spills occurring at the site of the proposed Project;
- Monthly and annual number and volume of accidental small releases to the natural environment (including soils and water);
- Annual and monthly number of major spills occurring at the site of the proposed Project;
- Number of hydrocarbon releases;
- Number of chemical releases;
- Number of other releases;
- Number of employees trained in spill response (compared to number of employees working with or around contaminants);
- Number of employees trained in first aid (compared to number of site personnel);

- Number of employees trained in the safe and environmentally sustainable handling of chemicals on-site (compared to number of employees working with or around contaminants); and
- Response time and methods used in drills.

4.3.3 *Costs for Verification and Monitoring*

Costs for verification and monitoring of performance by Allana will be included in the operating cost of the Allana Potash Mining Project.

4.4 *REPORTING AND DOCUMENTATION*

4.4.1 *External Reporting*

Allana will fulfil the necessary external (IFC, Federal Government) reporting requirements with respect to this Plan.

4.4.2 *Internal Reporting*

Monitoring reports against Plan will be reported by the Allana environmental and community function(s) to their respective management boards as agreed. Monitoring documentation will be retained by Allana indefinitely

Table 5.1 Complete Project Lifecycle

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Potential negative impacts to environment, workforce and community from spills	Development and implementation of a suitable SPCCP	Review the SPCCP to confirm specific procedures are in place to address prevent, control and mitigate spill events during all phases of the proposed project and at all operations and facilities associated with the proposed Project	Annual review	QHS and Mine Manager
	Update the SPCCP	Review of the SPCCP in the event of a change in process within the mining or support operations	Review of the SPCCP in the event of a change in process within the mining or support operations	QHS Manager
	Manage the SPCCP processes	Maintenance of spill event contact information, location of contaminants, appropriate response procedures and location of response equipment	Annual review of processes	ELCR and QHS Managers
	Manage the SPCCP processes	Maintenance of spill response equipment	Annual inspection of equipment	QHS Manager
	Provide SPCCP relevant training	Provide spill response training to all employees and third party contractors, including first aid training	Document training Annual review of candidates	QHS Manager
	Provide SPCCP relevant training	Provide all personnel involved in mineral processing and process chemical management appropriate training on how to recognise and respond to situations which can result in releases to the environment	Document training Annual review of candidates	QHS Manager
	Inspect chemical and fuel storage facilities	Carryout inspections and assess integrity of all formal facilities used to store chemicals and fuels	Annual inspection of storage facilities	QHS Manager
	Oversee chemical transfer activities	Inspection of all chemical transfers taking place on site	As and when chemicals and/or fuel are delivered/removed from site	ELCR and QHS Support Staff

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
	Report of spills	Carryout the appropriate internal and external reporting	Review of all spill reports	QHS Manager

Volume III Annex F

Waste Management Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana Potash for Review
0143047_V2.0_WMP	Dieter Rodewald	Mike Everett	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AfDB	African Development Bank
AQMP	Air Quality Management Plan
CHSSMP	Community Health, Safety and Security Management Plan
EHS	Environmental, Health and Safety
EPC	Engineering, Procurement and Construction
ESH-MS	Environmental, Social and Health Management System
ERP	Emergency Response Plan
ESHIA	Environmental, Social and Health Impact Assessment
KPI's	Key Performance Indicators
IFC	International Finance Corporation
NaCl	Sodium Chloride (salt)
WMP	Waste Management Plan
WWTP	Waste Water Treatment Plant

DEFINIITIONS

Waste Classes: For the purposes of this WMP waste will be classed as either hazardous or non-hazardous. Inert waste is included in the non-hazardous class.

Hazardous Waste ⁽¹⁾: means any unwanted material that is believed to be deleterious to human safety or health or the environment.

Inert Waste: is waste that does not undergo significant biological, physical or chemical transformations. It will not dissolve, burn or react physically or chemically with other substances in such a way so as to negatively impact on the environment or human health.

Non-hazardous Waste: waste that is neither inert nor hazardous.

Waste Types: Apart from the two main classes of waste, waste may be grouped into different types, e.g. medical, glass, metal, plastics, paper, organic. Different types of waste can be re-used or recycled to varying degrees of efficacy.

(1) From the Ethiopian Proclamation on Environmental Pollution Control (n° 300/2002)

Allana Potash Corp. (Allana) hold one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy), in the Danakil depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Several activities associated with the proposed Project will result in the generation of waste that could have a detrimental impact on the receiving environment.

The following Waste Management Plan (WMP) presents a framework outlining the general requirements essential for effectively managing waste onsite during all phases of the proposed Project. The WMP provides an outline to ensure that systems are in place so as to manage unwanted waste related impacts.

Allana will use this framework WMP to develop a detailed operational Plan.

1.1 POLICY STATEMENT AND OBJECTIVES

1.1.1 Policy Statement

The WMP has been compiled within the context of the proposed Projects Environmental Policy Statement, as set out in *Box 1.1* below.

Box 1.1 Environmental Policy Statement

Allana will educate and manage all employees and contractors to avoid the generation of waste, and where avoidance is not possible to reduce, re-use and recycle all wastes produced, and where this is not possible to suitably and legally dispose of the waste.

1.1.2 Waste Management Strategy

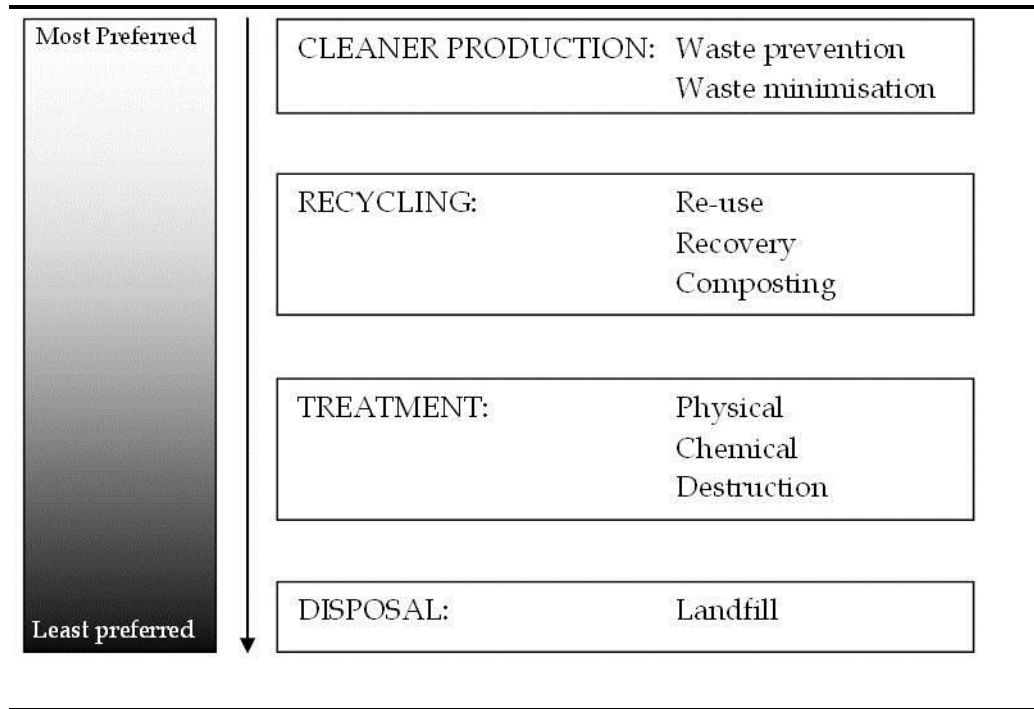
Waste produced on site will be managed as follows:

- Appropriate technologies, reuse and recycling of materials will be applied to achieve the efficient use of natural resources and other materials.

- Waste will be disposed of in accordance with the waste management hierarchy.

This internationally recognised and accepted hierarchy of waste management is illustrated in *Figure 1.1* below.

Figure 1.1 *Waste Management Hierarchy*



1.1.3 Objectives

The objectives of this Plan are as follows:

- Ensure compliance with the Ethiopian Constitution, the Ethiopian Pollution Control Proclamation (n° 300/2002) and the Public Health Proclamation (n° 200/2000).
- Take cognisance of the internationally accepted waste management hierarchy model (refer to *Figure 1.1*);
- Comply with International Finance Corporation (IFC) Performance Standards and Guidelines and Equator Principles;
- Identify high level sources of waste associated with the construction and operational phases of the proposed Dallol Potash Project;
- Categorise anticipated waste streams;
- Describe mitigation measures to minimise waste-related impacts associated with all activities, services and facilities at the proposed Project;
- Assign responsibilities for implementing the WMP; and

- Describe verification, monitoring and reporting measures.

1.2 *PURPOSE AND SCOPE*

The construction, operation and decommissioning phases of the proposed Project will result in several waste streams that have the potential to impact on the biophysical and social environment. The WMP is aimed at identifying these potential waste-related impacts and describing measures to mitigate these impacts, thus reducing the risk of biophysical or social impacts.

The construction, operation and decommissioning phase of the proposed Dallol Potash Project will result in solid and liquid wastes, which are addressed in this WMP. In addition to construction, operational and decommissioning and closure mitigation measures, the WMP also addresses monitoring measures to:

- Ensure compliance with the WMP; and
- Identify areas where the WMP can be improved.

The WMP should be considered to be a “living” document that is amended in light of the learning experienced during its implementation.

1.3 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

There are a number of linkages between this WMP and other social and environmental plans. These are described below.

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Community Health, Safety and Security Management Plan (CHSSMP)	General and hazardous waste has the potential to impact on individuals health should onsite waste not be suitable managed.
Spill Prevention, Control and Containment Plan (SPCCP)	Chemical and/or fuel spills have the potential to contaminate soils, resulting in a waste that needs to be treated or disposed of.
OCCUPATIONAL HEALTH, SAFETY AND RISK PLANS	
Emergency Response Plan (ERP)	Chemical and/or fuel spills have the potential to contaminate soils, resulting in a waste that needs to be treated or disposed of.

A summary of the legal requirements and standards relevant to the WMP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

The following Ethiopian legislative and policy document informed the development of this WMP:

- *Constitution of the Federal Democratic Republic of Ethiopia*

The constitution sets out the concept of sustainable development and provides the rights around living in a clean and healthy environment.

- *Environmental Pollution Control Proclamation (n° 300/2002)*

The Environmental Pollution Control Proclamation came into force on 3 December 2002. The Proclamation advocates a “polluter pays” policy and the Environmental Protection Agency (EPA) or relevant regional environmental agency has the right to close or relocate any enterprise if the activity being carried out poses a risk to human health or to the environment.

- *Public Health Proclamation (n° 200/2000)*

This proclamation prohibits discharging of untreated liquid waste generated from septic tanks, seepage pits and industries into water bodies or water convergences. It also prohibits the disposal of solid or liquid or any other waste in a manner which contaminates the environment or affect the health of civil society.

2.2 IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 1 (PS1)- Assessment and Management of Environmental and Social Risks and Impacts*

PS1 aims to identify and assess environmental and social risks and impacts of the project, and to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.

- *Performance Standard 3 – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

2.3 *IFC GENERAL ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINES, 2007*

The following general environmental, health and safety guidelines published by the IFC are applicable to this Plan:

- **IFC General Environmental, Health and Safety (EHS) Guidelines: Environmental - 1.3 Wastewater and Ambient Water Quality** (which applies to projects with the potential to generate process wastewater, sanitary (domestic) sewage, or storm water);
- **IFC's General EHS Guidelines: Environmental - 1.5 Hazardous Materials Management** (which applies to facilities and activities involving the transportation, production, handling, storage, and disposal of hazardous materials);
- **IFC General EHS Guidelines: Environmental - 1.6 Waste Management** (which applies to projects that generate, store or handle any quantity of waste); and
- **IFC EHS Guidelines for Waste Management Facilities** (which provides for the design, construction and operation of facilities for the management of hazardous and non-hazardous waste, including landfills and other waste management systems).

2.4 *AFRICAN DEVELOPMENT BANK STANDARDS AND POLICIES*

The following African Development Bank (AfDB) procedures and guidelines are applicable to this Plan:

- *Environmental and Social Assessment Procedures for AfDB's Public Sector Operation (June, 2001)*

The environmental and social assessment (ESIA) procedures set out by the AfDB's ensure that the Banks projects, programmes and plans have been designed to make them environmentally and socially sustainable.

- *Integrated Environmental and Social Impact Assessment Guidelines (October 2003)*

The AfDB completed a review of its environmental assessment procedures and integrated the bank's new vision and emerging priorities, particularly

crosscutting themes. The new procedures, entitled Environmental and Social Assessment Procedures were produced and adopted in June 2001.

Projects should enhance positive impacts and, in the following order, on prevention, minimise, mitigate or compensate adverse impacts. This approach implies that most of the measures should be related to project design, location and implementation rather than curative interventions that handle adverse outcomes after the emergence of the anticipated problems.

2.5

RELEVANT INTERNATIONAL POLICIES

- *Basal Convention – On the Control of Transboundary Movements of Hazardous Wastes and their Disposal*

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted on 22 March 1989 by the Conference of Plenipotentiaries in Basel, Switzerland, in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of the developing world of deposits of toxic wastes imported from abroad. The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as “hazardous wastes” based on their origin and/or composition and their characteristics. Ethiopia is a signatory to the convention.

With respect to this Plan, Allana have the responsibility to ensure that adequate measures are developed and implemented by parties, including third parties, to prevent, reduce, reuse and recycle waste produced onsite.

Furthermore, Allana have the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence with respect to waste management.

Table 3.1 outlines the roles and responsibilities related to implementing this management plan.

Table 3.1 *Responsible Parties and Roles and Responsibilities*

Responsible Parties	Roles and Responsibilities
Mine Manager	<ul style="list-style-type: none"> • Review monthly and annual waste reporting • Review waste related outcomes and work with Environmental, Land and Community Relations (ELCR) Manager to identify necessary improvements • Ensure operational personnel have management systems in place to support ELCR commitments
Environmental, Land and Community Relations (ELCR) Manager	<ul style="list-style-type: none"> • Confirm that training regarding Waste Management is included in induction training for all employees and contractors • Develop and provide training to ELCR Officers regarding duties regarding waste management • Review weekly inspection reports and monthly reports • Deliver monthly reports to Mine Manager • Oversee WMP annual reporting • Liaise with contractors regarding waste management issues • Schedule weekly inspections • Resolve issues identified in weekly inspections • Schedule inspections of other waste collection points • Receipt of monthly submissions of hazardous waste register from contractors
ELCR Officer/s	<ul style="list-style-type: none"> • Perform weekly inspections and compile the necessary reports • Prepare monthly report • Collect documentation from security on a weekly basis (re: transportation of waste off-site) • Perform inspections of waste collection points and complete inspection sheet

4.1 SUMMARY OF IMPACT MANAGEMENT

As with any project of this scale and nature, there are certain impacts that cannot be entirely eliminated, i.e. residual impacts after implementing mitigation measures. With respect to impact mitigation, the proposed Project subscribes to the philosophy of impact avoidance (by changes to project planning and/or design) and impact reduction (to reduce impacts that cannot be avoided to acceptable levels). What follows, is a description of the potential residual impacts and the mitigation measures proposed to reduce them to acceptable levels. These mitigation measures comprise the management plan to address waste-related impacts.

The following sections will:

- Identify at a high level potential waste types generated during the construction and operational phases;
- Identify potential impacts associated with each phase of the proposed Dallol Potash Project;
- Identify the objectives and targets related to the impacts;
- Describe the management measure(s) to minimise the impact; and
- Assign responsibilities for the management measures.

4.2 MANAGEMENT DURING CONSTRUCTION

Potential waste types (both general and hazardous) generated during the construction phase are summarised in *Table 4.1* below.

Table 4.1 *Waste Types Generated during the Construction Phase*

Waste Type	End Use
General Waste	
General food and office waste	Disposal to landfill
Used uncontaminated personal protection equipment	Disposal to landfill
Paper and cardboard	Recycle
Steel Strapping	Recycle
Plastic	Recycle
Plastic water bottles	Recycle
Pallets	Reuse/Recycle
Wood	Reuse/Recycle
Waste tyres	Recycle
Electrical cables	Recycle
Steel rope	Recycle
General scrap steel	Recycle

Waste Type	End Use
General Waste	
Pipe work	Recycle
Chains	Recycle
Wire mesh	Recycle
Scrap drills	Recycle
Pumps	Refurbish/reuse
Winches	Refurbish/reuse
Electrical motors	Refurbish/reuse
Bearings	Recycle
Hoses	Recycle
Cutter tips	Recycle
Fluorescent tubes	Recycle
Fuses and electrical	Recycle
Waste cement	Disposal to landfill
Hazardous Waste	
Used filters	Disposal to a hazardous waste company
Used spill kits	
Used rags	
Hydraulic hoses	
Seals	
Waste solvents and degreasers	
Aerosol cans	
Hydrocarbon contaminated soil and water	
Acids	
Waste oil (hydraulic and lubricating) and grease	
Batteries	
Medical (first aid) wastes	
Sewage	Onsite treatment

4.2.1 *Potential Impacts*

Potential construction phase impacts include:

- Impact of contaminating soil;
- Impact on surface water due to hydrocarbon spills, contaminated runoff;
- Impact on surface water due to sewage and waste disposal;
- Impact on flora and fauna due to hydrocarbon spills and deterioration in quality of soil and water resources;
- Social impacts associated with bad odours and deterioration in quality of water (surface and groundwater) resources; and
- Health impacts associated with potential scavenging.

4.2.2 *Objectives and Targets*

The *objectives* associated with waste management during the construction phase include:

- To prevent contamination of soil and surface water through hydrocarbon spills;

- To prevent contamination of surface water through untreated sewage being discharged into the environment;
- To prevent indirect impacts on flora, fauna and people due to contaminated soil and water resources; and
- To prevent health impacts arising via contact with general and/ or hazardous waste.

This may be achieved by meeting the following *targets*:

- Zero hydrocarbon spills into the environment;
- Zero discharge of raw sewage directly into the environment;
- No unauthorised access to the waste storage facilities; and
- Zero incidents of hazardous waste dumping on site.

4.2.3 *Management Actions*

In terms of the proposed strategy for managing waste (refer to *Section 1.1.2*) every effort will be made to avoid the generation of waste, followed by efforts to minimise, re-use and recycle waste. Treatment (physically or chemically) of waste will be undertaken, where appropriate. Disposal by landfill will be undertaken where waste cannot be minimised, re-used, recycled or treated.

A Waste Management Procedure will be established as part of the Environmental, Social and Health Management System (ESH-MS), which will define controls for handling, on site storage and final disposal of waste generated during the construction phase.

Waste Re-use and Recycling and Disposal

End use for general and hazardous waste types during the construction phase of the proposed Project are presented in *Table 4.1* above.

In the case of mechanical general waste, all hazardous materials (such as residual oil) will be drained, stored in the temporary hazardous waste storage facility and managed/disposed of in accordance with the section dealing with hazardous waste below.

Suitable hazardous waste processors that are certified to collect, transport and reuse hazardous waste products have not yet been identified. Similarly, recycling facilities that are certified to collect and recycle general waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project.

Please Note: Allana will transport all general waste through to the Mekele Sanitary Landfill in the short-term; however, during detailed design of the proposed Project Allana will look at potentially establishing a general waste landfill onsite. This however will not form part of the scope of this ESHIA, and should Allana decide to establish a landfill within their Project Area, a separate environmental permitting process will be undertaken.

Waste Handling

All waste streams will be characterised according to their composition, source, and type of wastes produced, generation rate, disposal methods and local regulatory requirements.

All waste will be handled in accordance with its class (hazardous or non-hazardous) and all personnel collecting, handling, transporting or disposing of waste will be trained in the proper procedures for dealing with the said waste class.

Waste will be segregated at source and contained in appropriately labelled and/or colour coded (green for all recyclables, yellow for general waste and red for hazardous waste) waste containers or waste skips. Container or waste skip labels shall accord with a standard and will class the waste as well as specify any special handling requirements. All bulk waste containers on site (skips, bins, drums etc.) shall be appropriately labelled to show what class and type of waste can be disposed of in them. Containers shall be appropriately designed to store liquid, solid, hazardous or non-hazardous waste. Waste containers will be appropriately designed in terms of volume, composition, and shape. Containers that may react with the waste to produce a harmful substance will not be used. Only one class or type of waste will be stored in each container. Solid and liquid wastes will not be mixed.

Waste containers will be closed with a lid and enclosed in an area that is fenced and access will be restricted. A security guard will be assigned to secure the waste storage area 24/7.

Where possible, wastes will be compacted prior to offsite disposal. Waste compaction is critical for the following two reasons:

- To reduce the volume of waste requiring disposal in Mekele; and
- To reduce the likelihood of wind-blown wastes.

Waste Transport

Waste will be transported from source to storage facilities and final disposal sites in the appropriate manner, taking the following into account:

- The nature, composition and integrity of transport packaging and containers will be appropriate to the type and class of waste being transported.
- Transport vehicles will cater for the type, class and quantity of waste being transported in terms of its composition, load capacity, covering etc.
- Loading and unloading procedures to avoid waste loss will be followed.
- Employees will be trained in the correct procedure to address accidents and emergencies.
- All transport vehicles will be equipped with suitable materials or equipment to contain, manage and remove accidental spillages.

- Vehicles carrying hazardous wastes shall be labelled appropriately.
- As is mentioned above, Allana will dispose of all general waste to the licensed Mekele Sanitary Landfill Site ⁽¹⁾ in the short term; however during detailed design of the proposed Project Allana will look at potentially establishing a general waste landfill onsite. This however will not form part of the scope of this ESHIA, and should Allana decide to establish a landfill within their Project Area, a separate environmental permitting process will be undertaken.
- For hazardous waste a licensed hazardous waste handling company ⁽²⁾ will be contracted for transport and disposal to a licensed hazardous waste disposal facility. No hazardous waste will be disposed of or buried on site. Hazardous waste handling companies will furnish Allana with waste manifests.

Waste Storage and Segregation

During the construction phase, hazardous and general (non-hazardous) waste will be collected at source and transported for storage at temporary or permanent storage facilities. These storage facilities will be appropriately designed i.e. appropriate flooring/ lining, covered (to protect from direct sunlight, wind and rain) if necessary, and bunded where required to contain accidental spills or leaks. The following procedures will be undertaken:

General Waste

- General waste will be stored at a temporary storage facility in large skips (designed, registered and operated to store general waste), following which general waste will be transported off site and disposed of at the registered landfill site in Mekele.
- The temporary storage facility will be designed in accordance with the necessary Ethiopian legislation.
- Waste will be segregated wherever appropriate. Separate storage areas will be constructed and utilised where appropriate. Segregation is important where it is critical to keep different classes or types of waste physically apart to prevent reactions. Separate storage areas will be appropriately designated and labelled.
- If a hazardous waste is mixed with non-hazardous waste, the entire consignment will be regarded as hazardous.
- Temporary waste storage facilities/ landfill sites will be protected from access by the public, livestock and/ or local fauna (e.g. birds, rodents).

Hazardous Waste

In addition to the above, the following mitigation measures apply to the storage of hazardous waste:

(1) The Mekele Sanitary Landfill Site has been in operation since 2008 and has an area of 21ha. the landfill receives over 201,606 tons of predominantly non-hazardous waste per annum

(2) *Please Note* - suitable hazardous waste disposal companies that are certified to collect, transport and dispose of hazardous waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project

- Any temporary hazardous waste storage facility will be appropriately designed to prevent any contamination of the social and biophysical environment.
- Where appropriate, hazardous waste will be stored in sealed containers and placed in a fenced and gated storage facility that is secured by a security guard. The facility shall have a concrete floor and be covered to prevent rain from entering.
- Any temporary storage facility shall be appropriately banded.
- Storage facilities for hazardous waste will have the following precautionary measures:
 - Materials and equipment for fire-fighting purposes and mountings for fire extinguishers;
 - Cleaning equipment and a system for flushing out ducts, receptacles and containers;
 - Sufficient quantities of absorbent material to absorb or collect any spilled or leaking waste;
 - All areas shall be tightly sealed in such a way that there is no risk of soil or groundwater becoming contaminated. These areas shall be tested for water-tightness at regular intervals; and
 - Fencing must be erected to prevent access by the public, livestock and/ or local fauna.
 - Appropriate signage will be erected in the various waste areas.

Waste Treatment

Waste Water Treatment Plant

A WWTP will be constructed on site. All treated effluent will be used as process water or for dust suppression where appropriate. Treated sewage will conform to recognised sewage effluent standards before discharge into the environment.

If tests indicate that it is suitable to do so, waste sludge will potentially be used as a compost medium for in the Doum Palm nursery; however, the suitability of this will be assessed during the detailed design phase of the proposed Project.

4.2.4

Responsibility

Environmental functions within Allana will be responsible and accountable for implementing waste management measures for the proposed Allana Potash Mine. Furthermore, overall accountability for auditing of waste management lies with Allana.

During the construction phase, the EPC contractors will also be responsible for implementing the waste management measures outlined in this plan.

Potential waste types (both recyclables, general and hazardous) generated during the operational phase includes:

Potential waste types (both general and hazardous) generated during the operational phase are summarised in *Table 4.2* below.

Table 4.2 *Waste Types Generated during the Operational Phase*

Waste Type	End Use
General Waste	
General food and office waste	Disposal to landfill
Used uncontaminated personal protection equipment	Disposal to landfill
Paper and cardboard	Recycle
Steel Strapping	Recycle
Plastic	Recycle
Plastic water bottles	Recycle
Pallets	Reuse/Recycle
Wood	Reuse/Recycle
Conveyor belting	Disposal to landfill
Waste tyres	Recycle
Conveyor idlers	Recycle
Electrical cables	Recycle
Steel rope	Recycle
General scrap steel	Recycle
Pipe work	Recycle
Chains	Recycle
Wire mesh	Recycle
Scrap drills	Recycle
Pumps	Refurbish/reuse
Winches	Refurbish/reuse
Electrical motors	Refurbish/reuse
Bearings	Recycle
Hoses	Recycle
Cutter tips	Recycle
Fluorescent tubes	Recycle
Fuses and electrical	Recycle
Waste cement	Disposal to landfill
Hazardous Waste	
Used filters	Disposal to a hazardous waste company
Used spill kits	
Used rags	
Hydraulic hoses	
Seals	
Waste solvents and degreasers	
Aerosol cans	
Hydrocarbon contaminated soil and water	
Acids	
Waste oil (hydraulic and lubricating) and grease	
Batteries	
Medical (first aid) wastes	
Sewage	

4.3.1 *Potential Impacts*

Potential operational phase impacts include:

- Impact of contaminated soil;
- Impact on surface water due to sewage and waste disposal;
- Impact on flora and fauna due to hydrocarbon spill and deterioration in quality of soil and water resources;
- Social impacts associated with bad odours from temporary waste storage facilities and deterioration in quality of water (surface and groundwater) resources; and
- Health impacts associated with scavenging.

4.3.2 *Objectives and Targets*

The *objectives* associated with waste management during the operations phase include:

- To protect soil, surface water and groundwater from contamination by hydrocarbon spills;
- To prevent contamination of surface water through untreated sewage being discharged into the environment;
- To prevent health impacts arising via contact with general and/ or hazardous waste.
- To manage the temporary waste storage facilities in such a manner so as to minimise social impacts.

This may be achieved by meeting the following *targets*:

- Zero hydrocarbon spills into the environment;
- Zero discharge of raw sewage directly into the environment;
- Zero incidents of illegal dumping of wastes, both general and hazardous;
- No unauthorised access to temporary waste storage facilities; and
- The WWTP is to be capable of treating volume of sewage predicted over the life of the proposed Dallol Potash Project.

4.3.3 *Management Actions*

Waste Re-use, Recycling and Disposal

End use for general and hazardous waste types during the operational phase of the proposed Project are presented in *Table 4.2* above.

In the case of mechanical general waste, all hazardous materials (such as residual oil) will be drained, stored in the temporary hazardous waste storage facility and managed/disposed of in accordance with the section dealing with hazardous waste below.

Suitable hazardous waste processors that are certified to collect, transport and reuse hazardous waste products have not yet been identified. Similarly, recycling facilities that are certified to collect and recycle general waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project.

Please Note: Allana will transport all general waste through to the Mekele Sanitary Landfill in the short-term; however, during detailed design of the proposed Project Allana will look at potentially establishing a general waste landfill onsite. This however will not form part of the scope of this ESHIA, and should Allana decide to establish a landfill within their Project Area, a separate environmental permitting process will be undertaken.

Waste Handling

All waste streams will be characterised according to their composition, source, and type of wastes produced, generation rate, disposal methods and local regulatory requirements.

All waste will be handled in accordance with its class (hazardous or non-hazardous) and all personnel collecting, handling, transporting or disposing of waste will be trained in the proper procedures for dealing with the said waste class.

Waste will be segregated at source and contained in appropriately labelled and/or colour coded (green for all recyclables, yellow for general waste and red for hazardous waste) waste containers or waste skips. Container or waste skip labels shall accord with a standard and will class the waste as well as specify any special handling requirements. All bulk waste containers on site (skips, bins, drums etc.) shall be appropriately labelled to show what class and type of waste can be disposed of in them. Containers shall be appropriately designed to store liquid, solid, hazardous or non-hazardous waste. Waste containers will be appropriately designed in terms of volume, composition, and shape. Containers that may react with the waste to produce a harmful substance will not be used. Only one class or type of waste will be stored in each container. Solid and liquid wastes will not be mixed.

Waste containers will be closed with a lid and enclosed in an area that is fenced and access will be restricted. A security guard will be assigned to secure the waste storage area 24/7.

Where possible, wastes will be compacted prior to offsite disposal. Waste compaction is critical for the following two reasons:

- To reduce the volume of waste requiring disposal in Mekele; and
- To reduce the likelihood of wind-blown wastes.

Waste Transport

Waste will be transported from source to temporary waste storage facilities and final disposal in the appropriate manner, taking the following into account:

- The nature, composition and integrity of transport packaging and containers will be appropriate to the type and class of waste being transported;
- Transport vehicles will cater for the type, class and quantity of waste being transported in terms of its composition, load capacity, covering etc.;
- Loading and unloading procedures to avoid waste loss will be followed;
- Employees will be trained in the correct procedure to address accidents and emergencies;
- All transport vehicles will be equipped with suitable materials or equipment to contain, manage and remove accidental spillages; and
- Vehicles carrying hazardous wastes shall be labelled appropriately.

Waste Disposal

Recyclable Waste

Recycling facilities that are certified to collect and recycle general waste products (listed in *Table 4.2* above) have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project.

General Waste

- General waste will be stored at a temporary storage facility in large skips (designed, registered and operated to store general waste), following which general waste will be compacted, covered and transported off site and disposed of at a registered landfill site.
- The temporary storage facility will be designed in accordance with the necessary Ethiopian legislation.
- Waste will be segregated wherever appropriate. Separate storage areas will be constructed and utilised where appropriate. Segregation is important where it is critical to keep different classes or types of waste physically apart to prevent reactions. Separate storage areas will be appropriately designated and labelled.
- If a hazardous waste is mixed with non-hazardous waste, the entire consignment will be regarded as hazardous.
- Temporary waste storage facilities/ landfill sites will be protected from access by the public, livestock and/ or local fauna (e.g. birds, rodents).
- As is mentioned above, Allana will dispose of all general waste to the licensed Mekele Sanitary Landfill Site ⁽¹⁾ in the short term; however during detailed design of the proposed Project Allana will look at potentially establishing a general waste landfill onsite. This however will not form part

(1) The Mekele Sanitary Landfill Site has been in operation since 2008 and has an area of 21ha. the landfill receives over 201,606 tons of predominantly non-hazardous waste per annum

of the scope of this ESHIA, and should Allana decide to establish a landfill within their Project Area, a separate environmental permitting process will be undertaken.

Hazardous Waste

In addition to the above, the following mitigation measures apply to the storage of hazardous waste:

- Any temporary hazardous waste storage facility will be appropriately designed to prevent any contamination of the social and biophysical environment.
- Where appropriate, hazardous waste will be stored in sealed containers and placed in a fenced and gated storage facility. The facility shall have a concrete floor and be covered to prevent rain from entering.
- Any temporary storage facility shall be appropriately bunded.
- Storage facilities for hazardous waste will have the following precautionary measures:
 - Materials and equipment for fire-fighting purposes and mountings for fire extinguishers;
 - Cleaning equipment and a system for flushing out ducts, receptacles and containers;
 - Sufficient quantities of absorbent material to absorb or collect any spilled or leaking waste;
 - All areas shall be tightly sealed in such a way that there is no risk of soil or groundwater becoming contaminated. These areas shall be tested for water-tightness at regular intervals; and
 - Fencing must be erected to prevent access by the public, livestock and/ or local fauna.
- For hazardous waste a licensed hazardous waste handling company ⁽¹⁾ will be contracted for transport and disposal to a licensed hazardous waste disposal facility. No hazardous waste will be disposed of or buried on site. Hazardous waste handling companies will furnish Allana with waste manifests.

(1) *Please Note* - suitable hazardous waste disposal companies that are certified to collect, transport and dispose of hazardous waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project

Waste Treatment

Waste Water Treatment Plant

A WWTP will be constructed on site. All treated effluent will be used as process water or for dust suppression where appropriate. Treated sewage will conform to recognised sewage effluent standards before discharge into the environment.

If tests indicate that it is suitable to do so, waste sludge will potentially be used as a compost medium for in the Doum Palm nursery; however, the suitability of this will be assessed during the detailed design phase of the proposed Project.

4.3.4 Responsibility

Environmental functions within Allana will be responsible and accountable for implementing waste management measures for the proposed Dallol Potash Project during the operational phase. Furthermore, overall accountability for auditing of waste management lies with Allana.

4.4 MANAGEMENT FOR DECOMMISSIONING AND CLOSURE

Potential wastes types during the decommissioning and closure phase are described below:

Potential waste types (both general and hazardous) generated during the decommissioning phase are summarised in *Table 4.3* below.

Table 4.3 Waste Types Generated during the Decommissioning Phase

Waste Type	End Use
General Waste	
General food and office waste	Disposal to landfill
Used uncontaminated personal protection equipment	Disposal to landfill
Paper and cardboard	Recycle
Steel Strapping	Recycle
Plastic	Recycle
Plastic water bottles	Recycle
Pallets	Reuse/Recycle
Wood	Reuse/Recycle
Conveyor belting	Disposal to landfill
Waste tyres	Recycle
Conveyor idlers	Recycle
Electrical cables	Recycle
Steel rope	Recycle
General scrap steel	Recycle
Pipe work	Recycle
Chains	Recycle
Wire mesh	Recycle
Scrap drills	Recycle
Pumps	Refurbish/reuse
Winches	Refurbish/reuse

Waste Type	End Use
Electrical motors	Refurbish/reuse
Bearings	Recycle
Hoses	Recycle
Cutter tips	Recycle
Fluorescent tubes	Recycle
Fuses and electrical	Recycle
Waste cement	Disposal to landfill
Hazardous Waste	
Used filters	Disposal to a hazardous waste company
Used spill kits	
Used rags	
Hydraulic hoses	
Seals	
Waste solvents and degreasers	
Aerosol cans	
Hydrocarbon contaminated soil and water	
Acids	
Waste oil (hydraulic and lubricating) and grease	
Batteries	
Medical (first aid) wastes	Onsite treatment
Sewage	

4.4.1 *Potential Impacts*

Potential decommissioning and closure phase impacts include:

- Impact of contaminated soil;
- Impact on surface water due to sewage and waste disposal;
- Impact on flora and fauna due to hydrocarbon spill and deterioration in quality of soil and water resources;
- Social impacts associated with bad odours from temporary waste storage facilities; and
- Health impacts associated with scavenging.

4.4.2 *Objectives and Targets*

The *objectives* associated with waste management during the decommissioning and closure phase include:

- To prevent contamination of soil and surface water through hydrocarbon spills;
- To prevent contamination of surface water through untreated sewage being discharged into the environment;
- To prevent indirect impacts on flora, fauna and people due to contaminated soil and water resources;
- To prevent health impacts arising via contact with the general and/ or hazardous waste at temporary waste storage facilities.
- To manage the temporary waste storage facilities in such a manner so as to minimise social impacts.

This may be achieved by meeting the following *targets*:

- Zero hydrocarbon spills into the environment;
- Zero discharge of raw sewage directly into the environment, especially during decommissioning; and
- No unauthorised access to temporary waste storage facilities.

4.4.3 *Management Actions*

Waste Re-use and Recycling

End use for general and hazardous waste types during the construction phase of the proposed Project are presented in *Table 4.3* above.

In the case of mechanical general waste, all hazardous materials (such as residual oil) will be drained, stored in the temporary hazardous waste storage facility and managed/disposed of in accordance with the section dealing with hazardous waste below.

Suitable hazardous waste processors that are certified to collect, transport and reuse hazardous waste products have not yet been identified. Similarly, recycling facilities that are certified to collect and recycle general waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project.

Please Note: Allana will transport all general waste through to the Mekele Sanitary Landfill in the short-term; however, during detailed design of the proposed Project Allana will look at potentially establishing a general waste landfill onsite. This however will not form part of the scope of this ESHIA, and should Allana decide to establish a landfill within their Project Area, a separate environmental permitting process will be undertaken. Should a landfill be established on site the Project ESH-MS will need to include measures associated with suitable closure and rehabilitation of the landfill.

Waste Handling

All waste will be handled in accordance with its class (hazardous or non-hazardous) and all personnel collecting, handling, transporting or disposing of waste will be trained in the proper procedures for dealing with the said waste class.

Waste will be segregated at source and contained in appropriately labelled and/or colour coded (green for all recyclables, yellow for general waste and red for hazardous waste) waste containers or waste skips. Container or waste skip labels shall accord with a standard and will class the waste as well as specify any special handling requirements. All bulk waste containers on site (skips, bins, drums etc.) shall be appropriately labelled to show what class and type of waste can be disposed of in them. Containers shall be appropriately

designed to store liquid, solid, hazardous or non-hazardous waste. Waste containers will be appropriately designed in terms of volume, composition, and shape. Containers that may react with the waste to produce a harmful substance will not be used. Only one class or type of waste will be stored in each container. Solid and liquid wastes will not be mixed.

Waste containers will be closed with a lid and enclosed in an area that is fenced and access will be restricted. A security guard will be assigned to secure the waste storage area 24/7.

Where possible, wastes will be compacted prior to offsite disposal. Waste compaction is critical for the following two reasons:

- To reduce the volume of waste requiring disposal in Mekele; and
- To reduce the likelihood of wind-blown wastes.

Waste Transport

Waste will be transported from source to storage facilities and final disposal sites in the appropriate manner, taking the following into account:

- The nature, composition and integrity of transport packaging and containers will be appropriate to the type and class of waste being transported.
- Transport vehicles will cater for the type, class and quantity of waste being transported in terms of its composition, load capacity, covering etc.
- Loading and unloading procedures to avoid waste loss will be followed.
- Employees will be trained in the correct procedure to address accidents and emergencies.
- All transport vehicles will be equipped with suitable materials or equipment to contain, manage and remove accidental spillages.
- Vehicles carrying hazardous wastes shall be labelled appropriately.

Waste Disposal Facilities and Waste Water Treatment Plant

General Waste

Temporary general waste storage facilities will be dismantled and removed. All general waste will be transported off site and disposed of at the licensed Mekele Sanitary Landfill Site.

Hazardous Waste

Temporary hazardous waste storage facilities will be dismantled and removed. A licensed hazardous waste handling company ⁽¹⁾ will be contracted for transport and disposal to a licensed hazardous waste disposal facility.

(1) *Please Note* - suitable hazardous waste disposal companies that are certified to collect, transport and dispose of hazardous waste products have not yet been identified. The identification of these third party persons will take place during the detailed design phase of the proposed Project

Waste Water Treatment Plant

The WWTP is to be dismantled and removed. Sludge may be used as used for rehabilitation purposes if tests indicate that it is appropriate to do so, otherwise it will be disposed of offsite at a reputable hazardous waste facility.

4.4.4 Responsibility

Environmental functions within Allana will be responsible and accountable for implementing waste management measures for the proposed Dallol Potash Project. Furthermore, overall accountability for auditing of waste management lies with Allana.

Should there be any EPC/EPCM contractors on site during the decommissioning and closure phase, they too will be responsible for implementing the waste management measures outlined in this plan.

The main goal of verification and monitoring is to provide assurance that the mitigation and management measures outlined in this Plan are being met and are successful. Specific objectives of verification and monitoring are to:

- Verify that the WMP is being implemented;
- Verify the performance of personnel in implementing the WMP;
- Monitor the success of the measures stipulated in the WMP; and
- Evaluate the need for remedial or corrective action to:
 - Improve performance or personnel;
 - Improve success of the management measure; or
 - Introduce new measures to address existing or new waste-related impacts.

5.1 VERIFICATION AND MONITORING PROGRAMME

In order to verify performance of personnel and implementation of the WMP, regular *ad hoc* site inspections (to ensure good day-to-day housekeeping) and formal audits will be undertaken by Allana. Major non-compliances noticed during the *ad hoc* inspections are to be reported as per the procedure described in *Section 6* of this plan. The results of all audits are to be recorded as per the procedure.

There are no specific quantitative standards for waste that can be monitored; however, based on the specified objectives and targets, certain Key Performance Indicators (KPIs) have been developed (*Table 5.1*). Remedial action needs to be taken should the management action fail to meet the KPIs.

5.1.1 Key Performance Indicators

The following Key Performance Indicators (KPIs) will be measured and used to evaluate the proposed Project's performance with respect to its stated objectives and commitments regarding waste management:

- Annual volumes of hazardous waste disposed of off-site but not recycled (i.e. no longer in temporary storage);
- Annual volumes of hazardous waste recycled off-site;
- Annual percent change of hazardous waste volume compared to previous year;
- Annual volume of non-hazardous waste reused or recycled;
- Annual volume of non-hazardous waste disposed of on-site;

- Annual volume of non-hazardous waste disposed of off-site;
- Annual volume of contaminated soils generated and treated on-site;
- Annual percent change of volume of non-hazardous waste production compared to previous year; and
- Volume of hazardous waste transported across international boundaries.
- Good segregation of waste streams (recyclables, general waste and hazardous waste).
- No reports of hazardous waste being mixed with general waste and vice versa.
- Zero reports of illegal dumping of wastes.

5.1.2

Training

Training will be provided to the ELCR staff by the ELCR manager regarding the duties involved in implementing the WMP.

The ELCR staff will provide any necessary training to the security staff responsible for collecting paperwork from trucks, contractors and other project staff who have responsibilities relevant to waste management.

Third-party training will be provided for all of those handling chemical or hazardous waste and renewed as required.

Table 5.1 Verification and Monitoring Programme

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
Construction Phase				
Waste minimisation, re-use and recycling	Return as many glass, metal drums and plastic containers as possible to suppliers.	Keep a record of number of the amount of containers returned to suppliers.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste handling	Sufficient number and adequate placement of bins on site.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Bins to be emptied regularly - no litter lying outside of bins.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste accurately classified and labelled in appropriate language(s) at source.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Personnel are trained and competent.	Keep record and attendance registers that personnel have attended appropriate training.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Used fuel/chemical/solvent/lubricant/oil containers appropriately designed and maintained.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste transport	Waste transported offsite to a licensed waste facility/disposal site regularly to avoid backlog of waste.	<ul style="list-style-type: none"> Visual confirmation. Proof of suitable disposal (weigh bridge certificates). 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Transport vehicles are suitable to transport the class and type of waste.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
	Transport vehicles to have sufficient quantities of materials and equipment to contain, remediate and remove accidental spills and any contaminated soil/ water.	<ul style="list-style-type: none"> Maintain register of materials and equipment and audit their usage. Usage of such materials would also allow the amount of accidental spills to be inferred. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste storage and segregation	Temporary waste storage facilities appropriately designed for purpose (impermeable floors, covered, drainage, access control, etc.).	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Temporary storage of hazardous waste must take place in closed containers away from direct sunlight or rain.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	For temporary storage of liquid hazardous waste, storage facility bunded and able to contain 110% of largest storage container or 25% of total volume, whichever is greater.	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	No unauthorised entry into the waste storage facilities.	Maintain register of entries.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste segregated where necessary.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste treatment	Waste Water Treatment Plant (WWTP) designed to treat the requisite volume of sewage.	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers
No overflow of untreated sewage into the environment.		<ul style="list-style-type: none"> Visual confirmation. Standard measures to check for leaks. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Operational Phase				
Waste minimisation, re-use and recycling	Return as many glass, metal drums and plastic containers as possible to suppliers.	Keep a record of number of the amount of containers returned to suppliers.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits
Waste handling	Sufficient number and adequate placement of bins on site and associated building infrastructure.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
	Bins to be emptied regularly - no litter lying outside of bins.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste segregated at source.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste accurately classified and labelled in appropriate language(s) at source.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Personnel are trained and competent.	<ul style="list-style-type: none"> Keep record and attendance registers that personnel have attended appropriate training. Implement Environmental Awareness Plan. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Used fuel/chemical/solvent/lubricant/oil containers appropriately designed and maintained.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste transport	Waste transported offsite to a licensed waste facility/disposal site regularly to avoid backlog of waste.	<ul style="list-style-type: none"> Visual confirmation. Proof of suitable disposal (weigh bridge certificates). 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits
	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.	ELCR Manager and ELCR Officers	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.
	Transport vehicles are suitable to transport the class and type of waste.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Transport vehicles to have sufficient quantities of materials and equipment to contain, remediate and remove accidental spills and any contaminated soil/water.	<ul style="list-style-type: none"> Maintain register of materials and equipment and audit their usage. Usage of such materials would also allow the amount of accidental spills to be inferred. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste storage and segregation	Temporary waste storage facilities appropriately designed for purpose (impermeable floors, covered, drainage, access control, etc.).	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
	Temporary storage of hazardous waste must take place in closed containers away from direct sunlight or rain.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	For temporary storage of liquid hazardous waste, storage facility bunded and able to contain 110% of largest storage container or 25% of total volume, whichever is greater.	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	No unauthorised entry into the waste storage facilities.	Maintain register of entries.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste segregated where necessary.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Tailings as far as possible be used as backfill in cavern; however, majority of tailings will be stockpiled between the bine field and the evaporation pond, an area of 12.5km ² on the salt flats, with a height of approximately 2.5m.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Reclaimed brine to be returned to the evaporation ponds.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste treatment	No overflow of untreated sewage into the environment.	<ul style="list-style-type: none"> • Visual confirmation. • Standard measures to check for leaks. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	No untreated effluent from the WWTP discharged into the environment.	<ul style="list-style-type: none"> • Visual confirmation. • Standard measures to check for leaks. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits
	Sludge emanating from the WWTP to potentially be used as a fertiliser compound for the growth of Doum Palms in the nursery (to be confirmed during detailed Project design).	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
	Should tests indicate that onsite disposal of WWTP sludge is not suitable, waste sludge to be disposed of offsite at a reputable hazardous waste facility.	<ul style="list-style-type: none"> Visual confirmation. Proof of suitable disposal (weigh bridge certificates). 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits
Decommissioning and Closure Phase				
Waste minimisation, re-use and recycling	Return as many glass, metal drums and plastic containers as possible to suppliers.	Keep a record of number of the amount of containers returned to suppliers.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste handling	Sufficient number and adequate placement of bins on site and associated building infrastructure.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Bins to be emptied regularly - no litter lying outside of bins.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste segregated at source.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Waste accurately classified and labelled in appropriate language(s) at source.	Visual confirmation.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Personnel are trained and competent.	<ul style="list-style-type: none"> Keep record and attendance registers that personnel have attended appropriate training. Implement Environmental Awareness Plan. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Used fuel/chemical/solvent/lubricant/oil containers appropriately designed and maintained.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste transport	Waste transported offsite to a licensed waste facility/disposal site regularly to avoid backlog of waste.	<ul style="list-style-type: none"> Visual confirmation. Proof of suitable disposal (weigh bridge certificates). 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits
	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.	ELCR Manager and ELCR Officers	Containers used to transport used fuel/chemical/solvent/lubricant/oil are appropriately designed and maintained.

Facilities/ Source/ Aspect	Parameters/ standards/ KPI	Measurement methodology, equipment, detection limits	Responsibility	Frequency of measuring
	Transport vehicles are suitable to transport the class and type of waste.	<ul style="list-style-type: none"> Confirmation of design specification from supplier. On-going visual confirmation. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Transport vehicles to have sufficient quantities of materials and equipment to contain, remediate and remove accidental spills and any contaminated soil/water.	<ul style="list-style-type: none"> Maintain register of materials and equipment and audit their usage. Usage of such materials would also allow the amount of accidental spills to be inferred. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
Waste storage and treatment facilities	The management of tailings will be in accordance with the Rehabilitation, Decommissioning and Closure Plan	Confirm as part of audit of compliance with contract specifications.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Temporary general waste storage facilities will be dismantled and removed. All general waste will be transported off site and disposed of at a registered landfill site.	<ul style="list-style-type: none"> Visual confirmation of structure dismantling and removal. Record of waste collection and disposal to be maintained and audited. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Temporary hazardous waste storage facilities will be dismantled and removed. All hazardous waste will be transported off site and disposed of at a registered landfill site.	<ul style="list-style-type: none"> Visual confirmation of structure dismantling and removal. Record of waste collection and disposal to be maintained and audited. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	The WWTP is to be dismantled and removed. Sludge may be used as a fertiliser for during rehabilitation if tests indicate that it is appropriate to do so, otherwise it will be disposed of offsite at a reputable hazardous waste facility. Any treated effluent shall be managed in accordance with the WAMP.	<ul style="list-style-type: none"> Visual confirmation of structure dismantling and removal. Record of waste collection and disposal to be maintained and audited. Comply with the WAMP. 	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.
	Groundwater protected from contamination by leachate from any of the waste storage facilities.	Comply with groundwater monitoring measures described in the WAMP.	ELCR Manager and ELCR Officers	<i>Ad hoc</i> inspections and monthly formal audits.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

Any necessary reporting to the Ethiopian government in terms of waste management will be stipulated in the mining license issued by the Ethiopian Ministry of Mines.

6.2 *LENDER REPORTING*

Any reporting to the lenders will be stipulated in the conditions of approval.

6.3 *INTERNAL REPORTING*

A report shall be prepared by the Allana environmental function after each audit using the following classification system for findings:

- Major non-conformances;
- Minor non-conformances; and
- Associated recommendations.

A tracking system will be implemented to identify:

- Non-conformities;
- Areas for improvement;
- Remedial actions; and
- A programme and associated responsibilities for remedial actions.

Records will be maintained to demonstrate conformity with the WMP.

Table 7.1 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
Impacts on soil, water, fauna and flora due to contamination from spills, sewage and waste disposal.	Prevent contamination of soil, flora and fauna, groundwater or surface water.	Used oil will be recycled on site or returned to supplier.	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers
		All staff will be trained in waste management procedures.		
		Waste will be segregated at source and handled according to its class in appropriately labelled containers.		
		Waste will be transported in appropriately designed containers in transport vehicles that cater for the class and quantity of waste being transported.		
		Transport vehicles will be labelled appropriately.		
		All temporary waste storage facilities will be appropriately designed to accommodate different classes and quantities of waste.		
		Fire-fighting equipment will be readily available at temporary waste storage facilities.		

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<p>Sufficient quantities of absorbent material will be readily available in case of spills and leakages.</p> <p>All treated liquid effluent will be recycled or re-used within the processing plant.</p> <p>Sludge from the Waste Water treatment Plant will be potentially be used as a fertiliser for Doum Palms in the nursery if appropriate or disposed of at a reputable offsite hazardous waste facility and or landfill site.</p>		

Table 7.2 *Operational Phase*

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> Impacts on soil, water, fauna and flora due to contamination from spills, sewage and waste disposal. Indirect social impacts as a result of deteriorating water and soil quality. 	<ul style="list-style-type: none"> Prevent contamination of soil, flora and fauna, groundwater or surface. Prevent indirect social impacts. 	<ul style="list-style-type: none"> Recycle used oil on site or return to supplier. All staff trained in waste management procedures. Waste segregated at source and handled according to its class in appropriately labelled containers. Waste to be transported in appropriately designed containers in transport vehicles that cater for the class and quantity of waste being transported. Transport vehicles to be 	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<p>labelled appropriately.</p> <ul style="list-style-type: none"> All temporary waste storage facilities to be appropriately designed to accommodate different classes and quantities of waste. Fire-fighting equipment to be readily available at waste storage facilities. Sufficient quantities of absorbent material to be readily available in case of spills and leakages. 		
		<p>Tailings</p> <p>Tailings as far as possible be used as backfill in cavern; however, majority of tailings will be stockpiled between the bine field and the evaporation pond, an area of 12.5km² on the salt flats, with a height of approximately 2.5m.</p>	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers
		<p>Brine</p> <p>All reclaimed brine to be returned to the evaporation ponds.</p>	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers
		<p>Final Disposal of Waste</p> <p>All waste (general and hazardous) if not re-used or recycled to be suitably disposed of a reputable licensed facility/landfill that is able to receive such waste.</p>	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
		<p>Waste Water Treatment Plant</p> <ul style="list-style-type: none"> • No treated effluent from the WWTP discharged into the environment. Treated effluent must be returned to the processing plant. • Sludge emanating from the WWTP to potentially be used as a fertiliser application for Doum Palms in the nursery. • Should tests indicate that onsite disposal of WWTP sludge is not suitable, waste sludge to be disposed of offsite at a reputable hazardous waste facility. 	Please refer to <i>Table 5.1</i> .	ELCR Manager and ELCR Officers

Table 7.3 *Decommissioning and Closure Phase*

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> Impacts on soil, water, fauna and flora due to contamination from spills, sewage and waste disposal. Indirect social impacts as a result of deteriorating water and soil quality. 	<ul style="list-style-type: none"> Prevent contamination of soil, flora and fauna, groundwater or surface. Prevent indirect social impacts. 	<ul style="list-style-type: none"> Recycle used oil on site or return to supplier. All staff trained in waste management procedures. Waste segregated at source and handled according to its class in appropriately labelled containers. Waste to be transported in appropriately designed containers in transport vehicles that cater for the class and quantity of waste being transported. Transport vehicles to be labelled appropriately. All temporary waste storage facilities to be appropriately designed to accommodate different classes and quantities of waste. Fire-fighting equipment to be readily available at waste storage facilities. Sufficient quantities of absorbent material to be readily available in case of spills and leakages. 	<p>Please refer to <i>Table 5.1</i>.</p>	<p>ELCR and ELCR Officers</p>

Volume III Annex G

Water Management Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana for Review
0143047_V2.0_WAMP	Stefan Muller	Mike Everett	December 2012

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LIST OF ACRONYMS

Table 0-1 List of Acronyms

Abbreviation	Full Definition
Allana	Allana Potash Corp.
Aquifer Diffusivity (α)	The ratio of transmissivity to storativity
BFS	Bankable Feasibility Study
DFS	Definitive Feasibility Study
E	east
Ercosplan	Ercosplan Group of Companies
ERM	Environmental Resources Management Southern Africa Pty. Ltd.
EW	East-west
Ha	Hectare
HPC	Heterotrophic plate count
Hydraulic Conductivity (K)	Constant of proportionality defining the specific discharge of a porous medium under a unit hydraulic gradient,
Hydraulic Gradient (i)	Hydraulic head loss per unit distance
K	Thousand
Kg	Kilogram
kj	Kilojoules
Kl	Kiloliter
Km	Kilometer
km ²	Square kilometer
Kt	Kilotonne
kW	Kilowatt
L	Liter
l/s	Liters per second
LOM	Life of mine
m	Meter
M	Million
mamsl	Meters above mean sea level
m bgl	Meters below ground level
m ³	Cubic meter
m ³ /h	Cubic meter per hour
mm	Millimeter
Mm ³	Million cubic meters
mN	Meters north
Mt	Million tonnes
Mtpa	Million tonnes per annum
NE	Northeast
NW	Northwest
pa	Per annum
PFS	Pre-Feasibility Study
Porosity (n)	Ratio of void volume to total volume in a rock or unconsolidated material
Q	Pumping rate
SE	Southeast

Abbreviation	Full Definition
Specific Discharge (q)	Flow rate per unit cross-sectional area of aquifer. Also known as Darcy velocity or Darcy flux given by the product of hydraulic conductivity and hydraulic gradient
Specific Storage (Ss)	Volume of water released from storage from a unit volume of aquifer per unit decline in hydraulic head.
Specific Yield (Sy)	Volume of water released from storage by an unconfined aquifer per unit surface area of aquifer per unit decline of the water table
Storativity (S)	Volume of water released from storage by a confined aquifer per unit surface area of aquifer per unit decline in hydraulic head normal to surface
SWL	Static water level
T	Tonnes
T	Transmissivity
TDS	Total dissolved solids
W	West
WGS84UTM	World Geodetic System Universal Transverse Mercator Projection coordinates
WL	Water level

DEFINIITIONS

Aquifers: geological formation(s) capable of supplying economic volumes of groundwater.

Alluvial: sediments deposited by flowing water.

Alluvial aquifer: an aquifer formed of unconsolidated material deposited by water, typically occurring adjacent to river channels and in buried or paleochannels.

Alluvium: a general term for unconsolidated deposits of inorganic materials (clay, silt, sand, gravel, boulders) deposited by flowing water.

Aquifer system: a heterogeneous body of intercalated permeable and less permeable material that acts as a water-yielding hydraulic unit of regional extent.

Aquifer testing: the process whereby an aquifer is subjected to pumping from a borehole under controlled test conditions in order to determine the hydraulic parameters of the groundwater system through its response to the stress of abstraction.

Available drawdown: the height of water above the depth at which the pump is set in a borehole at the time of water level measurement (m).

Borehole: includes a well, excavation, or any other artificially constructed or improved groundwater cavity which can be used for the purpose of intercepting, collecting or storing water from an aquifer; observing or collecting data and information on water in an aquifer; or recharging an aquifer [from National Water Act (Act No. 36 of 1998)].

Brackish: water that contains between 1 000 and 10 000 mg/L of dissolved solids.

Brine: water that contains more than 35 000 mg/L of dissolved solids.

Catchment: the area from which any rainfall will drain into the watercourse, contributing to the runoff at a particular point in a river system; synonymous with the term river basin.

Cone of depression: the cone-shaped area around a borehole that results from the lowering of the water table or piezometric surface by abstraction.

Confined aquifer: an aquifer overlain by a confining layer of significantly lower hydraulic conductivity in which groundwater is under greater pressure than that of the atmosphere; also known as an artesian aquifer.

Contamination: the introduction of any substance into the environment by the action of man.

Discharge rate: the volume of water per unit of time abstracted from a borehole (L/s).

Dissolved solids: minerals and organic matter dissolved in water.

Drawdown: the difference between the observed groundwater level during pumping and the non-pumping or rest groundwater level in a borehole.

Ephemeral rivers: these rivers are generally storm-event driven and flow occurs less than 20% of the time.

Evapotranspiration: the loss of moisture from the combined effects of direct evaporation from land and sea, and transpiration from vegetation.

Exploitation potential: the rate at which groundwater can be withdrawn from a catchment without causing any detrimental impacts.

Fault: a zone of displacement in rock formations resulting from forces of tension or compression in the earth's crust.

Fissures: a general term to include natural fractures, cracks and openings in consolidated rock caused by bedding planes, joints, faults, etc.

Formation: a general term used to describe a sequence of rock layers.

Fracture: cracks, joints or breaks in the rock that can enhance water movement.

Fracture zone: a zone of cracks or fissures within rocks.

Fractured aquifer: an aquifer that owes its water-bearing properties to fracturing caused by folding and faulting; see secondary aquifer.

Freshwater: water that contains less than 1 000 mg/L salts.

Groundwater: water found in the subsurface in the saturated zone below the water table or piezometric surface i.e. the water table marks the upper surface of groundwater systems.

Groundwater flow: the movement of water through openings and pore spaces in rocks below the water table i.e. in the saturated zone;

Heterogeneous: refers to materials having different properties at different points; diverse in character or content; in reality, all aquifers are heterogeneous, although we assume homogeneity in order to simplify their analysis; opposite of homogeneous;

Homogeneous: a characteristic of the geological unit in which hydraulic conductivity is independent of position or direction; opposite of heterogeneous.

Hydraulic conductivity: measure of the ease with which water will pass through earth material; defined as the rate of flow through a cross-section of one square metre under a unit hydraulic gradient at right angles to the direction of flow (in m/d).

Hydraulic gradient: the slope of the water table or piezometric surface; is a ratio of the change of hydraulic head divided by the distances between the two points of measurement.

Hydraulic head: the height of a column of water above a reference plane.

Hydrological cycle: the continuous circulation of water between oceans, the atmosphere and land; the sun is the energy source that raises water by evapotranspiration from the oceans and land into the atmosphere, while the forces of gravity influence the movement of both surface and subsurface water.

Infiltration: the downward movement of water from the atmosphere into the ground; not to be confused with percolation.

Perched aquifers: aquifers that contain perched groundwater i.e. bodies of groundwater separated from an underlying body of groundwater by an unsaturated zone.

Perennial: lasting through a year or several years i.e. a river that flows all year round or a wetland that remains wet all year round.

Permeable: materials that allow liquids (and gases) to flow through it.

Permeability: the ease with which a fluid can pass through a porous medium and is defined as the volume of fluid discharged from a unit area of an aquifer under unit hydraulic gradient in unit time (expressed as $m^3/m^2/d$ or m/d); it is an intrinsic property of the porous medium and is independent of the properties of the saturating fluid; not to be confused with hydraulic conductivity which relates specifically to the movement of water.

Piezometric level: the elevation to which groundwater levels rise in boreholes that penetrate confined or semi-confined aquifers.

Porosity: ratio of the volume of void space to the total volume of the rock or earth material.

Potable water: water that is safe and palatable for human use;

Recharge: the addition of water to the zone of saturation, either by the downward percolation of precipitation or surface water and / or the lateral migration of groundwater from adjacent aquifers.

Recharge area: an area over which recharge occurs.

Rest water level: the groundwater level in a borehole not influenced by abstraction; synonymous with static water level, but no groundwater levels are ever truly static as they continually respond to recharge, discharge and abstraction.

Runoff: all surface and subsurface flow from a catchment, but in practice refers to the flow in a river i.e. excludes groundwater not discharged into a river.

Saturated zone: the subsurface zone below the water table where interstices are filled with water under pressure greater than that of the atmosphere;

Specific capacity: the rate of discharge of water well per unit of drawdown, usually expressed as $m^3/d/m$.

Specific yield: ratio of the volume of water that a given mass of saturated rock or soil will yield by gravity from that mass.

Spring: a point where groundwater emerges, usually as a result of topographical, lithological or structural controls.

Storage coefficient: the volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head.

Test pumping: see aquifer testing and borehole testing.

Transmissivity: the rate at which a volume of water is transmitted through a unit width of aquifer under a unit hydraulic head (m^2/d); product of the thickness and average hydraulic conductivity of an aquifer.

Tritium: Tritium (T) or 3H is a radioactive isotope of hydrogen (having two neutrons and one proton) with a half-life of 12.4 years. Tritium concentrations are measured in tritium units (TU) where 1 TU is defined as the presence of one tritium in 10^{18} atoms of hydrogen (H).

Unconfined aquifer: an aquifer with no confining layer between the water table and the ground surface where the water table is free to fluctuate.

Unsaturated zone: that part of the geological stratum above the water table where interstices and voids contain a combination of air and water; synonymous with zone of aeration or vadose zone.

Vulnerability: the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.

Water table: the upper surface of the saturated zone of an unconfined aquifer at which pore pressure is at atmospheric pressure, the depth to which may fluctuate seasonally.

Well field: a group of boreholes in a particular area usually used for groundwater abstraction purposes.

Yield: the quantity of water removed from a water resource e.g. yield of a borehole.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 & 1878/2002 from the Ethiopian Ministry of Mines and Energy), in the Danakil depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed project, a suite of management plans needs to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Several activities associated with the proposed Project will result in the abstraction and discharge of groundwater, which could impact on the receiving environment. This Water Management Plan (WAMP) has been developed to address the potential groundwater related impacts that have been identified in the ESHIA and associated groundwater impact assessment.

1.1 POLICY STATEMENT

The WAMP has been compiled within the context of the proposed Projects Environmental Policy Statement, as set out in *Box 1.1* below.

Box 1.1 Environmental Policy Statement

Allana will evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment. Environmental sustainability will be improved through integrating environmental, social, cultural and economic factors into business decisions, goals and objectives, whenever practical. Allana will conserve natural resources through efficient resource consumption, and safe disposal of effluent and wastes

1.2 OBJECTIVES

The objectives of this Plan are as follows:

- To ensure compliance with Ethiopia’s Water Management Act and other relevant Ethiopian Regulations;
- To ensure that the proposed water strategy complies with the objectives of the Ethiopian Water Master Plan;

- To meet IFC Performance Standards and IFC Environmental, Health and Safety Guidelines;
- To meet Ethiopian and World Health Organisation (WHO) drinking water standards;
- To protect the biophysical environment from any impacts that cannot be mitigated, and that will negatively impact on biodiversity on a regional scale;
- To preserve water resources in line with the objectives of integrated catchment management, thereby ensuring that this resource is utilised to the maximum benefit of Ethiopia and its inhabitants;
- To construct infrastructure and reticulation systems to standards designed to minimise water losses and leaks; and
- To achieve zero discharge including complete recycling of waste waters and potentially contaminated surface water runoff.

1.3

PURPOSE AND SCOPE

This WAMP has been developed to address the potential water-related impacts that are associated with the Allana Potash Project and describes the measures to mitigate these impacts.

The Plan incorporates the following concepts and actions:

- Zero waste water discharge (e.g. sewage, oil, grease and diesel contaminated water, grey water);
- Recycling and re-use;
- Monitoring of groundwater levels and quality changes;
- Periodic calibration of numerical groundwater model(s);
- Protection against contamination including regular audits of waste management facilities and effluent disposal;
- Metering and leak detection;
- Action plan for all unaccounted water losses in excess of 10,000 litres; and
- Identification and mitigation of impacts.

The WAMP links directly with several other management plans. This is described in detail below.

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Community Health, Safety and Security (CHSSMP) Plan	<p>The contamination of surface and groundwater must be avoided in the broader Allana project area, given the reliance of the local population on these resources. Numerical guidelines nominated by Allana include Ethiopian, World Bank (WB) and WHO guidelines for drinking water and include baseline soil and groundwater parameters against which remediation will be measured should soil and groundwater contamination occur</p> <p>Based on the present understanding of the hydrogeological conditions in the area, it is unlikely that the water supply to Hamad Ela will be affected by the project. However, if the project adversely affects the water supply to the village, Allana will provide alternative water resources of equal or better quality to the community.</p>
ENVIRONMENTAL PLANS	
Waste Management Plan (WMP)	Procedures for the management of all waste streams produced by the Allana project must be in place to ensure groundwater is not contaminated.
Flora and Fauna Management Plan	Allana's plans to pump water for mining might impact the plants in the area, especially palms used by communities for palm mats. There is a chance that there might not be enough water for these plants and some of them may die. Allana must ensure that the negative impact is small and should - if monitoring identifies negative impacts - use alternative groundwater resources towards the south, which are from a different aquifer.
Rehabilitation, Decommissioning and Closure Plan	Re-vegetation as part of rehabilitation of palm area
OCCUPATIONAL HEALTH, SAFETY AND RISK PLANS	
Spill Prevention Control and Containment plan	Hydrocarbon and sewage spills have the potential to contaminate both surface and groundwater resources

A summary of the legal requirements and standards relevant to the WAMP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

The following National Legislation and Policies are applicable to water management in Ethiopia:

- Mining Proclamation 678/2010;
- Water Resource Management Proclamation No. 197/200;
- Ethiopian Water Resources Management Regulation No. 115/2005;
- River Basin Council and Authorities Proclamation No. 534/2007;
- Abbay Basin High Council and Authorities Regulation No. 151/2008;
- Awash Basin High Council and Authorities Regulation No.156/2008; and
- Definition of Power and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 691/2010.

Article 33(1) (b) of the Mining Operation Proclamation No. 678/2010, provides that the Mining License Holder as appropriate, have the right to use subject to the relevant water laws, water from any water body, situated on, or flowing through, such land or sink a well or borehole required for mining operations.

Article 5 of the Ethiopian Water Resources Management Proc. No. 197/2000 stipulates that all water resources of the country are the common property of the Ethiopian people and the state. Accordingly, Article 6(4) of the same proclamation provides that the water resource of the country shall be managed by a permit system.

In a similar fashion with the above paragraph, Article 9(3) of Proclamation 534/2007 provides that Basin Authorities shall ensure that project activities and investments related to water in the basin are, in their content, schedule, impacts and management are in line with the integrated water resources management process. Furthermore, Sub Article (8) of the same article stipulates that Basin Authorities are also required to serve as advisors to the Basin High Council and the Ministry on dispute resolution related to the allocation and use of water resources of the basin.

Danakil is the basin applicable to the proposed Project; however, the Danakil Basin Authority has not yet been established. Although Article 2 (1) and 3 of the proclamation states that in some cases two or more river basins may be organised under a single Basin High Council and Authority, no such arrangement has been observed to date. To date, two water basin High Councils and Authorities have been established. These are the Abbay and

Awash Basin High Council and Authorities (Regulation n°s 151/2008 and 156/2008 respectively).

In accordance with Article 2(7) and 2(20) of Proc.197/2000 the supervising body is the Ministry of Water Resources, renamed as Ministry of Water and Energy by Proc. 691/2010. The Supervising Body shall issue the permit applied for within sixty (60) days after receipt of the application where the proposed use of water does not: 1) infringe, in any manner, any person's legitimate interest upon the water; and 2) entail pollution or harmful effects on the water resource and the environment (Article 14, Proc. 197/2000).

2.2

IFC PERFORMANCE STANDARDS

The following IFC Performance Standards are applicable to this Plan:

- *Performance Standard 1 (PS1)- Assessment and Management of Environmental and Social Risks and Impacts*

PS1 aims to identify and assess environmental and social risks and impacts of the project, and to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.

- *Performance Standard 3 – Resource Efficiency and Pollution Prevention*

PS3 aims to avoid or minimise adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. Furthermore, the standard promotes more sustainable use of resources, including energy and water and aims to reduce project-related greenhouse gas emissions.

- *Performance Standard 4 (PS4) – Community Health, Safety and Security*

PS4 aims to avoid adverse impacts on the health and safety of affected community during the Project life from both routine and non-routine circumstances. Furthermore, the standard ensures that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the affected communities.

- *Performance Standard 6 – Biodiversity Conservation and Sustainable Natural Resource Management.*

PS6 aims to protect and conserve biodiversity, maintain the benefits from ecosystem services and promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

2.3

WORLD BANK POLLUTION PREVENTION AND ABATEMENT HANDBOOK, 1998

The following World Bank Guidelines are applicable to this Plan:

- World Bank EHS Guidelines, Thermal Power: Guidelines for New Plants (PPAH, 1998);
- World Bank EHS Guidelines: Mining and Milling – Open Pit; and
- World Bank EHS Guidelines: Mining and Milling – Underground

2.4

IFC GENERAL ENVIRONMENTAL, HEALTH AND SAFETY GUIDELINES, 2007

Specific Guidelines appropriate to the WAMP include:

IFC Environmental Guidelines:

- Guideline 1.3 (which applies to projects that have the potential to generate process wastewater, sanitary (domestic sewage) or storm water to the environment); and
- Guideline 1.4 (which relates to water conservation).

IFC Community Health and Safety Guidelines:

- Guideline 3.1 (which applies to project activities involving wastewater discharges, water extraction, diversion or impoundment).

The responsibility for implementing this plan lies with the Environmental Management function of Allana.

The Environmental Management function will undertake quality assessments of all monitoring and data received, and will ensure the adequacy of all water management reports.

Overall accountability for water efficiency and its sustainable use, and the setting and review of water related use and quality targets will lie with the Board of Allana, who are responsible for the delegation of responsibilities downwards to its operational division of Allana Potash in Ethiopia.

4.1 SUMMARY OF ALLANA'S WATER REQUIREMENTS

The proposed Project will require large volumes of water during the operational phase, with current estimates for full production being 16 Mm³/annum.

The water quality requirements for solution mining and processing water are different. A range of acceptable water quality composition, based on the analytical results of water sampled from wells drilled during the water exploration campaign, is given in *Table 4.1* below.

Processing Water for the plant should have a low mineralisation. For solution mining the requirements are less stringent and mixing of different mineralized waters is possible, but overall mineralization should not exceed about 140 ms/cm, with the summed Ca and Mg content below 10 g/l.

Table 4.1 *Allana Water Quality Requirements for Processing Water and for Solution Mining*

	Process Water	Process Water	Solution Mining	Solution Mining
	Good	Acceptable	Acceptable	Barely Acceptable
Na	0.012 g/l	0.083 g/l	14.5 g/l	34.2 g/l
K	0.014 g/l	0.094 g/l	0.70 g/l	1.85 g/l
Mg	0.039 g/l	0.110 g/l	1.10 g/l	2.76 g/l
Ca	0.280 g/l	0.370 g/l	3.38 g/l	7.32 g/l
Cl	0.220 g/l	0.980 g/l	28.0 g/l	64.3 g/l
SO ₄	0.598 g/l	1.21 g/l	2.08 g/l	1.57 g/l
Conductivity	2.05 ms/cm	5.54 ms/cm	70 ms/cm	141 ms/cm

Source: ErcosPlan (2012)

4.2 SUMMARY OF IMPACT MANAGEMENT

Water supply for mining purposes will be derived from a groundwater source within the alluvial fans between the Sabah River Fan in the south and the Musley fan in the north, with a backup groundwater sources from alluvial fans south of Hamad Ela, when technically and economically feasible. Water for human consumption will be pumped from the alluvial sediments within the Sabah River basin.

In terms of sustainability and beneficial long term use, a comprehensive groundwater investigation is currently being undertaken. This groundwater investigation has included geophysics studies, drilling programmes, pump testing, and sampling and monitoring of groundwater levels, water quality

and isotope analyses. Preliminary results indicate high hydraulic values and large storage coefficients in all of the presently investigated alluvial fans.

Initial isotope studies revealed the presence of Tritium (TU). As groundwater tritium concentrations reflect atmospheric tritium levels when the water was last in contact with the atmosphere, tritium can be used to semi quantitatively date groundwater recharge. Given that TU values vary both spatially and temporally, it is important to establish the closest precipitation measurement point to provide a reference to estimate groundwater recharge and travel times. Groundwater age estimation using tritium only provides semi-quantitative, “ball park” values:

- <0.8 TU indicates sub modern water (prior to 1950s)
- 0.8 to 4 TU indicates a mix of sub modern and modern water
- 4 to 15 TU indicates modern water (<5 to 10 years)
- 15 to 30 TU indicates some bomb tritium
- >30 TU: recharge occurred in the 1960s to 1970s

The tritium concentration in various samples collected in the area were measured between 1.0TU and 2.0TU, indicating a mix of sub modern and modern water. However, it is recommended that recharge be quantified using the radiocarbon dating method which provides more definitive results.

When the recharge is defined in a more quantitative way, with the present knowledge of the geology and the hydrogeology, a numerical groundwater flow model will be constructed and different abstraction scenarios simulated. The numerical flow model will provide a better understanding of the targeted aquifers and will help to:

- Define the sustainable water potential of an area;
- Define potential impact on the natural environment;
- Define potential impact on the presently used water supply in the area; and
- Help to refine the presently existing groundwater monitoring system indicating sensitive areas.

Potential impacts of using groundwater from the Alluvial Fan Wellfield may include a reduction in yield or quality of existing boreholes, and vegetation stress to groundwater dependent ecosystems, principally related to the vegetation at the fringe of the salt pan. With respect to existing boreholes, mitigation measures include resettlement of Mororo (situated within the Allana concession) and Alai lai (situated a few meters outside of the Allana concession), and the provision of replacement supplies.

It is recommended to undertake targeted vegetation mapping prior to the beginning of water abstraction at the well field. Monitoring boreholes must be drilled to measure the water table that could affect the vegetation. However, other external factors (e.g. climate change, variation in rainfall patterns,

additional people harvesting the trees etc.) must be considered as well. Regional and sub-regional change in vegetation away from the well field must be measured in addition, to evaluate the influence of water abstraction to the potentially affected vegetation.

4.3 *MANAGEMENT DURING CONSTRUCTION*

4.3.1 *Impacts*

Assuming that water of better quality (water suitable for human consumption and cement mixing) will be required during the construction phase; the alluvial sediments of the Sabah River and if suitable, water with better quality from the presently investigated alluvial fans are the potential targeted abstraction areas. ERM is not familiar with all details of water requirements used for building purposes, but suspended solid, acidity, alkalinity, algae and chloride will have an effect on the strength and durability of e.g. concrete. The potential impacts are:

- Limited groundwater drawdown (1 to 3 m) with drawdown cone within 300 m radius from the point of abstraction might occur over a 6 to 12 month period;
- Reduced yield of the presently used water supply borehole(s) might occur; and
- Soil and groundwater impact as a result of spillages and wastage during construction activities and / or potential runoff of spilled materials.

4.3.2 *Objectives and Targets*

The objectives and targets of groundwater management during construction are:

- To establish good baseline data (water quality, groundwater levels) and evaluate seasonal variances, which will be analysed in an annual monitoring report which will include a trend analysis, problem areas, recommendations and all historical results. The report will also be submitted to the regulatory body; and
- To manage the lowering of the water table and consequent impacts on the groundwater supply to the army water supply; and set up a post construction groundwater monitoring plan to identify any groundwater impacts due to construction activities.

4.3.3 *Management Practices*

The following management practices are required:

- Establish baseline groundwater quality, level and use criteria, pre-construction.
- Sourcing of construction water supply must consider impact on existing groundwater users.
- Engineering, Procurement and Construction (EPC) Contractor to ensure procedures are in place for spill prevention and clean-up, sewage handling and treatment, storage of fuels and chemicals, and car washing and repairs, and approved by Allana.
- Audit post construction, to identify potential spills, soil and groundwater impacts.
- Soil sampling of impacted soil areas for Volatile Organic Compounds, metal and Diesel Range Organic components to confirm clean-up, following corrective action by EPC contractor.

4.3.4 *Responsibility*

The responsibility for the completion of mitigation measures proposed for pre-construction and during construction lies with the groundwater consultants reporting to Allana.

During construction, responsibility for the monitoring and management of groundwater monitoring lies with Allana.

The EPC Contractor is responsible for the implementation of approved procedures, in place to prevent any impacts to groundwater during the construction phase.

4.4 *MANAGEMENT DURING OPERATION*

4.4.1 *Impacts*

Based on the present understanding of the project, the following impacts during the operational phase of the project might or will occur:

- Lowering of groundwater levels within the alluvial fans between the Sabah River Fan in the south and the Musley fan in the north.
- The lowering of the water table in the alluvial fan might interrupt/reduce the water supply to the palm fridge at the edge of the salt pan.

- Lowering of groundwater levels in the surrounding aquifer with potential yield loss in community water supply boreholes.
- Potential saline intrusion within the alluvial fan aquifers leading to a deterioration in groundwater quality.

4.4.2 *Objectives and Targets*

The objectives and targets of groundwater management during operation are:

- To ensure protection of groundwater resources;
- To prevent indirect impacts on flora, fauna and people due to contamination of groundwater;
- To manage lowering of water table and consequent impacts on communal groundwater use; and
- Establishment of a groundwater monitoring plan to identify any groundwater impacts due to mining activities.

4.4.3 *Management Actions*

The following management practices are required:

- Refine the conceptual model constructed by Fugro when new data become available;
- Define recharge more accurately by using the ¹⁴C dating method;
- Compilation of numerical flow model;
- Establishment of a comprehensive monitoring system for, in particular groundwater quality and level monitoring;
- Refine conceptual and numerical model twice in the first 5 years and thereafter every 5 years based on groundwater monitoring results;
- Refine and upgrade groundwater monitoring system as required;
- Complete a vegetation survey;
- Replace communal water supplies unacceptably impacted by water abstraction, with alternative groundwater resources;
- Annual audits of monitoring and management systems; and

- Oils, diesel for machinery, sewage and dirty water will be contained in banded areas and released only after treatment.

4.4.4 Responsibility

Responsibility for the management of groundwater during the operations phase will lie with the environmental function of Allana, which will ensure that all related groundwater monitoring is undertaken and that this plan is implemented. The environmental function will ensure that the monitoring, management and reporting of ground water management are as per this plan.

Responsibility for analysis of water samples will be undertaken by an off-site accredited laboratory.

4.5 MANAGEMENT FOR DECOMMISSIONING AND CLOSURE

4.5.1 Impacts

Impacts on groundwater during decommissioning are similar to those experienced during construction and operation, which include the potential for groundwater contamination and a slow water level recovery, post mining. Groundwater monitoring will take place until such time as a closure certificate is obtained or as otherwise agreed with the Authorities.

4.5.2 Objectives and Targets

The objectives and targets of groundwater management during decommissioning and closure are:

- To ensure proper decommissioning, demolition and decontamination of building structures, infrastructure and waste storage areas;
- To monitor the post-mining rising water table and consequent impacts on private groundwater use; and
- To modify the groundwater monitoring plan to monitor natural attenuation.

4.5.3 Management Actions

The following management practices are required:

- Groundwater level and quality monitoring post closure;
- Close out audit;
- Soil clean-up and groundwater monitoring;
- Containment of "dirty" water runoff; and
- Replace palm trees at the fringe of the salt pan if dewatering affected the area and palm trees died because of water abstraction.

4.5.4 *Responsibility*

Responsibility for the management and monitoring of ground water during the closure phase will be agreed with the relevant authorities.

5.1 MONITORING PROGRAMME

At present (December 2012) the field work for the water supply component of the Allana Potash Project is on-going. Therefore the recommendations in this document must be seen as preliminary.

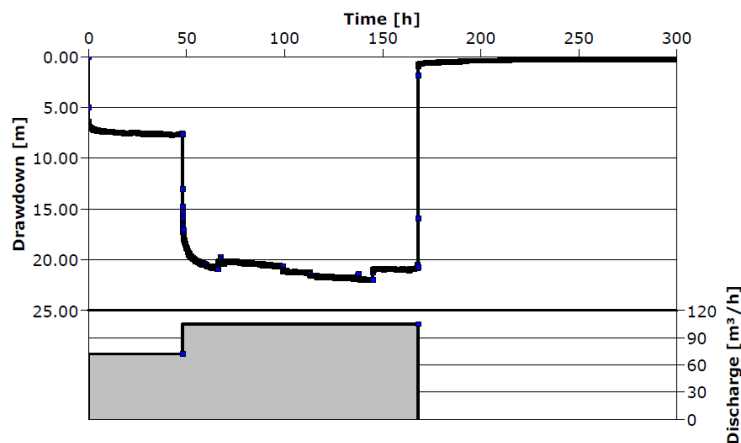
Based on the results of geophysics studies undertaken by Fugro (2012), the medial thickness of water bearing sediments in these alluvial fans can be estimated at between 30 to 40m between the basement rock of the westerly mountain range and the salt plain in the Danakil Depression. Based on this data, Fugro (2012) conceptualize a potential groundwater reservoir with a volume of approx. 180,000,000 m³; the usable volume of which would be dependent on the water quality, especially chloride, which may render some water too brackish for use in solution mining. Taking into account a water demand of approximately 16,000,000m³/a for solution mining, the reservoir would be depleted, without recharge, after approx. 11 years.

Recharge is therefore the critical factor in determining the long term sustainability of utilizing this potential water resource.

Recharge into the alluvial fan area was estimated by Fugro (2012) based on the results of geophysics, drilling, pump tests and water level measurements. To date, a total of 18 observation wells at 9 locations, 3 pumping wells and 2 solution wells have been drilled on the Project site.

The pumping test, pumping at a rate of 110 m³/h for 168 hours (*Figure 5.1*) shows that the groundwater table recovers completely and immediately at the end of testing. This data suggests the cone of depression surrounding this well as a result of drawdown was steep and recovered shortly after pump testing. Such long term pump tests at the pumping wells and depth to groundwater monitoring (October 2011 to December 2012) measured at all boreholes in the Study area indicates a permanent subsurface influx to the groundwater bearing fan structures.

Figure 5.1 Pump Test Data (100m³/h for 168h): HyDal-20-PW



In order to quantify recharge, Fugro (2012) developed a conceptual numerical model, with the following structure and parameters:

- One layer (2D);
- One hydraulic conductivity of $7 \cdot 10^{-4}$ m/s (the average rate from all the pumping tests conducted);
- A geological base of -145 m masl;
- Varying evaporation rates up to 3600mm to a depth of water table of 0,5 m; and
- No direct recharge caused by precipitation in the fan area.

Due to the uncertainty with regards the evaporation rate and depth of evaporation influence; this input into the model was tested using various evaporation rates.

The conceptual model results indicated that in order to maintain the detected hydraulic gradient, a subsurface influx (recharge) from the west of between 35.7 Mm³/a and 55.2 Mm³/a is required. This result is an important indication of a considerable influx (recharge) into the alluvial fans through large fault structures, and serves to confirm recharge indicated by initial long term pump test and longer term groundwater depth measurements.

The water in the Alluvial Fans (the target water source) flows into the Salt Pan Fringe and supports both community users and ecological resources. Current users of groundwater from the targeted alluvial fan systems include the villages of Mororo (situated within the Allana concession) and Alai lai (situated a few meters outside of the Allana concession). These villages source their water from an open saline pool on the edge of the salt flats; this water

has high concentrations of, in particular, sulphate, sodium, chloride and potassium, which are above the maximum allowable SANS Class II guideline, rendering it unsuitable as a source of potable water.

Currently therefore, these communities receive water that is delivered to them by the Ethiopian Military; however, this supply has been reported to be unreliable. The Palm Salt Fringe maintains an interaction between ecology and people and is of high importance with respect to ecosystem services. Therefore the Salt Pan Fringe should be monitored but in conjunction with Salt Pan Fringes in areas not effected by water abstraction, to define outside factor such as climate change and prolonged droughts.

Based on the conceptual hydrogeological model a three dimensional numerical flow model will be generated and different water supply options tested. Based on the results of the modelling exercise, the monitoring network will be enhanced to suite the requirements highlighted by the model.

However, the objectives of the monitoring programme include:

- To obtain water levels and water quality samples from the sites identified for routine monitoring;
- Re-run the ¹⁴C dating method to refine the numerical model;
- To submit the samples for comprehensive analysis of the physical parameters, anions and cations and metals concentrations, and to compare these, in an annual report, against the baseline qualities previously established;
- To submit samples for biological and bacteriological analysis to understand the baseline conditions and the impacts of the Project;
- To report on the compliance of the analytical results against standards and guidelines in order to identify problem areas and make recommendations for remedial actions;
- To identify areas and sources of pollution;
- To determine extent of dewatering cones and any impacts on groundwater users; and
- To determine the impact of pumping from the wellfield.

The aim of monitoring is to assess whether any changes are occurring to the ambient (baseline) water quality of aquifers, either as a result of water abstraction, or as a result of any contamination by the surrounding activities, and to then make recommendations for mitigation or remediation of any significant sources of contamination, if these are identified.

5.1.1 *Monitoring Parameters*

The parameters selected for monitoring will be indicative of the pollutants of concern from the process, and will include parameters that are regulated under compliance requirements. The inorganic and metal parameters for surface and groundwater monitoring are given in *Table 5.1*.

Table 5.1 *Analytical Schedule*

Inorganic constituents	Metal constituents
Electrical Conductivity as EC at 25°C	Aluminium as Al
Hardness as CaCO ₃	Arsenic as As
pH at 25°C	Boron as B
Total Suspended Solids (TSS)	Cadmium as Cd
Total Dissolved Solids (TDS) -Calculated	Chromium as Cr
Bicarbonate Alkalinity as CaCO ₃	Cobalt as Co
Carbonate Alkalinity as CaCO ₃	Copper as Cu
Total Hardness as CaCO ₃	Iron as Fe
Dissolved Oxygen (DO) as O ₂	Lead as Pb
Biological Oxygen Demand (BOD) as O ₂	Manganese as Mn
Chemical Oxygen Demand (COD) _ LR as O ₂	Molybdenum as Mo
Chemical Oxygen Demand (COD) _ HR as O ₂	Nickel as Ni
Calcium as Ca	Selenium as Se
Magnesium as Mg	Uranium as U
Sodium as Na	Vanadium as V
Potassium as K	Zinc as Zn
Chloride as Cl ⁻	
Sulphate as SO ₄ ⁻	
Fluoride as F ⁻	
Nitrate as NO ₃ ⁻	
Ammonia as (NH ₄ ⁺ -N)	
Ortho-Phosphate(PO ₄) as P	

Groundwater samples will be submitted for a broad screening analysis for petroleum hydrocarbons. This will include analysis for: Volatile Organic Compounds (VOCs, i.e. benzene, toluene, ethyl-benzene and xylenes or "BTEX"); Gasoline Range Organics (GRO, i.e. carbon chain length C4-C12); and Total Petroleum Hydrocarbons (TPH i.e. carbon chain length C10-C40). Appropriate TPH carbon banding will be requested from the laboratory to further allow determination of the presence of Diesel Range Organics (DRO, carbon chain length C11-C28) and/or heavier oil fractions (viz. lubrication and fuel oils of carbon chain length >C28) in the samples.

Recommended analytical methods:

- BTEX/ GRO: EPA Method 8260 by GC/MS; and
- TPH: EPA Method 8015 Modified (GC/FID).

All monitoring boreholes will be equipped with automatic water level recorders connected to data loggers to continuously monitor the water table.

The sampling rate will be set at the start at 60min and could be changed if required

5.1.2 *Selection of Sampling Points*

At present (December 2012) the field work for the water supply component of the Allana Potash Project is on-going and a number of monitoring points have already been constructed. The presently (November 2012) available monitoring points are listed in Table 5-2.

Table 5.2 *Monitoring Points November 2012*

Well ID/year	X (long.)	Y (Let)	Z (m)
Hyde 1- I'm/2012	633773	1564080	-42.33
Hyde 1- I/2012	633772	1564089	-42.33
Hyde 2- I/2012	633710	1565869	-55.94
Hyde 2- It/2012	633711	1565861	-55.94
Hyde 3- I/2012	633450	1567628	-102.49
Hyde 3- It/2012	633451	1567621	-102.49
Hyde 4- I/2012	635017	1566985	-107.29
Hyde 4- I'm/2012	635013	1566994	-107.29
Hyde 5- I/2012	635609	1565236	-103.84
Hyde 6- I/2012	635826	1564148	-109.56
Hyde 6- It/2012	635836	1564145	-109.56

However, when additional information becomes available, a comprehensive monitoring program will be determined.

5.1.3 *Monitoring Protocols*

Standard Operating Procedures will be developed for groundwater monitoring both in terms of sampling and analytical protocols and for the selection and calibration of monitoring equipment. The protocols will include:

- Sampling protocols and quality control;
- General Sampling and Decontamination Procedures; and
- Water level measurements.

5.2 *VERIFICATION*

It is expected that relevant authorities (Minster of Water and Energy, Basin High Council or Basin Authorities) will conduct independent monitoring to verify the results submitted by Allana.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

The legal requirement for reporting in Ethiopia is presently not fully understood and local authorities are not developed yet. However groundwater sampling results will be collated into an annual monitoring report that will be submitted to the relevant authorities (Minster of Water and Energy, Basin High Council or Basin Authorities).

6.2 *LENDER REPORTING*

Reporting to Lenders will be done as per their requirements. Where there is a requirement for ad hoc reporting in the event of non-compliances, or should the need for remedial action plans be identified, reporting will be undertaken on this basis.

6.3 *INTERNAL REPORTING*

Quarterly reports will be compiled by the environmental function. These reports will include trend analysis, interpretation of results, recommendations on remedial measures and relevant figures and graphs.

The quarterly reports will be combined into an annual report which will include a trend analysis, identification of problem areas, recommendations and all historical results.

6.4 *COMMUNITY REPORTING*

Quarterly reports will be compiled by the environmental function. These reports will include basic trend analysis, simple interpretation of results, recommendations on remedial measures and relevant figures and other simple illustrative means.

Table 7.1 Pre Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> Analysis of potential impacts on water users and environment 	<ul style="list-style-type: none"> To establish good baseline data To evaluate seasonal variances To ensure uninterrupted water supply to Hamad Ela To ensure uninterrupted water supply to the Allana mining operation 	<ul style="list-style-type: none"> Establish baseline groundwater quality, level and use criteria, pre-construction Sourcing of construction water supply must consider impact on existing groundwater users Installation of further observation wells ¹⁴C isotope analysis (Further studies on recharge etc.) Sourcing of solution water supply Continued monitoring of observation wells Establish monitoring point that covers the upstream and downstream of the water supply to Hamad Ela and the camp to monitor the impact of water abstraction and the seasonal variation Establish monitoring points ± 3 in the Sabah River to monitor the seasonal variation and establish a baseline 	<p>Variables to monitor:</p> <ul style="list-style-type: none"> Refer to Section 5 <p>Monitoring locations:</p> <ul style="list-style-type: none"> Use presently available monitoring points <p>Monitoring Frequency:</p> <ul style="list-style-type: none"> Water level monthly Chemical quarterly 	<ul style="list-style-type: none"> The responsibility for the completion of mitigation measures proposed for pre-construction and during construction lies with the groundwater consultants reporting to Allana Mitigation measures proposed for pre-construction lies with Allana Responsibility for groundwater monitoring lies with Allana Specialist water quality analyses by off-site accredited laboratories

Table 7.2 Construction Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> • Limited groundwater drawdown (1-3 m) with drawdown cone within 300 m radius from abstraction borehole in the Sabah River alluvium for a 6 to 12 month period • Additional influx during the construction phase, resulting in higher water consumption and subsequent possible impact on present water supply • reduced yield of the presently used water supply borehole(s) • Soil and groundwater impact as a result of spillages and wastage during construction activities and / or potential runoff of spilled materials 	<ul style="list-style-type: none"> • To ensure protection of groundwater resources • To establish good baseline data • To evaluate seasonal variances • To ensure uninterrupted water supply to Hamad Ela • To produce an annual monitoring report which will include trend analyses, the identification of problem areas, recommendations and provision of all historical results 	<ul style="list-style-type: none"> • Establish baseline groundwater quality, level and use criteria, pre-construction • Sourcing of construction water supply must consider impact on existing groundwater users • Establish pre-construction baseline groundwater quality • Audit post construction, to identify potential spills, soil and groundwater impacts • Soil sampling of impacted soil areas for Volatile Organic Compounds, metal and Diesel Range Organic (DRO) components to confirm clean-up, following corrective action by contractor • Replace communal water supply if affected 	<p>Variables to monitor:</p> <ul style="list-style-type: none"> • Refer to <i>Section 5</i> <p>Monitoring locations:</p> <ul style="list-style-type: none"> • To be determined after the construction of the numerical model <p>Monitoring Frequency:</p> <ul style="list-style-type: none"> • Water level monthly • Chemical quarterly 	<ul style="list-style-type: none"> • The responsibility for the completion of mitigation measures proposed for pre-construction and during construction lies with the groundwater consultants reporting to Allana • Mitigation measures proposed for pre-construction and during construction lies with Allana • Responsibility for groundwater monitoring lies with Allana • Environmental function to ensure groundwater management during construction is as per this plan • Specialist water quality analyses by off-site accredited laboratories

Table 7.3 Operation Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> Water abstraction may lead to the deterioration of the habitat adjacent to the salt flats (e.g. palm trees) reduced yield of the presently used water supply borehole(s) Soil and groundwater impact as a result of spillages and wastage during construction activities and / or potential runoff of spilled materials 	<ul style="list-style-type: none"> To ensure protection of groundwater resources To establish good baseline data To evaluate seasonal variances To ensure uninterrupted water supply to Hamad Ela To produce an annual monitoring report which will include trend analyses, the identification of problem areas, recommendations and provision of all historical results 	<ul style="list-style-type: none"> Establish baseline groundwater quality, level and use criteria, pre-construction Sourcing of potable water supply must consider impact on existing groundwater users Establish pre-construction baseline groundwater quality Audit post construction, to identify potential spills, soil and groundwater impacts Soil sampling of impacted soil areas for Volatile Organic Compounds, metal and Diesel Range Organic (DRO) components to confirm clean-up, following corrective action by contractor The water levels in the community wells are to be monitored and should water levels in the wells drop by a significant level, then Allana has committed to providing alternative sources of water. This water should conform to the SANS Class I standard 	<p>Variables to monitor:</p> <ul style="list-style-type: none"> Refer to <i>Section 5</i> <p>Monitoring locations:</p> <ul style="list-style-type: none"> To be determined after the construction of the numerical model <p>Monitoring Frequency:</p> <ul style="list-style-type: none"> Water level monthly Chemical quarterly 	<ul style="list-style-type: none"> Mitigation measures proposed during operation lies with Allana Responsibility for groundwater monitoring lies with Allana Environmental function to ensure groundwater management during construction is as per this plan Environmental function Specialist water quality analyses by off-site accredited laboratories

Table 7.4 Decommissioning and Closure Phase

Impact	Objective	Mitigation/Management Measures	Monitoring Plan	Responsibility
<ul style="list-style-type: none"> Soil and groundwater impact as a result of spillages and wastage during construction activities and / or potential runoff of spilled materials 	<ul style="list-style-type: none"> To ensure proper decommissioning, demolition and decontamination of building structures and waste storage areas To monitor the post-mining rising water table and possible impacts on private groundwater use Modify groundwater monitoring plan to monitor natural attenuation 	<ul style="list-style-type: none"> Groundwater level and quality monitoring post closure until a positive environmental trend is detected Close out audit Soil clean-up and groundwater monitoring replace palm trees at the fringe of the salt pan if dewatering affected the area and palm trees died because of water abstraction 	<p>Variables to monitor:</p> <ul style="list-style-type: none"> Refer to <i>Section 5</i> <p>Monitoring locations:</p> <ul style="list-style-type: none"> To be determined after the construction of the numerical model <p>Monitoring Frequency (to be reviewed after one year):</p> <ul style="list-style-type: none"> Water level monthly Chemical quarterly to be reviewed after one year 	<ul style="list-style-type: none"> To be agreed with the relevant authorities

Volume III Annex H

Archaeology and Cultural Heritage Management Plan

Version 2.0

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LIST OF ACRONYMS

Abbreviation	Full Definition
ACH	Archaeological Cultural Heritage
ACHMP	Archaeology and Cultural Heritage Management Plan
ARCCH	Authority for Research and Conservation of Cultural Heritage
CH	Cultural Heritage
EIA	Environmental Impact Assessment
ESHIA	Environmental, Social and Health Impact Assessment
LCH	Living Cultural heritage

DEFINITIONS

Cultural Heritage: Research and Conservation of Ethiopian Cultural Heritage are regulated by Proclamation No.209/2000. The proclamation defines 'Cultural Heritage' as anything tangible or intangible which is the product of creativity and labour of man, in either pre-historic or historic times, that describes and witnesses to the evolution of nature and which has a major value in its scientific, historical, cultural, artistic and handicraft contents. According to Proclamation 209/2000, Cultural Heritage is divided into tangible and intangible heritage.

Tangible Cultural Heritage: Cultural heritage that can be seen and felt and includes immovable or moveable historical and manmade cultural heritage.

Immovable Cultural Heritage: Cultural heritage attached to the ground with a foundation and which can be moved only by dismantling and shall include: sites where cultural heritage have been discovered, paleontological historic and pre-historic archaeological places; buildings, memorial places, monuments and palaces; remains of ancient towns, burial places, cave paintings, and inscriptions as well as church, monastery, mosque or any other places of worship.

Movable Cultural Heritage: Cultural heritage not attached to the foundation and that can be moved from place to place easily and which are handed down from the past generation and shall include: parchment manuscripts, stone paintings and implements, sculptures and statues made of gold, silver, bronze, iron, copper or of any other mineral or wood, stone, inscriptions of skin, ivory, horn, archaeological and bone or earth or of any other material, and also paleontological remains; written and graphic documents or cinematographic and photographic documents or sound and video recordings; coins made of gold, silver, bronze, copper or of any other materials; and ethnographic implement, ornament or any other cultural object of nations, nationalities and peoples.

Replicable Cultural Heritage: Tangible forms of cultural heritage that can be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archaeological or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/or structures.

Nonreplicable Cultural Heritage: May relate to the social, economic, cultural, environmental, and climatic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the:

- Cultural heritage is unique or highly unusual for the period it represents;
or
- Cultural heritage is unique or highly unusual in linking several periods in the same site.

A Chance Find: Any cultural heritage site or associated material encountered during the course of construction works, as opposed to a find made in the course of intentional archaeological investigation. Chance Finds include, but are not limited to artefacts, archaeological deposits, ruins, monuments, and human remains.

A Cairn: A manmade cultural feature of piled or stacked stones. Cairns are a common cultural heritage feature of prehistoric societies and they are known to serve multiple functions, including: burial markers, territorial or location markers, or centres of ritual or ceremonial activity.

This document is the Archaeology and Cultural Heritage Management Plan (ACHMP) for the Dallol Potash Project. It seeks to provide detail regarding the implementation of avoidance, mitigation and management measures for impacts related to the Allana Potash Corporation (hereafter referred to as Allana) and items of archaeological or cultural heritage significance.

1.1

BACKGROUND AND CONTEXT

Allana is proposing to develop a potash solution mining facility in the Danakil Depression, Ethiopia (the Project). The development of the mine includes the construction of a pond site, brine field, processing plant, temporary logistic facilities, drill sites, access roads, and ancillary components associated with construction and operation of the mine. Project construction activities, and subsequent operation of the mining complex, may have direct physical impacts on known and suspected Cultural Heritage sites. In addition, construction related activities could potentially restrict local stakeholder access to Cultural Heritage sites.

As part of the Environmental Social and Health Impact Assessment (ESHIA) of the proposed Project, a baseline desktop and field surveys were conducted to gather data for the assessment of Project impacts on cultural heritage sites within the Project license area.

The baseline data gathering efforts discovered that the proposed Project area contains a number of physical and aboveground cultural resources. Currently, there are 145 known cultural sites within the Project area and the sites have been evaluated as being of high, medium, or low significance. All 145 physical cultural resources fall within the categories of either Archaeological Cultural Heritage (ACH) or Living Cultural Heritage (LCH).

There are seven known ACH sites that currently fall *within* a proposed Project component's footprint. The majority of the physical cultural resources (either ACH or LCH) do not fall within a proposed Project footprint. However, cultural resources that currently fall outside proposed project footprints might still be impacted, especially if the Project adjusts the construction plan layout or engages in ground disturbing activities that are not presently planned or sited.

Because no previous archaeological work had been conducted in this area of Ethiopia prior to ERM's baseline field survey, a system of classification had to be developed from field observations. Five general categories of site type were developed to describe the cultural heritage within Project area (*See Figure 1.1*). These include:

1. Prehistoric Circular Cairns;

2. Prehistoric Stacked Circular Cairns;
3. Prehistoric Conical (or Pyramid) Cairns;
4. Modern Burials; and
5. Modern Military Shooting Blinds.

The modern burials and shooting blinds are relatively easy to interpret as their functions are known to the modern populations. As for the *cairn* structures, their functions are unknown. Modern populations provided a variety of interpretations as to the functions of the *cairn* structures. From a scientific perspective, it is likely that the *cairn* structures are of significant age as they are similar to larger probable Late Stone Age monuments visited during the ERM fieldwork on the north-western slopes of North Erta-Ale.

The significance of the modern graves is believed to be of either of medium or high importance; however, local involvement would be required to more accurately assign significance values to modern graves if any are to be disturbed by the Project. All modern military shooting blinds are considered to be of low importance. Prehistoric *cairn* structures (circular, stacked circular and conical) have significance values ranging from low, to medium, to high.

Figure 1.1 *Examples of Each of the Five Categories of Cultural Heritage Sites within the Project License Area*



1.2 **POLICY STATEMENT AND OBJECTIVES**

1.2.1 **Policy Statement**

Allana developed a project Chance Find Policy for exploration activities prior to the ERM fieldwork with the objective of avoiding or reducing adverse effects to archaeological or heritage resources discovered during exploration and construction, and to identify roles and the responsibilities of person(s) designated by Allana. The mentioned policy and procedures will be updated based on the new archaeological findings made by the ERM investigations.

Further modifications may be made to the policy and procedures should additional finds be made or if the proposed project design changes substantially.

The current policy states that all employees and contractors will be made aware that archaeological or historic artefacts or materials may not be removed from sites by unauthorised personnel; the collection of such artefacts is strictly forbidden by the Ethiopian Government, and failure to comply may result in prosecution and assessment of penalties.

1.2.2 Objectives

The purpose of this Plan is to provide specific and updated management and mitigation measures to minimise potential impacts to cultural heritage sites. The objectives of this Plan are as follows:

- Identify the framework for compliance with Ethiopian national law, IFC Performance Standards, and African Development Bank Standards and Policies;
- Use the results of additional archaeological surveys to develop a program of archaeological excavations to collect data from and/or relocate cultural heritage sites that cannot be avoided through project redesign;
- Outline a Chance Finds Program to manage the discovery of Chance Finds during the construction phase;
- Establish a Cultural Heritage Training Program for project management and staff; and
- Define the roles and responsibilities for implementing the above management and mitigation measures.

1.3 PURPOSE AND SCOPE

1.3.1 Purpose

Cultural heritage is a scientific and historical resource as well as a key mechanism that supports local cultural identity. Cultural heritage can also serve to support community development and can be the basis for establishing a beneficial relationship between the Project and local communities.

The impacts from the proposed Project are described in detail in the ESHIA, which reflects the significance of impact and suggested management measures to address them. This ACHMP sets out initial steps within a high level framework, but requires implementation in a detailed policy and set of management procedures.

1.3.2 *Scope*

The ACHMP focuses on the receptors of the cultural heritage impacts of the proposed Project. Specifically, the ACHMP primarily addresses Archaeological Cultural Heritage (ACH).

1.4 *GENERAL PRINCIPALS FOR SAFEGUARDING CULTURAL HERITAGE*

The following principles are identified as key to strategic and effective cultural heritage safeguarding initiatives.

1.4.1 *Sustainable*

- Invest in the local cultural heritage through archaeological research and the promotion of the region's archaeological past.
- Engage the local communities in new archaeological discoveries and increase local capacity to manage and protect these cultural resources.

1.4.2 *Strategic*

- Focus on areas of greatest potential impact.
- Develop frameworks that responsibly employ cultural heritage in the best way to benefit communities.

1.4.3 *Measurable*

- Use participatory methods of monitoring and evaluation to build trust and local ownership of outcomes.
- Track changes in community perceptions to gain real time feedback on performance of the ACHMP.

A summary of the legal requirements and standards relevant to the ACHMP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

Article 51/3 of the Constitution of the Federal Democratic Republic of Ethiopia (1995) declares that the Federal Government 'shall establish and implement national standards and basic policy criteria for public health, education, science, and technology as well as for the protection and preservation of cultural and historical heritage'. The concept of sustainable development and environmental rights are also enshrined in article 43, 44 and 92 of the Constitution.

Based on the Constitution, the Council of Ministers of Ethiopia endorsed the Cultural Policy of Ethiopia in October 1997 and one of its main objectives is to enable the languages, heritage, history, handicraft, fine arts, oral literature, traditional lore, beliefs and other cultural features of the various nations, nationalities and peoples of Ethiopia to receive equal recognition. In addition the Cultural Policy states their objective is to respect, preserve and conserve these and pass them over to future generations.

Research and Conservation of Ethiopian Cultural Heritage are regulated by Proclamation No.209/2000 of Ethiopia.

Protection and conservation of cultural heritage from manmade and natural hazards is one of the duties and responsibilities of the Authority for Research and Conservation of Cultural Heritage (ARCCH). Article 42 of the same proclamation states:

- 1) *The Council of Ministers may, upon the recommendation of the Minister, declare any area as a reserved area and publish same in the Negarit Gazeta, where an assemblage of immovable Cultural Heritage is situated or where such an area is deemed to be an archaeological site.*
- 2) *Unless otherwise specifically decided by the Council of Ministers, no person may, without a permit issued by the Authority, carry out building or road construction, excavations of any type or any operation that may cause ground disturbance in an area declared reserved pursuant to Sub-Article (1) of this Article.*
- 3) *Any person who holds permit to conduct construction works in a reserved area and who discovers Cultural Heritage in the course of construction activities shall stop construction and shall forthwith report same in writing to the Authority.*

These indicate that the Authority has the power of issuing building permission for any work to be carried out in an area declared reserved by the Council of Ministers. It is also stated that the removal of any cultural heritage is to be carried out under strict supervision of the responsible authority, the ARCCH.

The Environmental Impact Assessment (EIA) Proclamation (No. 299/2002) has made EIA to be a mandatory legal prerequisite for the implementation of major development projects, programs and plans. This proclamation is a proactive tool seeking to integrate environmental, economic, cultural, and social considerations into a decision making process in a manner that promotes sustainable development. This Proclamation outlines the procedures for the management of environmental protection in case of public works. It states that impact means any changes to the environment or its components that may affect human health or safety, flora, fauna, soil, air, climate, natural and cultural heritage.

2.2 *IFC PERFORMANCE STANDARDS*

Consistent with the convention concerning the Protection of the World Cultural and Natural Heritage, IFC Performance Standard 8: Cultural Heritage aims to ensure that Projects protect cultural heritage in the course of their activities, support its preservation and promote the equitable sharing of benefits from the use of cultural heritage.

IFC Performance Standard 8 requires that Projects:

- Protect cultural heritage by ensuring that internationally recognised practices for the protection, field-based study, and documentation of cultural heritage are implemented. Where relevant this includes the retention of a competent professional to assist in the identification and protection of cultural heritage;
- Develop provisions for managing chance finds, requiring any chance find to be undisturbed until an assessment by a competent professional is completed and management actions are identified;
- Consult with affected communities to identify cultural heritage of importance and to incorporate their views into the decision making process. This should involve national and local regulatory agencies;
- Allow continued access to cultural heritage sites by affected communities within living memory for long-standing cultural purposes;
- Avoid impacts to cultural heritage, or where unfeasible, minimise (impacts) or restore in situ the functionality of replicable cultural heritage;

- Will not remove any non-replicable cultural heritage unless the following criteria are met: there are no technically or financially feasible alternatives, the overall benefit of the project outweigh the anticipated cultural heritage loss from removal and the removal of cultural heritage is conducted using the best available techniques; and
- Should not remove, significantly alter, or damage critical cultural heritage. In exceptional circumstances where impacts are unavoidable, the Project will use a process of Informed Consultation and Participation (ICP).

2.3

AFRICAN DEVELOPMENT BANK STANDARDS AND POLICIES

The African Development Bank Environmental and Social Assessment Procedures were produced and adopted in June 2001. Crosscutting issues prioritized by the bank include cultural heritage and the procedure states that the assessment should include cultural heritage and human interactions and impacts on the biosphere.

Allana is responsible for the implementation of this plan. Allana may delegate responsibility for executing specific elements of this plan to individual contractors, but Allana is responsible for the development and execution of audit and verification procedures to maintain appropriate levels of oversight.

It is essential that there are clear roles and responsibilities for implementing the ACHMP, including monitoring, evaluation and reporting. Allana will also seek to identify potential partners to contribute to, support and oversee the implementation of the ACHMP.

4.1 SUMMARY AND FRAMEWORK OF CULTURAL HERITAGE IMPACT MANAGEMENT

4.1.1 Summary

Activities associated with the development, construction, operation and decommissioning of the proposed Project may result in both direct and indirect physical impacts on known above ground and unknown subsurface cultural heritage sites within the Project concession area. In addition, construction activities may restrict local stakeholder access to locally significant cultural heritage sites such as modern, historic, and/or prehistoric graves.

The most effective way to manage or mitigate potential impacts to cultural heritage sites is by avoidance through project redesign. Where avoidance is not possible, impacts will be managed through:

- A stakeholder engagement program;
- Implementation of a Chance Finds Program;
- Provision of Cultural Heritage Training to Project staff;
- Post-assessment archaeological field excavations; and
- Post-assessment site relocation excavations.

4.1.2 Framework

Stakeholder Engagement Programme

The cultural heritage baseline survey identified a number of both prehistoric and modern cultural sites within the proposed Project area. A few of the modern cultural sites are associated with the villages of Alai Lai, Mororo, and Hamad Ela. A stakeholder engagement program will be executed in order to minimise the restricting of access to cultural heritage sites during the construction and operation phases of the mine. In addition, the stakeholder engagement program will seek the input of local communities and identify the roles and responsibilities of local stakeholders during the excavation of local cultural heritage sites and graves. This program will:

- Identify periods and frequency of site use in order to provide input into designing a construction schedule that will minimise access restrictions during the construction phase;
- Identify which cultural heritage sites are currently utilised or viewed as significant by local stakeholders in order to make recommendations for avoidance of these sites during the construction and operation phases of the mine; and

- Where avoidance is deemed to be unfeasible, establish compensation measures including, but not limited to, site relocation to mitigate impacts to significant cultural heritage sites.

The stakeholder engagement program will be implemented prior to beginning construction of the mine complex. The program will continue throughout the construction and operation phases to address stakeholder concerns as they arise.

Implementation of a Chance Finds Programme

While the project currently has a Chance Finds policy with associated procedures, these will be updated to reflect the current understanding of baseline conditions. Once updated, the Chance Finds Programme will be implemented to manage impacts to known, suspected, and unknown cultural heritage sites during the Project construction phase. It will also define the protocols and procedures for assessing any unanticipated cultural heritage sites or materials encountered during the Project construction phase. These protocols will include:

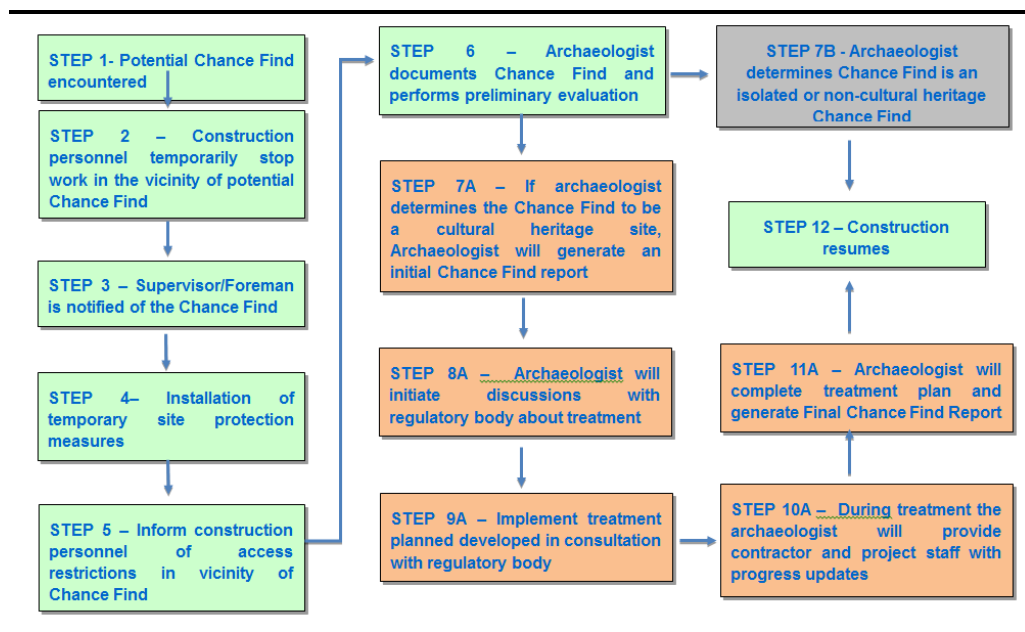
- Stop work authority and procedures for protecting cultural heritage materials encountered during construction;
- Procedures for the documentation and assessment of Chance Finds to determine if additional investigations are required;
- Protocols for consultation with Project management, cultural heritage specialists, and national regulatory bodies to design and implement additional investigations; and
- Roles and responsibilities of all stakeholders.

The Chance Finds protocol will be implemented through a combination of Project staff training and the use of an archaeological monitor(s), referred to as the watching brief archaeologist(s).

An international cultural heritage specialist will remain on-call and will provide oversight of the Chance Finds Programme. The on-call international cultural heritage specialist will be used on an as-needed-basis and will monitor the Chance Finds Programme from his/her desktop. The on-call international specialist will only conduct field monitoring in the case of unusual or highly sensitive and importance chance finds. A local archaeologist will also remain on-call on an as-needed-basis and will only conduct field monitoring if the proposed Project either encroaches on areas of known archaeological sensitivity, or encounters chance finds of low to moderate importance. The local archaeologist must be present during all ground disturbing works conducted within these sensitive zones. Ground works in other areas will be monitored by at least one member of the project staff that has received cultural heritage training.

Chance Finds will be reported by any member of the proposed Project; all Chance Finds must be evaluated by an archaeologist. This procedure complements the other mitigation measures previously described by addressing finds that may not be identified in the planned additional archaeological assessment. A generalised Chance Find response protocol is outlined in *Figure 4.1*.

Figure 4.1 *Diagram of Chance Finds Procedure*



Provision of Cultural Heritage Training

Allana will establish a Cultural Heritage Training Programme for project management and the construction contractor's management and field staff. The objective of the Cultural Heritage Training programme is to manage potential impacts to known and unknown cultural heritage sites by facilitating the identification and reporting of potential Chance Finds encountered during construction works. The program will consist of a lecture and classroom training; Chance Finds tool box talks/training for field staff; and the development of reference materials such as fliers, signage, and educational posters to be posted in the construction camp(s) and facilities. This training should be designed and delivered by an experienced international cultural heritage specialist and include training in:

- Defining Chance Finds;
- Identifying Chance Finds in the field;
- Local sensitivity to loss of access to and destruction of cultural heritage sites;

- Sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites;
- Chance Finds reporting procedures; and
- The consultation process with local and national stakeholders and regulatory agencies.

The presence of construction personnel with training in the identification and reporting of Chance Finds will reduce the number of watching brief archaeologists required to monitor construction works; allow the archaeologists to focus their efforts on monitoring ground works in the vicinity of known or suspected cultural heritage sites; and increase the number of onsite individuals with a basic ability to identify potential Chance Finds.

Post-Assessment Archaeological Excavations

Archaeological data recovery excavations will be performed at prehistoric cairn sites that cannot be avoided by the proposed Project. In order to fall under the category of prehistoric cairn, a cairn cannot be ascribed to any stakeholders. This will be determined through the stakeholder engagement programme. Archaeological excavations of these sites will consist of:

- Data recovery excavations resulting in the complete excavation and removal of the entire site; or
- Smaller scale, site sampling excavations designed to obtain sufficient data to characterise site type, use, and period of occupation.

The type of archaeological excavation employed at each site will be determined based on the results of the additional archaeological field assessment. At this time (absent engagement with national-level and local stakeholders), it is expected that data recovery excavations will be reserved for high significance sites that will sustain medium or high magnitude impacts or at medium significance sites that will sustain high magnitude impacts. Site sampling excavations will be performed at high significance sites sustaining low magnitude impacts, at medium significance sites that will sustain medium magnitude impacts and at low significance sites that will sustain high magnitude impacts.

Excavation methodologies will be developed in consultation with relevant national authorities. Excavation teams will be staffed by Ethiopian archaeologists with guidance (in scoping and during in-field operations) from experienced international cultural heritage specialists. All artefacts and/or human remains recovered from these excavations will be curated with the relevant national authority and this should wherever possible involve local stakeholders.

Site relocation excavations will be performed at modern grave sites claimed by extant stakeholders that cannot be avoided by the proposed Project. These sites can be subject to archaeological excavations with the permission of stakeholders. However, if stakeholder permission for scientific excavations is not obtained, these sites will be excavated with the goal of relocating both grave markers and any human remains outside the Project footprint. After excavation, the human remains will be reinterred in a new location and the associated grave marker will be reconstructed over the grave site. These reconstructions will be conceptual, in that they will be reasonable representations of the excavated features. The excavation methodology and re-internment plan will be developed in consultation with relevant national authorities and in consultation with local stakeholders. Excavation and relocation plans will strive to incorporate any religious or ritual requirements and/or oversight requested by local stakeholders. The excavation team will be staffed by Ethiopian archaeologists with guidance (in scoping and during in-field operations) from international cultural heritage specialists as well as any local stakeholders that wish to participate.

4.2 *MANAGEMENT DURING PRE-CONSTRUCTION PHASE*

4.2.1 *Impacts*

Pre-construction management actions are intended to reduce the following construction phase risks: 1) potential restriction of local stakeholder access to cultural heritage sites, 2) potential direct physical impacts on known and suspected cultural heritage sites and 3) potential significant Project delay.

4.2.2 *Objectives and Targets*

The objective of the pre-construction phase management and mitigation measures is to minimise the impact of mine construction on the five types of known and potential cultural heritage sites within the Project license area.

The construction phase management plan targets potential and known cultural heritage sites throughout the Project concession area. The five known types of cultural heritage sites include:

1. Prehistoric Circular Cairns;
2. Prehistoric Stacked Circular Cairns;
3. Prehistoric Conical Cairns;
4. Modern Graves; and
5. Modern Military Shooting Blinds

4.2.3 *Management Actions*

Impacts will be managed and/or mitigated through a combination of data recovery through avoidance, stakeholder engagement and potential post-

assessment excavations. If avoidance is not possible, then the following general actions should be undertaken (refer to *Section 4.1.2*):

- Stakeholder Engagement Program; and
- Post-assessment Archaeological and/or Site Relocation Excavations.

Specific mitigation measures include:

- Shift/adjust the northwest boundary of the proposed Plant Area to avoid high importance sites known to exist in its northwest corner; and
- Update and implement a Chance Finds Programme.

4.3 *MANAGEMENT DURING CONSTRUCTION PHASE*

4.3.1 *Impacts*

Impacts during Project construction includes construction groundworks at planned Project components. Accordingly, the Project during construction phase activities face the following risks: 1) potential restriction of local stakeholder access to cultural heritage sites; 2) potential direct physical impacts on known and suspected cultural heritage sites; and 3) potential significant delay in Project construction.

4.3.2 *Objectives and Targets*

The objective of the construction phase management measures is to minimise the impact of mine construction on unknown and potential cultural heritage sites within the Project license area. Although the pre-construction phase management tasks are intended to collect information on all known and suspected cultural heritage sites within the Project license area, there is the potential to encounter additional cultural heritage sites during construction.

The construction phase management plan targets potential and known cultural heritage sites throughout the Project concession area. Further, currently unknown archaeological sites may have no visible surface indicators, and will only be identified during ground disturbing activities. Accordingly, the operations phase management plan specifically targets the following resources:

1. Prehistoric Circular Cairns;
2. Prehistoric Stacked Circular Cairns;
3. Prehistoric Conical Cairns;
4. Modern Graves;
5. Modern Military Shooting Blinds; and
6. Unknown/undiscovered subsurface archaeological resources.

4.3.3

Management Actions

In addition to avoidance, in order to minimise impacts to cultural heritage sites during construction, the following construction phase management general actions will be undertaken (refer to *Section 4.1.2*):

- Temporary warning signage and marking will be installed at all cultural heritage sites that could be impacted by planned or unplanned Project activity;
- Implementation of a Chance Finds Program; and
- Provision of Cultural Heritage Training.

Specific mitigation measures include:

- Actively Monitor Non-footprint areas to be used to see if any cultural heritage sites might be impacted (e.g. new access roads); and
- Implement mitigation measures if avoidance is not possible.

If sites are to be impacted, implement the following procedure that varies by site importance:

- Sites of Negligible Importance:
 - Trained contractors monitor area during site preparation activities with an international cultural heritage specialist on-call in case of unexpected finds.
- Sites of Low Importance:
 - Trained environmental staff monitor contractor work during site preparation activities with international cultural heritage specialist on-call in case of unexpected finds.
- Sites of Medium Importance:
 - Trained environmental staff consult with on-call international cultural heritage specialist to decide on data recovery versus continued monitoring (with on-call option).
- Sites of High Importance:
 - A professional archaeologist undertakes data recovery prior to resumption of construction if avoidance is not possible.

4.4 *MANAGEMENT DURING OPERATIONS PHASE*

4.4.1 *Impacts*

Impacts during the Project operation phase include: 1) additional post-construction groundworks such as additional road construction or proposed Project component expansion and/or adjustment, and 2) unplanned impacts such as vehicle or mining machinery accidents. Accordingly, the Project faces the following risks during operation phase activities: 1) potential restriction of local stakeholder access to cultural heritage sites; 2) potential direct physical impacts on known and suspected cultural heritage sites; and 3) potential significant delay in Project operations.

4.4.2 *Objectives and Targets*

The objective of the operations phase management measures is to minimise the impact of mine operation on unknown and potential cultural heritage sites within the Project license area. Although the pre-construction and construction phase management tasks are intended to collect information on all known and suspected cultural heritage sites within the Project license area, there is the potential to encounter additional cultural heritage sites during operations.

The operations phase management plan targets potential and known cultural heritage sites throughout the Project concession area. Further, currently unknown archaeological sites may have no visible surface indicators, and will only be identified during ground disturbing activities. Accordingly, the operations phase management plan specifically targets the following resources:

1. Prehistoric Circular Cairns;
2. Prehistoric Stacked Circular Cairns;
3. Prehistoric Conical Cairns;
4. Modern Graves;
5. Modern Military Shooting Blinds; and
6. Unknown/undiscovered subsurface archaeological resources.

4.4.3 *Management Actions*

In order to minimise impacts to cultural heritage sites during mine operations, the following operations phase management general actions will be undertaken (refer to *Section 4.1.2*):

- Implementation of a Chance Finds Program; and
- Provision of Cultural Heritage Training.

4.5 *MANAGEMENT FOR DECOMMISSIONING AND CLOSURE*

4.5.1 *Impacts*

There are currently no anticipated impacts to cultural heritage associated with the decommissioning and closure of the mine complex; therefore, no decommissioning and closure plans have been provided for this cultural heritage management plan. Potential impacts to cultural heritage sites will be incorporated into any decommissioning and closure plan for the mine with an emphasis on avoiding impacts through closure design. Prior to commencing any decommissioning or closure, a specific archaeology and cultural heritage management plan will be created.

4.5.2 *Objectives and Targets*

The objective of any decommissioning and closure phase cultural heritage management plan will be to manage and/or mitigate any impacts to known, suspected, or unknown cultural heritage sites. This may be achieved by avoidance and project design.

4.5.3 *Management Actions*

Potential impacts to cultural heritage that will occur as a result of decommissioning and closure activities will be assessed and a management plan will be implemented to minimize or mitigate any impacts.

Specific decommissioning mitigation actions include:

- Development of mitigation measures for potential impacts to cultural heritage as part of the site closure and restoration plan.

4.6 *RESPONSIBILITY*

Allana is responsible for the implementation of these management efforts. Allana may delegate responsibility for executing specific elements of this plan to individual contractors, but Allana is responsible for the development and execution of audit and verification procedures to maintain appropriate levels of oversight.

5.1 MONITORING AND REPORTING MEASURES

Cultural Heritage staff, non-Cultural Heritage Project staff, Contractors, and subcontractors will be required to maintain records of monitoring, Chance Finds, and Chance Find response measures. These records of monitoring will include:

- Daily monitoring records indicating areas and activities monitored.
- Communications and instructions (such as stop work and resume work).
- Weekly reports summarizing reporting period activities including Chance Finds, assessments and evaluations, internal and external communications and instructions and supporting photographic documentation (or other reference materials as appropriate).
- An additional report aimed at fulfilling any specific local government cultural heritage requirements is also anticipated.
- Monthly reports summarizing monitoring and evaluation results, status of any site treatment measures, instructions to Contractor, and other internal and external communications.
- Performance reports on the ACHMP and associated activities will also be submitted to the IFC and any other lenders. Reports will be aligned to IFC Performance Standard 8.

5.2 MONITORING PROTOCOL

In the case of a Chance Find, Project activity will cease temporarily in the vicinity and the area shall be marked for avoidance. Construction supervisors, field personnel, and staff will be notified. The Project archaeologist will also be notified of the find if he or she is not already aware of the find. If the find is significant, then government cultural heritage representatives will be notified as well, in order that appropriate treatment strategies can be developed and approved. Site treatment scenarios to be considered include preservation in place through redesign or specialized construction techniques, and rescue excavations in advance of additional construction work if avoidance is not possible. After treatment work is agreed and any required excavations carried out, Project excavation or construction activity will be cleared to resume in the area (refer to *Figure 4.1*).

Table 6-1 Actions to Prioritise and Develop ACHMP Activities

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Pre-Construction	Construction	Operations					
Post-assessment Archaeological Data Recovery and/or Site Relocation Excavations							
✓			Recovery Excavations (if needed)	Archaeological data recovery excavations will be performed at prehistoric cairn sites that cannot be avoided by the proposed Project. Cultural sites can be subject to data recovery excavations. In order to fall under the category of prehistoric cairn, the site must be unable to be ascribed to any stakeholders, which will be determined through the Stakeholder Engagement Plan.	<ul style="list-style-type: none"> • Data recovery excavations result in the complete excavation and removal of the entire site; or • Smaller scale, site sampling excavations designed to obtain sufficient data to characterise site type, use, and period of occupation. • Site relocation excavations are performed at modern grave sites claimed by extant stakeholders that cannot be avoided by the proposed Project. • However, if stakeholder permission for scientific excavations is not obtained, these sites are excavated with the goal of relocating both grave markers and any human remains outside the Project footprint. 	Before any project ground disturbing activity.	Allana ELCR Department

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Pre-Construction	Construction	Operations					
Stakeholder Engagement Program							
✓			<p>Stakeholder Engagement Program</p>	<p>The cultural heritage baseline survey identified a number of both prehistoric and modern cultural sites within the proposed Project area.</p> <p>A few of the modern cultural sites are associated with the villages of Alai Lai, Mororo, and Hamad Ela.</p> <p>Engage local and traditional authorities regarding the provision of public infrastructure into in-migration hotspots. Develop a stakeholder engagement program which will seek to minimise access restriction to cultural heritage sites during Project activities.</p> <p>The stakeholder engagement program will also seek the input of local communities during the excavation of local cultural heritage sites and graves.</p>	<ul style="list-style-type: none"> • Periods and frequency of site use are identified in order to provide input into designing a construction schedule that will minimise access restrictions during the construction phase; • Cultural heritage sites which are currently utilised or viewed as significant by local stakeholders are identified in order to make recommendations for avoidance of these sites during the construction and operation phases of the mine; and • Where avoidance is not deemed feasible, compensation measures are established including, but not limited to, site relocation to mitigate impacts to significant cultural heritage sites. 	<p>During pre-construction, or whenever a cultural heritage site of significance will be impacted in some manner.</p>	<p>Allana ELCR Department.</p>

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Pre-Construction	Construction	Operations					
Development and Implementation of a Detailed Chance Finds Procedure							
✓	✓		<p>Develop and execute a Chance Finds Procedure</p>	<p>The Chance Finds Procedure will be developed before commencement of the construction phase.</p> <p>It will be implemented to manage impacts to known, suspected, and unknown cultural heritage sites during the Project construction phase.</p> <p>It will also define the protocols and procedures for assessing any unanticipated cultural heritage sites or materials encountered during the Project construction phase.</p>	<ul style="list-style-type: none"> • An international on-call cultural heritage specialist conducts field monitoring where necessary i.e. only in the case of unusual or highly sensitive chance finds. • A local on-call archaeologist conducts field monitoring if the proposed Project encroaches on archaeologically sensitive areas or encounters chance finds of low to moderate importance. • Procedures are outlined for protecting cultural heritage materials encountered during construction. • Protocols are developed for communicating with Project management, cultural heritage specialists, and national regulatory bodies to design and implement additional investigations. • Temporary warning signage and high visibility marking is installed at all cultural heritage sites that could be impacted by planned or unplanned Project activity (potentially reducing the risk of chance finds). 	<p>The Chance Finds Procedure will be developed during pre-construction. It will be implemented during construction, operations and whenever ground-breaking activities are planned.</p> <p>Inclusion of weekly, monthly and yearly reports.</p>	Allana ELCR Department

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Pre-Construction	Construction	Operations					
Provision of Cultural Heritage Training to Project Staff							
✓	✓		<p>Provision of Cultural Heritage Training to Project Staff</p>	<p>Allana will establish a Cultural Heritage Training Programme for project managers and the construction contractor's management and field staff.</p> <p>The program will consist of a lecture and classroom training; Chance Finds tool box talks/training for field staff; and the development of reference materials such as fliers, signage, and educational posters to be posted in the construction camp(s) and facilities.</p> <p>This training should be designed and delivered by an experienced international cultural heritage specialist and include training in:</p> <ul style="list-style-type: none"> • Defining Chance Finds; • Identifying Chance Finds in the field; • Local sensitivity to loss of access to and destruction of cultural heritage sites; • Sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites; • Chance Finds reporting procedures; and • The consultation process with local and national stakeholders and regulatory agencies. 	<ul style="list-style-type: none"> • All relevant staff have received training ahead of construction activity starting. 	<p>Provided to Project Staff during the construction and operations phase.</p>	<p>Allana ELCR Department</p>

Volume III Annex I

Community Development Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana for Review
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LIST OF ACRONYMS

Abbreviation	Full Definition
ABS	Alternative Basic Schools
AfDB	African Development Bank
APDA	Afar Pastoralist Development Association
AMREF	African Medical and Research Foundation
ANRS	Afar National Regional State
CDP	Community Development Plan
CHSSP	Community Health, Safety and Security Plan
CLO	Community Liaison Officer
DFID	Department for International Development
ELCR	Environmental, Land and Community Relations
ESHIA	Environmental, Social and Health Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FDRE	Federal Democratic Republic of Ethiopia
FGDs	Focus Group Discussions
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HC	Health Centre
HEP	Health Extension Programme
HR	Human Resources
HSDP IV	Health Sector Development Programme IV
IFC	International Finance Corporation
IRC	International Red Cross
IT	Information Technology
ITECH	International Training and Education Centre for Health
MDG	Millennium Development Goals
NGO	Non-Governmental Organizations
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PCDP	Public Consultation and Disclosure Plan
PRA	Participatory Rural Appraisal
PS	Performance Standards
RMC	Regional Member Countries
SEP	Stakeholder Engagement Plan
SES	Stakeholder Engagement Strategy
SPRP	Sourcing, Procurement and Recruitment Plan
UNDP	United Nations Development Programme
UNICEF	United Nations Fund for Children
WaSH	Water, Sanitation and Hygiene Programme

DEFINITIONS

Appreciative Enquiry: Takes an alternative approach to methods which look for barriers, or problems for a community and instead look at community aspirations and what currently works well in order to emphasise or amplify this.

Asset Mapping: A process which seeks to understand or 'map' the community's resources, as well as government, company and individual capacities and abilities which can be useful in the community development efforts. It also seeks to understand and promote connections between these communities, government agencies and the company.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 and 1878/2002 from the Ethiopian Ministry of Mines and Energy), in the Danakil Depression, Afar National Regional State in the Woreda of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans have been developed in light of public and authority comment, as well as in response to legal and policy requirements. The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

The area in which the Project is proposed is characterised by poverty, poor social infrastructure and limited government investment and oversight relative to other parts of Ethiopia. Levels of literacy are low and the economy is dependent on artisanal salt mining, collection and processing of palms, livestock and trading activities.

The development of the proposed Project will impact on the economy of the local villages and towns. Furthermore, the proposed Project is likely to instigate change to the local area, including change from a sparsely populated rural area, to an area with a higher concentration of quasi-urban settlements. Development and potential influx into the area will have a significant impact on the socio-economy of the local area, with a change in demographics, livelihoods and living conditions.

The communities potentially impacted by the proposed Project are considered to be vulnerable (i.e. they may be affected disproportionately by the proposed Project by virtue of, for example, their ethnicity, culture and dependence on a unique natural resource for their livelihood's, amongst other aspects). As such both the risks of negative impacts to these communities, and the opportunities for positive impact and benefit sharing are numerous.

There are high local expectations to share in and benefit from the planned mining development. Stakeholder engagement has confirmed that benefit sharing is a key criterion for gaining the social licence to operate. There have been examples of businesses (for example a large-scale commercial salt mining development) which have failed or been abandoned due to failure to secure local support and buy-in. Allana's success will depend on the extent of support it receives from local communities and leadership, and the sharing of

benefits is a key way in which to secure this. There is, therefore, a need to see investment in the short-term as well as medium to longer term, as a sign of commitment to the local area. Supporting community development initiatives is a powerful way, if undertaken well, to demonstrate both commitment and benefits sharing.

1.2 *METHODOLOGY*

A combination of the household survey and Focus Group Discussions (FGDs), using a mixture of Participatory Rural Appraisal (PRA) techniques were used for the preliminary identification of community development needs and priorities.

The household survey focused on identifying the most pressing concerns of communities both now and in the future. Coupled to this, the household survey asked community members what they valued most about their respective communities. The FGDs also worked to identify the greatest concerns of a community, in addition to stakeholder expectations of the proposed Project.

However, limited targeted data for community development needs and priorities were collected as this was beyond the scope of the ESHIA work undertaken, and it is recommended that a further assessment of community development needs and priorities be conducted through a PRA process. This should be undertaken in a manner that enables the full and active participation of all groups in the affected communities, including those that may be vulnerable or marginalised such as women, the elderly and children. Further social network analysis needs to also be conducted to map and measure the relationships among people, organisations and groups. This will clarify key actors, sub-groups roles and network characteristics that will answer questions about resources, information and influences ⁽¹⁾.

In addition Appreciative Enquiry and Assets Mapping could be conducted to discover, understand and encourage innovation through collecting stories and aspirations. This method enables communities, organisations and networks to take greater charge of their future and engage in strategic planning and visioning processes ⁽²⁾.

1.3 *POLICY STATEMENT AND OBJECTIVES*

1.3.1 *Policy Statement*

This Community Development Plan (CDP) has been developed to enhance the positive impacts of the Company's presence in the area, focusing where needs have been identified in the areas of health and education infrastructure, skills

(1) The International Finance Corporation, 2010

(2) The International Finance Corporation, 2010

and enterprise development as well as capacity building and livelihoods diversification. Underpinning the CDP is Allana's policy to provide local employment, support the local economy and act as a responsible neighbour and employer.

Allana's Public Consultation and Disclosure Plan (PCDP), which was developed for the proposed Project's exploration phase, is also relevant for the development of the CDP. Through the PCDP Allana has committed to a proactive and on-going dialogue with all agencies, organizations, and individuals with an interest in development of the proposed Project. The PCDP outlines and documents Allana's consultation and disclosure practices implemented for the proposed Project. Thus the engagement and mechanisms through which stakeholders have been engaged will inform and be used in the CDP.

1.4

OBJECTIVES

The main objectives of the CDP are as to:

- Provide long term sustainable development benefits to directly affected communities or groups of stakeholders that are in line with the Federal and District development goals, while adding business value to the company;
- Visibly demonstrate Allana's long-term commitment to the local area through adding long-term value to the proposed Project through building credibility, reputation and therefore support and trust within the local community, and other stakeholders;
- Ensure that potential negative development impacts from the proposed Project are turned into potential opportunities, not only for the stakeholders, but also for Allana;
- Provide a clear framework for Allana to manage the flow of community requests for support;
- Partner with existing organisations to jointly assist directly affected communities, potentially vulnerable groups, entrepreneurs and businesses to harness the economic development opportunities provided as a result of the proposed Project and withstand the potentially negative impacts associated with decommissioning and closure;
- Explore ways of assisting in building the capacity of local businesses to take up the direct and indirect opportunities provided by the proposed Project. The CDP should also look to maximise opportunities for procuring locally and investing in business development from as early as possible in the proposed Project life cycle; and

- Create economic development opportunities that facilitate local capacity in developing alternative livelihoods and independence from the proposed Project and Allana.

1.5 *PURPOSE*

Community investment is a key mechanism to support community development and to establish a mutually beneficial relationship between Allana and local communities.

The impacts from the proposed Dallol Potash Project are described in detail in the ESHIA, which rates the significance of these impacts, and suggested management measures to address them. These management measures will also address impacts associated with a changed sense of place, pressure on basic infrastructure and services, tension and conflict between villages, and changes to livelihood strategies. Although closely linked and at times intersecting, the CDP is designed to enhance and optimise the ability of communities to benefit from the positive impacts of the proposed Project over and above the impact management measures suggested in the ESHIA, thus the two are distinct.

To ensure that development efforts are both sustainable and reflect existing local or regional development plans where appropriate, the CDP is intended to be carried out in collaboration and partnership with local community members, community leadership, government authorities and Non-governmental Agencies (NGO's). The CDP sets out initial steps within a high level framework, but requires that a detailed Implementation Plan be developed for the CDP and consequential actions with responsibilities to be developed over time.

1.6 *SCOPE*

The CDP focuses on the receptors of the socio-economic impacts of the proposed Project. These receptors are found mainly at the local level; however various socio-economic impacts will also be felt at the regional and national level. The level at which socio-economic impacts may be felt are identified below:

- Economy, potential employees and business community of Ethiopia.
- Economy, potential employees and business community in the Afar National Regional State (ANRS).
- Communities within the Berahale and Dallol *Woredas* and Study Area.
- Vulnerable groups within the directly affected communities.

1.7 *GENERAL PRINCIPLES FOR CHOOSING COMMUNITY PROJECTS*

Recognising that the development of the Afar area and Ethiopia is the responsibility of the GoE and the ANRS Government, it will also benefit Allana to promote community development as a means to secure their social license to operate. To facilitate this, the following principles have been identified as key to strategic and effective community development initiatives.

1.7.1 *Sustainable*

- Avoid initiatives that create dependency and focus on projects that have long-term benefits that outlast the duration of the project.
- Ensure that projects have a viable exit / handover strategy.
- Invest in capacity building, participatory processes and organisational development to enable local communities, institutions and partners to grow in responsibility.
- Reinforce rather than replace local institutions and processes.

1.7.2 *Strategic*

- Address both short term and long term objectives through a strategic mix of investments.
- Focus on a few areas of greatest impact.
- Look beyond financial resources to use company assets, resources and expertise in the best way to benefit communities.

1.7.3 *Multi-Stakeholder Driven*

- Allana should position themselves as a partner in a multi-stakeholder process rather than the core actors in promoting local development; and
- Look to reduce company control and build local ownership and complementarity around shared interests.

1.7.4 *Measurable*

- Use participatory methods of monitoring and evaluation to build trust and local ownership of outcomes.
- Track changes in community perceptions to gain real time feedback on performance.

- Use outcome and impact indicators to measure the quantity and quality of change ⁽¹⁾.

1.8

LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS

The CDP has links to a number of other plans, particularly where recommendations are made to develop livelihood projects or undertake social investment for the mitigation or enhancement of environmental and social impacts.

The integration of all of these plans will ensure that these are considered within the context of the overall social development in the directly affected Study Area and long term sustainability of each investment is considered. Linkages and recommendations made in other social and environmental plans that need to be considered within the community development context, are set out in *Table 1.1*.

Table 1.1 *Linkage to other Management Plans*

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL MANAGEMENT PLANS	
Sourcing, Procurement and Recruitment Plan (SPRP)	Skills shortage in the local area is a significant barrier to local residents benefiting from the proposed Project. A key mechanism to address this is through the provision of education and skills training, and other measures aimed at building local skills capacity included in the CDP. These measures are relevant in meeting the objectives of the SPRP that include favouring the recruitment of local Afar (as is practicable given local skills and expertise), and where possible selecting local businesses and service providers ahead of selecting external groups ² .
Community Health, Safety and Security Management Plan (CHSSMP)	The CDP identifies health infrastructure and resources as a key community need, and has identified potential projects aimed at addressing these needs. Improvement to health infrastructure and resources will overlap with certain measures identified in the CHSSMP, and enhance the delivery of mitigation measures identified in the CHSSMP.

(1) The International Finance Corporation, 2010

² It is recognised that the local sourcing and procurement of goods and services from near to the proposed Project will be difficult. The types of equipment required for the proposed Project are specialised in nature and may not be available within Ethiopia. It is also understood that at the time of writing locally available goods are of mixed quality and availability, often not available in suitable volumes, and can be more expensive due to the logistic challenges associated with bringing them to site. In addition due to environmental limitation (extreme heat and small volumes of precipitation) minimal products are locally grown for sale. Due to these challenges it is understood that the local sourcing and procurement of goods may be limited or at a small scale during the construction and / or early operations phases. Nonetheless Allana will seek to encourage and facilitate the sourcing and procurement of goods and services locally as capacity and supply increases throughout the Life of Mine (LoM).

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL MANAGEMNT PLANS	
Stakeholder Engagement Plan and Strategy (SEP and SES)	The CDP identifies requirements for stakeholder engagement necessary to confirm local needs, and discuss priorities and options for community development projects. This requirement has been taken into account in developing the SES. In addition the SEP and SES will highlight community concerns identified to date, including concerns and requests relating to community development.

A summary of the legal requirements and standards relevant to the CDP are presented below.

2.1 NATIONAL LEGISLATION AND POLICY

2.1.1 *Constitution of the Federal Democratic Republic of Ethiopia*

The concept of Sustainable Development and environmental rights are enshrined in Articles 43, 44 and 92 of the Constitution of the Federal Democratic Republic of Ethiopia (FDRE).

In Article 43 that focuses on the Right to Development, people's right include the right to:

- Improved living standards and to sustainable development.
- Participate in national development and, in particular, to be consulted with respect to policies and projects affecting their community; and
- The enhancement of their capacities for development and to meet their basic needs, are recognised.

In Article 44 on Environmental Rights, all persons are entitled to:

- Live in a clean and healthy environment; and
- Be compensated for loss, including relocation with adequate state assistance.

In Article 92: Environmental Objectives, it is declared that:

- Government shall ensure that all Ethiopians live in a clean and healthy environment.
- Programs and projects design shall not damage or destroy the environment.
- Peoples have the right to full consultation and expression of views; and
- Government and citizens have the duty to protect the environment.

The Environmental Policy of Ethiopia (*Section 2.1.2* below) also makes provision for social aspects and provides for the protection of both natural and

human environments. It also recognizes the importance of public participation in proposed developments.

However apart from the articles and policies mentioned above, Ethiopian legislation makes little provision for social aspects of any development.

2.1.2 *The Environmental Policy of Ethiopia, 1997*

The Environmental Policy of Ethiopia (EPE), 1997 was established by the Environmental Protection Authority (EPA) of Ethiopia in collaboration with the Ministry of Economic Development and Cooperation. Key elements of this policy that are of relevance to this project include the following:

- **Section 3.6: Mineral Resources:** The policy acknowledges that mineral resources are not renewable resources. The policy promotes environmental protection, environmental education and awareness for the public and safe mining methodologies. Terms and conditions of a contract should be utilised to ensure that all pre-development environmental impact studies, appropriate mitigation and reclamation measures are taken during and after the operations.
- **Section 4.9:** Requires an Environmental Impact Assessment (EIA) to consider the physical, biological, social, socio-economic, political and cultural impacts and conditions of a development. For private sector developments, the developer has the ultimate responsibility to ensure that a preliminary and a full EIA are performed. Mitigation and contingency plans are compulsory elements in an EIA. The policy also requires that the EIA process involves independent review and public comments.

Consistent with Article 44 of the Constitution, the policy provides that the people are assured of their fundamental rights to an environment that is clean and healthy.

2.2 NATIONAL STRATEGIES AND PLANS

2.2.1 *National Growth and Transformation Plan (2010/11 to 2014/15)*

Summary of Plan

The National Growth and Transformation Plan (GTP) is a medium term (5 year) strategic framework which sets out growth and investment targets for Ethiopia. The GTP is directed to achieving Ethiopia's long term vision and sustaining the rapid and broad based economic growth experienced during the past several years.

In order to realise this growth federal level government will need to build and focus on the economies of the various economic sectors (namely - agriculture and rural development, trade and industry, mining and infrastructure development).

In the mining sector, the government's main focus is to create a conducive environment for private investors to participate in exploring and developing the countries mineral resources (of which potash is included).

Applicability to Project

The proposed Dallol Potash Project in the Danakil Depression of Ethiopia is aiding the Ethiopian Government in achieving broad based economic development, especially within the mining sector.

2.2.2 *Plan for Accelerated and Sustained Development to End Poverty (2005/06 to 2009/10)*

Summary of Plan

The Plan for Accelerated and Sustained Development to End Poverty (PASDEP) compliments the GTP. The main objective of the PASDEP aims to lay out the directions associated around accelerated, sustained and people centred economic development as well as to pave the ground work for the attainment of the Millennium Development Goals (MDG's) ⁽¹⁾ by 2015. The MDG's include:

- eradicate extreme poverty and hunger;
- achieve universal primary education;
- promote gender equality and empowerment of women;
- reduce child mortality;
- improve maternal health;
- combat HIV/AIDS, malaria and other diseases;
- ensure environmental sustainability; and
- foster a general partnership for development.

Applicability to Project

The proposed Project is aiding the Ethiopian Government in achieving economic development, especially within the mining sector.

In addition, the social impact assessment associated with the ESHIA has taken into account the social goals set out in the plan.

(1) The Millennium Development Goals (MDGs) are eight international development goals that all 193 United Nations member states and at least 23 international organizations have agreed to achieve by the year 2015 - UNDP, 2010

2.3 *INTERNATIONAL LEGISLATION AND POLICY*

2.3.1 *IFC Performance Standards*

The International Finance Corporation (IFC) Performance Standard (PS) on the *Assessment and Management of Environmental and Social Risks and Impacts* is relevant to social development and to addressing impacts over the lifetime of the Project.

The IFC also outlines the principles for successful and effective community investment in the *Strategic Community Investment: A Good Practice Handbook for Companies Doing Business in Emerging Markets.* "

2.3.2 *African Development Bank Standards and Policies*

Environmental and Social Assessment Procedures for African Development Bank's Public Sector Operation (June, 2001)

The objective of the overarching African Development Bank (AfDB) Group is to spur sustainable economic development and social progress in its regional member countries, and thus contribute to poverty reduction.

The environmental and social assessment (ESIA) procedures set out by the AfDB ensure that the Bank's projects, programmes and plans have been designed to make them environmentally and socially sustainable, and that they have involved stakeholder participation and timely public disclosure. Projects requiring the development of an environmental and social management plan (ESMP) must ensure that the number and complexity of measures required are proportional so as to ensure the project's environmental and social sustainability.

Integrated Environmental and Social Impact Assessment Guidelines (October 2003)

The AfDB completed a review of its environmental assessment procedures and integrated the bank's new vision and emerging priorities, particularly crosscutting themes. The new procedures, entitled Environmental and Social Assessment Procedures were produced and adopted in June 2001. Crosscutting issues prioritised by the bank include the following:

- **Poverty:** a multidimensional concept that covers income and non-income aspects. It is a state of livelihood characterised by material deprivation, food insecurity and lack of access to productive means.
- **Environment:** encompassing air, water, soil, flora, fauna, landscape, cultural heritage and human interactions and impacts on the biosphere.
- **Population:** demographics and factors influencing population growth. Population covers a broad range of issues such as population

characteristics and dynamics (size, density, age and gender structure, ethnics, life expectancy, internal and international migration, rural/urban migration, etc.), education and health, economic growth and employment as well as agricultural and natural resources.

- Health: complete state of physical, mental, social, and spiritual well-being. Consequently many factors influence people's health, particularly economic opportunities, the social context and the natural environment.
- Gender: taking into account gender differences in roles, rights, priorities, opportunities and constraints.
- Participation – the goal of actively involving the project stakeholders, particularly those who stand to gain or to lose from a project.

Projects should enhance positive impacts and, in the following order, on prevention, minimise, mitigate or compensate adverse impacts. This approach implies that most of the measures should be related to project design, location and implementation rather than curative interventions that handle adverse outcomes after the emergence of the anticipated problems.

Private Sector Development Policy (draft)

Towards the goal of sustainable development, the AfDB's Private Sector Development Policy (draft 2012) focuses on assisting its regional member countries (RMCs) achieve inclusive economic growth under three major objectives:

- Improvement of the investment and business climate to strengthen international competitiveness;
- Development of social and economic infrastructures and increasing access by households and enterprises to reliable, quality services; and
- Development of a vibrant private sector ecosystem of industrial and commercial enterprises, financial intermediaries, capital markets, and corporate services firms.

The responsibility for implementing this plan lies with Allana's Environment, Land and Community Relations (ELCR) Department with support from other functions within the Allana Project team who will need to support the resourcing and roll-out of the CDP, specifically Human Resources (HR) and Procurement.

It is essential that there are clear roles and responsibilities for implementing the CDP, including monitoring, evaluation and reporting. It is suggested that these activities are carried out by a Community Liaison Officer (CLO) or similar role, who can put aside time and resources to fulfil their responsibilities.

Allana will also seek to identify potential partners to contribute to, support and oversee the implementation of the community development projects identified. The appropriate partners will become apparent once the potential community development projects are confirmed, but are likely to include NGOs, government departments and the community itself. NGOs have historically been very effective partners in implementing community development activities in Ethiopia and elsewhere in Africa, and the identification of NGOs which might assist Allana will be a priority activity in the CDP.

An Investment Committee will be established with responsibility for leading strategy and decision making about community investment. Members of this committee will include representatives from the local recipient community, the Allana Project team and local development experts including government, NGOs and other stakeholders. Community consultation via this Investment Committee will ensure that the development needs prioritised by the community and those identified by Allana are aligned. The beneficiaries and partners must be directly involved in designing the project, including the principles, agreements and key performance indicators discussed below.

4.1 NEEDS ANALYSIS

The results of the social baseline data collection activities have been used to identify and analyse community needs within the Study Area, and will inform the development of the CDP and to decide upon key initiatives for Allana's CDP. It is important to note that specific engagement on the subject of community investment needs and activities has not yet taken place.

At *present*, based on the social baseline data collection, the most pressing concerns for communities were identified to be:

- Availability, quality and access to health services.
- Access and availability of drinking water; and
- Lack of availability of electricity in households.

Communities were also asked to identify what their greatest concerns about the *future* of their community were. The majority of respondents identified the following as their greatest concerns:

- Availability, quality and access to health services.
- Access and availability of drinking water; and
- Changes in lifestyle.

The identification of potential changes in lifestyle as a concern indicates that communities are aware of the changes that are likely to occur in the Study Area, mainly attributed to the presence of mining companies and the construction of the government road.

The seven villages surveyed across the Study Area identified that their existing relationships, solidarity and community networks are what they value most about their community. Strong Afar identity and social cohesion were features that were clearly evident during engagement and the baseline survey. Coupled with the community concern to changes in existing lifestyle indicates that any community investment should ensure that Afar identity and culture is encouraged, alongside the existence and acknowledgement of other ethnic groups.

4.2 COMMUNITY DEVELOPMENT THEMES

The CDP focuses on a set of community development and benefit sharing themes as opposed to impact management actions, however it is important to note that the two will be in some cases linked and cannot therefore be disaggregated.

The key themes identified in the CDP include:

1. Health, education and other infrastructure;
2. Enterprise development and livelihoods diversification; and
3. Education, skills and capacity development.

Within the themes are activities identified that can be implemented and will bring about short, medium and long-term benefits to communities:

- Short-term is defined as 3 to 6 months.
- Medium-term is defined as 6 months to 1 year; and
- Long-term is defined as 1 to 3 years.

At the end of each section is a graphic to summarise proposed investment activities with suggested timescales.

4.2.1 *Health, Education and Other Infrastructure*

The Study Area demonstrates a lack of basic and necessary infrastructure. Therefore investment in infrastructure development is largely relevant. Specific areas for investment in infrastructure are discussed in this section, along with a summary of community development initiatives aligned to infrastructural needs (*Figure 4.1*).

Health Needs

- A key factor that dictates the prevalence of disease outbreak is the level of access to clean water and sanitation. Household access to clean water is recorded at approximately 50% at the local level, a large proportion of which is derived from residents in Berahale Town.
- Access to water was perceived as a major issue among communities, and pressure on existing infrastructure as more people move into the area.
- Only Berahale, Hamad Ela and Ambule have access to a communal water tap (pumped from a borehole). The provision of water taps was reported to be a noticeable improvement in the villages' water sources.
- 88.6% of households surveyed indicated that solid waste disposal facilities are not available or unsatisfactory, demonstrating the lack of waste infrastructure in the Study Area.
- Five out of seven of the villages do not have any formal toilet facilities, and defecation in waste areas is the only option.
- 87.7% of respondents indicated that sanitation and toilet facilities were not available or unsatisfactory.

- Waste disposal facilities do not exist in the majority of villages. Berahale Town was observed to have better access to communal areas where waste could be disposed however dumping of waste in open spaces, and make-shift disposal facilities are common; and
- The local Health Centre (HC) stated that only 6% of households in Berahale Woreda had access to a basic latrine.
- The household survey identified that local residents deem healthcare services as inadequate and will rely on the hospital in Mekele in times of emergency / serious illness.
- Local healthcare workers identify that harsh environmental conditions and lack of transport prohibits them from reaching full coverage of the Health Extension Programme (HEP) and providing training on Water, Sanitation and Hygiene (WaSH). All households are eligible for training on the government HEP but only 4% have received it in the Woreda.

Education Needs

- There is only one secondary school in the Study Area (Berahale Town) which is a considerable distance in the absence of public transport. The long distance needed to reach schools and the money required to cover the costs of accommodation, food and transport for secondary school students were cited as barriers to attendance at schools.
- Residents highlighted the inadequacy of the school facilities available in their villages with limited text books, libraries, desks, benches, toilets and water supplies.
- The unavailability of night school for adults was also identified as a problem; participants at FGDs in Hamad Ela noted that the provision of a night school would allow them to pursue their education while maintaining income; and
- The local Education Office has commented that resources are limited, books are outdated and not aligned to the national curriculum, and there is a shortage of skilled teachers available / willing to work in the area.

Stakeholder expectations have also been used in the selection of investment areas for Allana. The following activities are suggested to address this development theme:

Healthcare Infrastructure

Several communities have stated that Allana has promised to provide health care to Hamad Ela mainly through restoring the non-functional health post (work on the Hamad Ela Health Post commenced in December 2012). Several local stakeholders have stated that they value the assistance that they received

from Allana's onsite medical services, and have questioned why this has stopped. Communities have also frequently requested for transportation support to the nearest health facilities in Berahale.

Any investment / collaboration with the local health services should pay attention to child and maternal health, as the two groups have been identified to be the most vulnerable groups in terms of their health status. In addition collaboration between local healthcare services with traditional governance mechanisms in addressing key health issues has been recommended.

Investment in Social Welfare

Allana should work closely with local healthcare services in monitoring changes in levels of community health and wellbeing related to the change in "sense of place". This could include supporting additional social welfare/social worker positions in the area to assist people struggling with the transition.

Waste Infrastructure

It is recommended that in collaboration with local government, Allana implement solid waste management systems in close proximity to the project (specifically Hamad Ela) and also those areas which are identified to be impacted by influx.

Water Infrastructure

Access to water is perceived as a major issue, and has constantly been highlighted in the baseline survey and engagement sessions. Villages in closer proximity to the Study Area have indicated that Allana have promised to construct boreholes for their communities, in particular the villages of Mororo and Alai Lai. In addition residents have also expressed concern over pressure on existing infrastructure as more people move into the area.

It is suggested that Allana improve community access to potable water by providing boreholes and community taps. It is recommended that if Allana provide / support the development of community infrastructure including latrines and boreholes a committee should be identified that are responsible for the management and maintenance of projects. It may also be beneficial to provide training to committee members prior to construction of infrastructure in the event that any malfunction occurs.

Sanitation Infrastructure

It is recommended that in collaboration with an NGO as well as local government Allana seek to improve community sanitation through building latrines¹, particularly in schools or public / community areas.

¹ Potentially considering 'waterless toilets' given water shortages in the area.

In addition Allana should provide support to the local government training on health and sanitation programmes including the HEP and Water, Sanitation and Hygiene (WaSH) programmes for households in the Study Area.

Education Infrastructure

Allana assisted the local school in Berahale by providing computers to the school. This has been highlighted as a success in several engagement sessions. The local Education Office has expressed the hope that collaboration between themselves and Allana will continue. To improve access to education for both children and adults, Allana should consider working with government to support the creation or improvement of central as well as Alternative Basic Schools (ABS) designed to suit the special needs and constraints of pastoral life within. To assist in resourcing these education facilities, Allana should consider providing bursaries to secondary school students / other relevant applicants to attend university, including teacher training courses with incentives to return to the local area. Some of these elements are discussed in *Section 4.2.3* below.

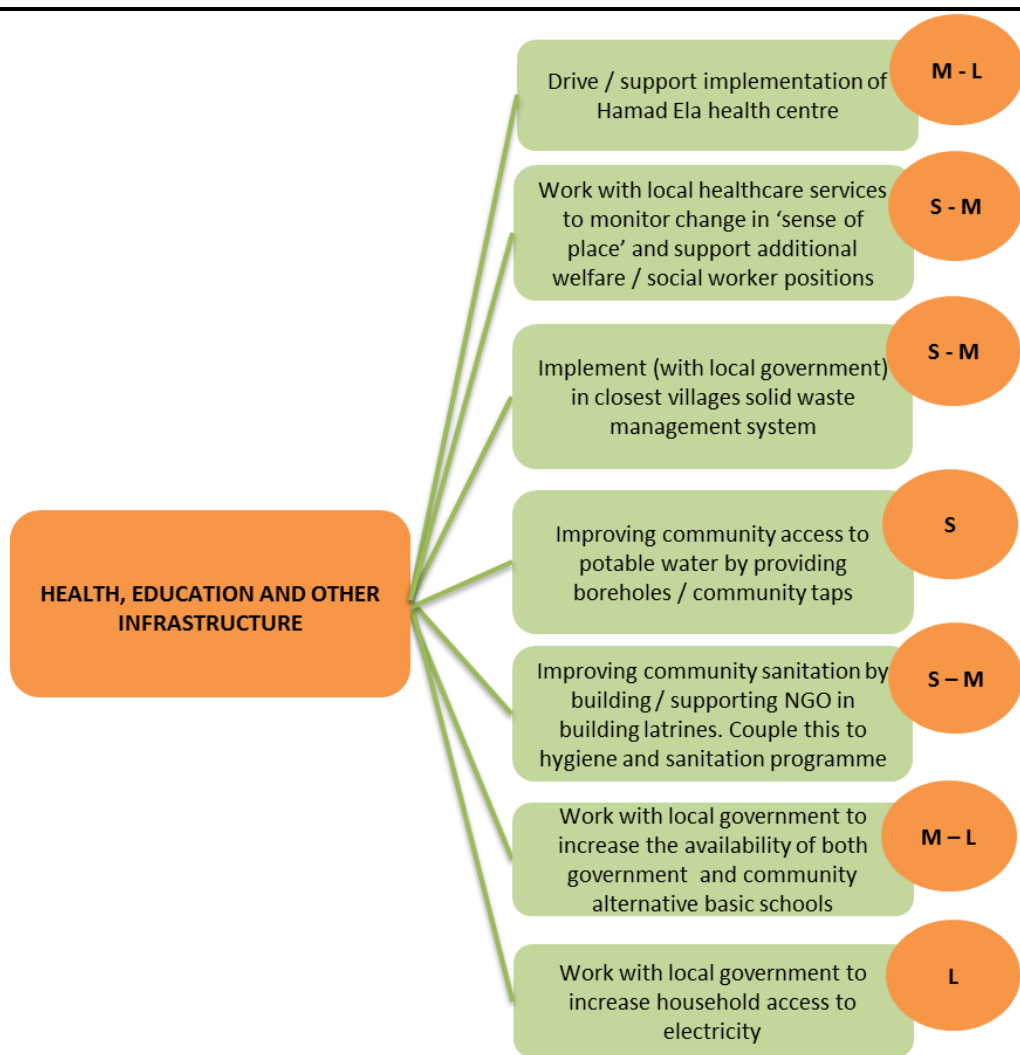
Electricity Infrastructure

The provision of electricity has been identified as a potential long-term investment as this would require considerable collaboration with various branches of the government. It is recommended that Allana work with government long-term to increase household access to electricity, recognising that the electrification will require sustainable management and collaboration with government to prevent dependency on Allana for generator fuel, repairs etc.

Transportation Infrastructure

Supporting the development of transportation services either for public transport or emergency services may be better addressed through improving community connectivity and healthcare services, dependent on Allana's policies. On the other hand the lack of transport services and the resulting impacts on education and health could be addressed through helping to support a transport cooperative whereby interested community members provide a transportation service as a local business. Allana could help to facilitate this by seeking partners to 'donate' a bus (which the cooperative would pay back in instalments through the operation of the bus service). This could be coupled to the recommended business skills training provided under the Education and Skills Development programme.

Figure 4.1 *Summary of Themed Community Development Plan Activities and Associated Timelines*



Legend

- S Short term (3-6 months)
- S-M Short to medium term
- M Medium term (6 months – 1 year)
- M-L Medium to long term
- L Long term (1 to 3 years)

4.2.2 *Enterprise Development and Livelihoods Diversification*

Allana should look to develop and support an appropriate programme that focuses on enterprise development and livelihood diversification to improve levels of income in the Study Area, and reduce dependence on mining in the

long-term. This has been identified as an area for investment for the following reasons:

- There is large reliance on primary livelihoods for income creation, and to purchase subsistence items including food, medication and clothing;
- Lack of livelihoods diversification, low livelihood productivity and sole reliance on key livelihoods including the salt trade, rearing livestock and palm collection;
- Lack of local procurement networks available in the Study Area due to restrictions on transportation services, skills and financial capital;
- Women from the FGDs have identified that livelihood and vocational training should be given including creating local handicrafts for tourism souvenirs, farming etc. However the applicability of these will need to be further interrogated as impacts and reliance on tourism are yet to be determined, and the ability for households to engage in agriculture in the area; and
- The impacts associated with eventual mine closure will be more manageable in a more diverse local economy where dependence on mining as a source of income is reduced as far as is possible.

Enterprise development and livelihoods diversification should closely link to vocational skills programmes as well as skills and capacity building (discussed in *Section 4.2.3*).

The following activities are suggested to address this development theme, and are also summarised in *Figure 4.2*.

Investment in Local Procurement Networks

A key aim of enterprise development should be to identify means to improve local procurement networks and supply chains for the provision of goods and services. The local Woreda office suggested that the amount of water, food and other basic goods procured from the Study Area should be increased, rather than importing from outside the region. Allana can conduct a review of what is currently procured locally and what is brought in, and identify who in the community could be supported to increase procurement networks (such as asking local suppliers to bring in new products). Guarantee of demand will work to ensure that local businesses and supply networks can develop. It is recognised that the local sourcing and procurement of goods and services from near to the proposed Project will be difficult due to absence of reliable goods and other limitations. Due to these challenges it is understood that the local sourcing and procurement of goods may be limited or at a small scale during the construction and / or early operations phases. Nonetheless Allana will seek to encourage and facilitate the sourcing and procurement of goods

and services locally as capacity and supply increases throughout the Life of Mine (LoM).

Increased Income Generation Opportunities from Direct and Indirect Contracting at a Local, Regional and National Level

Through coordination between Allana, other local mining companies and the Government of Ethiopia (GoE), enterprise and skill needs will be identified in relation to other existing and potential future industrial developments in the area. To achieve this Allana should continue to engage relevant departments of the GoE to proactively plan for the existing development process. Where possible training and education programmes will then be developed in partnership to maximise their benefit and reduce costs. Collaboration with government and other mining companies will allow for collective funding and collaboration of potential skills development and training programmes, developing a pool of skilled local employees potentially benefitting all parties involved.

Micro-Finance Provision and Enterprise Development Support

As part of their Community Investment programme Allana should work with appropriate partner organisations to develop a micro-finance organisation targeted at local Afar people allowing them access to credit to help develop small businesses, increase banking habits and improve access to markets.

In addition Allana should work with a relevant partner organisation to facilitate a programme to support and encourage enterprise and entrepreneurial development by local Afar people. This may include identifying local businesses and entrepreneurs to provide mentoring and training to people to help understand the current opportunities and limiting factors to business development.

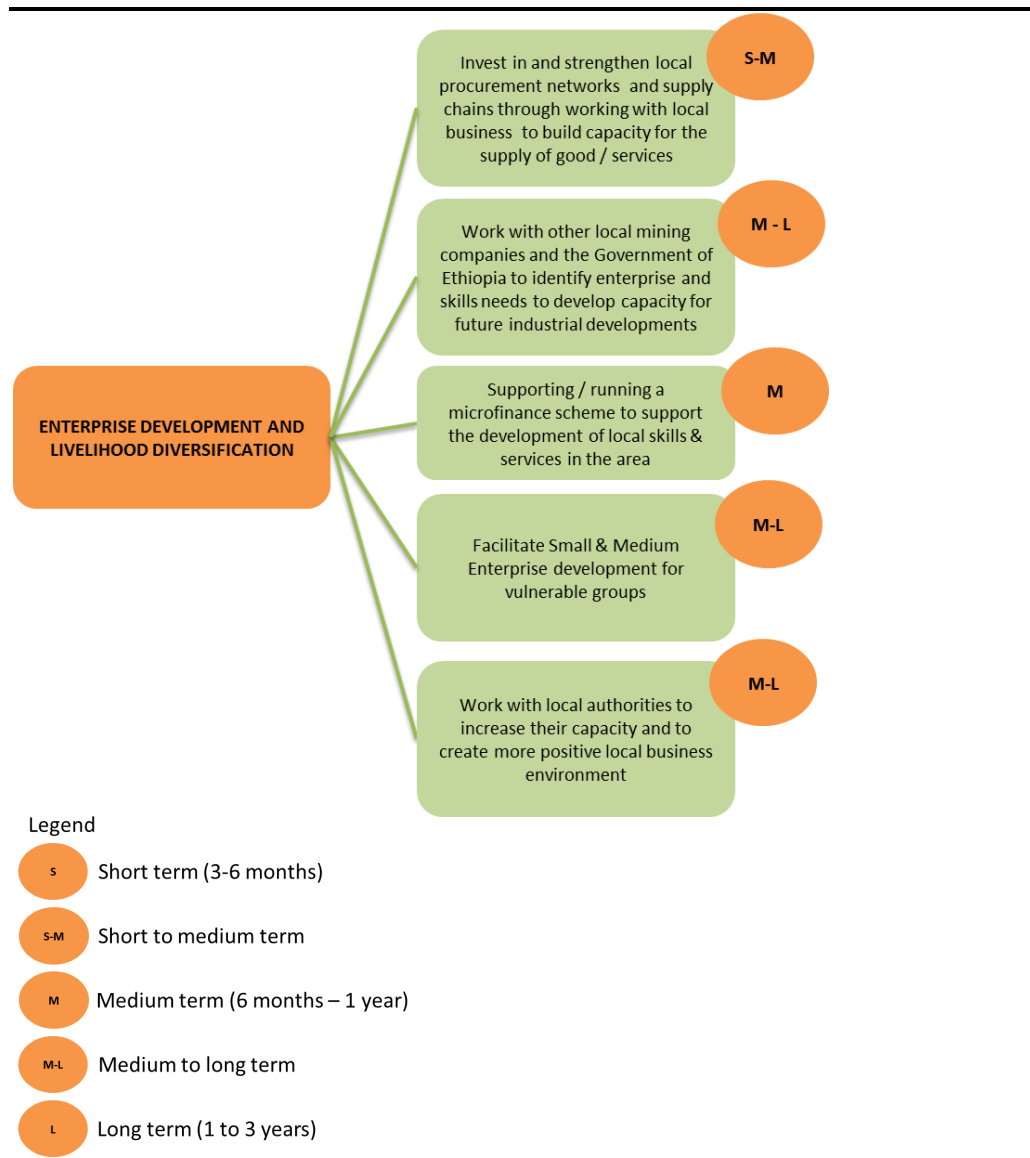
Promote Access to New Opportunities to Vulnerable Groups

Beyond providing micro-finance opportunities to local Afar communities, Allana should explore ways of promoting access to new economic opportunities to vulnerable or marginalised groups, such as female headed households, people with disabilities, and other marginalised groups.

Support Increased Capacity of Local Authorities

Allana should work with local authorities to create a more positive local business environment, to maximize the local benefit and manage the impacts of increased in-migration. This may include identifying sites and developing infrastructure for markets, providing greater forms of policing and protection around markets and establishing fair and appropriate mechanisms for the generation of revenue by local authorities.

Figure 4.2 *Summary of Themed Community Development Plan Activities and Associated Timelines*



4.2.3 *Education, Skills and Capacity Building*

Education, skills and enterprise development will be supported by the provision of health and education infrastructure, and indeed it will support the success of any enterprise development and livelihoods diversification efforts. It has been identified as an area for community investment for the reasons provided below. *Figure 4.3* provides a summary of proposed community development activities.

- Stakeholders in the Study Area have repeatedly raised the issue that formal employment opportunities are allocated to foreigners / highlanders. This is due to low literacy and skills levels in the local area;

- Low formal education - the majority of household survey respondents (62.5%) have not received any form of formal education, and only 6.1% have completed the second cycle of school;
- Only 10.1% of survey respondents above the age of ten years know how to read and write in Afarigna. Literacy in other languages varies; on average 12.0% of respondents can read and write in Amharic, 5.8% in Tigrigna and 6.42% in English;
- There are almost no certified skills in the area; and
- Employment of local Afar is constrained by low levels of literacy, English language capability and formal employment experience.

The following activities are suggested to address this development theme:

Literacy Training

It is suggested that Allana provide literacy classes for employees and local communities, including evening classes for adults.

Information Technology Training

It is suggested that Allana provide IT ⁽¹⁾ skills training for employees, and for local high school students to increase capacity and encourage skills-transfer.

Vocational Skills Development

Due to skills shortages in the Study Area education and skills training will be provided to residents of the local communities to increase local employment capacity. This training will be designed into short and medium term programs targeted to provide local candidates eligible at the construction and production phases. Preliminary training programmes will be designed to up-skill local candidates to allow them to attain positions within construction and operations teams. This may include training in:

- Health and safety.
- Safe driving skills.
- Equipment operation.
- Camp services (cooking, cleaning etc.).
- Administration.
- Carpentry.
- Basic plumbing and pipefitting.
- Welding; and
- Basic electrical engineering.

This training should be provided as part of Allana's recruitment policy in a pre-emptive manner in order to ensure that local capacity has been developed

(1) Skills related to computing technology

in advance of large scale hiring. This skills training should be offered to a greater number of local inhabitants than will be required to act as employees in order to boost local skills. It should be clearly communicated to training participants that not all people trained will be guaranteed to receive employment with Allana, although where possible those who have received training will be preferred candidates. Further tailored training programmes should be developed and implemented to provide the skills required for the production phase.

Training should also be provided to all new employees in order to ensure they are appropriately skilled to carry out their job. This may include 'on-the job' training, training during induction processes or formal training programmes.

Efforts should be made to provide suitable training to women, the youth and other marginal groups to ensure that they receive all possible potential access to training and employment. Allana should look for opportunities to work with partner organisations to implement this education and skills training.

Skills Certification

In line with the vocational training discussed above, Allana, as part of their Human Resources system, should develop a system of certification for training in a set of basic skills that also recognises periods of employment. As part of this the successful completion of training and attainment of competency in new skills while employed with Allana, or as part of an education and skills training programme, should be formally recognised through a company certification system. This system will also help trainees find gain recognition of the skills they have gained and assist in finding alternative work during any potential retrenchment. On-the-job training in simple tasks should also be certified by Allana and recognised. All Allana employees, upon leaving the company, should be provided with a letter referencing the work they have completed and the skills they have acquired during their period of employment.

Business Skills Training

Allana should consider providing business skills training including literacy, book keeping and identification of new markets and opportunities from construction. This will link to enterprise development initiatives discussed in the section above.

Bursaries

Allana should consider providing bursaries to secondary school students / other relevant applicants to attend university. It is recommended that any training and bursaries provided to teachers / students includes conditions for working and applying their skills in an area for a specified period of time. Allana should work with schools and teachers to identify training needs and

barriers to current provision of education to assess the most appropriate allocation of bursaries.

Healthcare Training

Due to a lack of trained healthcare professionals Allana should support education and skills development in this area. It is advised that trained healthcare professionals are used to provide mentorship and training to local healthcare workers who should be incentivised to use their skills locally. It has been suggested that healthcare professionals from Mekele hospital are used to provide services and training in the HC in Hamad Ela if or when it becomes operational. The sustainability of using professionals from Mekele has been questioned by several respondents including the regional Health Bureau. Therefore Allana should look to implement an internship or shadowing programmes for local residents interested in entering into the healthcare profession that is provided by external healthcare professionals.

In addition, to support health infrastructure Allana should provide support to the local government training on health and sanitation programmes including the HEP and WaSH programmes for households in the Study Area.

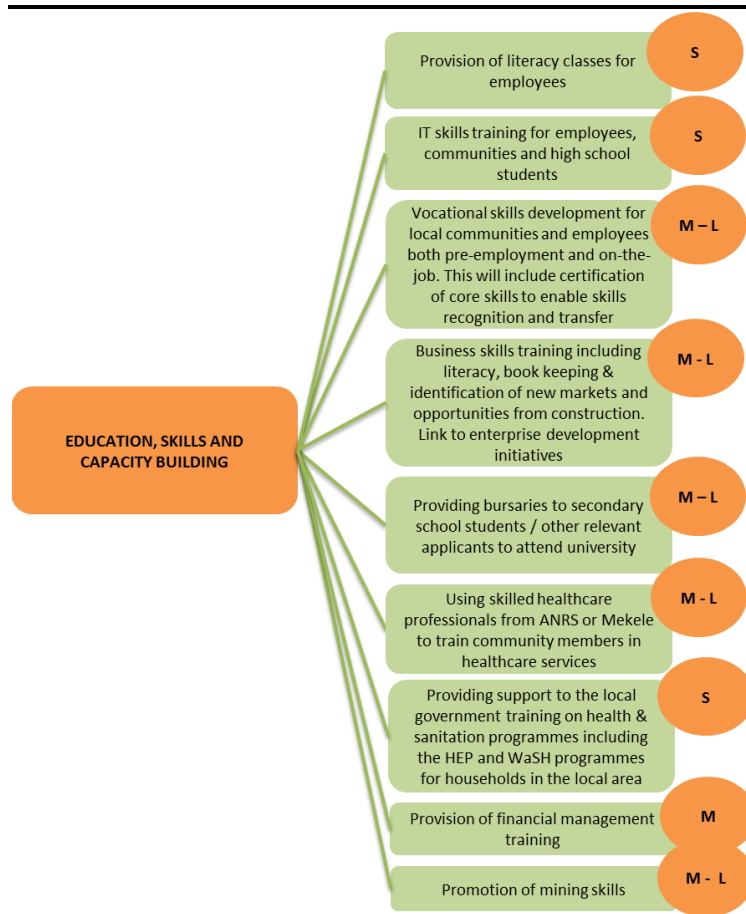
Financial Management Training

Due to limited experience of long-term wage labour in the local area Allana should provide, in collaboration with relevant partner organisations, training in fiscal management to employees, their families and affected communities. This training should be designed to maximise the benefits employees receive from increased household cash income, seeking to improve the sustainability of any local economic growth. This training should be designed to help promote savings, banking and responsible financial management training to households that may have minimal experience managing a monthly cash budget helping to increase the sustainability of any benefits received from employment. This should be provided with the aid of a relevant local partner or NGO in local languages, and will be made available to all members of employees' families.

Promote Mining Skills

Allana should work with the training programmes in place at higher education organisations in Semera, Addis Ababa, Mekele and other potential locations to promote the development of mining skills nationally as part of their community investment programme. This may include the provision of funding / sponsorship for mining-related courses, grants for Afar applicants, skills exchange and knowledge sharing through presentations, or internship programmes.

Figure 4.3 *Summary of Themed Community Development Plan Activities and Associated Timelines*



Legend

- S Short term (3-6 months)
- S-M Short to medium term
- M Medium term (6 months – 1 year)
- M-L Medium to long term
- L Long term (1 to 3 years)

A range of activities have been recommended above, however these need to be prioritised both in terms of greatest need and timeframe, an exercise in which recipient communities should be extensively involved. It has been indicated that the results of the baseline survey are not sufficient to confirm development needs and preferences with affected communities (this requires a longer and more focussed participatory process), and is recommended that further participatory engagement is carried out with a wide range of stakeholders to aid decision-making on Community Investment. This will assist in prioritising community development needs and priorities. Particularly at the regional, and more so at the local level it is key that Allana engages with the traditional governance institutions that represent villages across the area.

In addition participatory processes should be facilitated in communities that enable different stakeholders in the communities to identify and prioritise their development needs. Groups within the community will include women, youth and elderly, in addition to key community institutions including the salt association. This will ensure that a wide range of development needs are identified which can then be evaluated to identify key priorities, and ensure that a broad range of priorities are being addressed.

There are a series of processes that Allana can use to prioritise development initiatives depending on their objectives. Priorities can be assessed according to:

- Level of stakeholder priority (high, medium, low);
- Level of opportunity or risk presented (high, medium, low);
- Local capacity and availability of implementing partners;
- Cost benefit (number of people benefiting versus costs); and
- Fit with community development plan objectives and principles ⁽¹⁾.

5.1 IDENTIFICATION OF PARTNERS

Partnerships should support local capacity and avoid creating dependence on Allana. To the extent possible Allana should work through existing organisations and programs relevant to the area.

5.1.1 Non-Governmental Organisations

Allana will need to identify development NGOs in Ethiopia working in the north-eastern Afar region who have a strong track record in project delivery for project implementation. These development partners should aim to build

(1) The International Finance Corporation, 2010

the capacity of community institutions and local government to plan how CDP funds should be channelled into initiatives that will provide maximum benefit to the local communities.

Working with NGOs should ensure complementarity and alignment. Local healthcare services have identified that there is no alignment between the respective NGOs working in the area to tackle key health priorities, and to maximise utilisation of resources at present.

From the baseline survey and engagement conducted throughout the ESHIA the following have been identified as potential NGO partners:

- The International Red Cross (IRC): providing support to local hygiene and sanitation programmes, and building community latrines;
- The International Training and Education Centre for Health (ITECH): supports HIV/AIDS prevention in the local area;
- African Medical and Research Foundation (AMREF): providing support to development of the health profile in the local area focusing on maternal and child health;
- United Nations Children's Fund (UNICEF): provide support to households with malnourished children; and
- TARGET - run the Afar Mobile Hospital with physicians that provide basic curative services.

5.1.2

Government Programmes

Relevant government programmes include:

- The National Health Extension Programme which falls under the regional Health Bureaus Health Sector Development Programme (HSDP-IV). This is aimed at reaching universal coverage of primary health care and improving the quality of healthcare services.
- Local WaSH programme administered through local healthcare services.
- The Plan for Accelerated and Sustained Development to End Poverty (PASDEP) is the first five year phase plan aimed at achieving the goals and targets set out in the Millennium Development Goals (MDG). PASDEP has also developed tailored programmes for pastoralist areas in Ethiopia which is of particular relevance for the Afar National Regional State (ANRS) where a significant proportion of the population were pastoralists. These areas include:
 - Education: network of informal community-based schools and teaching arrangements.

- Health: mobile outreach health services.
- Water Resources: water points will be constructed adjacent to range areas for dry season utilization; and
- Pastoralist Institutions: developing participatory land use and ownership policy based on traditional communal land use system, establishment of Pastoralist Councils and helping pastoralist communities benefit from investment, tourism and other industries in their areas.

5.1.3 *Local Community Institutions*

To facilitate implementation of community development initiatives the following local groups should be considered:

- The Berahale Salt Selling Association is the first regional cooperative in Afar, and is made up of approximately 3,700 members. It is seen as a powerful association in the local area which has provided local ownership and control of resources.
- The majority of the women in the Study Area are members of the *engwa mehaber* (palm association) which is an informal institution common to many areas of Ethiopia. The *engwa mehaber* serves as forum for women to discuss and solve any challenges that they are facing in the household, in addition to providing financial support and benefit to members.

5.1.4 *Additional Institutions*

Panos Ethiopia has established an Afar Radio Programme which has a wide reach and audience in the ANRS. Programmes consist mainly of interviews and commentary in which elders, women, youth groups, community radio listening groups, local government officials, and NGO leaders share their views and opinions on issues affecting pastoralists in the region. Therefore Panos may be a good stakeholder to engage, and use to identify other organisations working in key areas in the ANRS.

6.1 INTRODUCTION

The following section provides a summary of the options for short, medium and long-term community investment projects. Allana will need to undertake specific engagement activities to prioritise which of these projects are most appropriate to support through a participatory process.

6.2 PROJECT OPTIONS**6.2.1 Short-term Project Options**

The following short-term activities were identified across all community development themes:

- Improving community access to potable water by providing boreholes / community taps;
- Provision of literacy classes for employees;
- IT skills training for employees, communities and high school students; and
- Providing support to the local government training on health and sanitation programmes including the HEP and WaSH programmes for households in the Study Area.

6.2.2 Short to Medium-term Project Options

The following short to medium-term activities were identified across all community development themes:

- Work with local healthcare services to monitor change in 'sense of place' and support additional welfare / social worker positions;
- Implement (with local government) in closest villages solid waste management system;
- Improving community sanitation by building / supporting NGO in building latrines. Couple this to hygiene and sanitation programme; and
- Invest in and strengthen local procurement networks and supply chains through working with local business to build capacity for the supply of good / services.

6.2.3 *Medium-term Project Options*

The following medium-term activities were identified across all community development themes:

- Supporting / running a microfinance scheme to support the development of local skills and services in the Study Area; and
- Provision of financial management training.

6.2.4 *Medium to Long-term Project Options*

The following medium to long-term activities were identified across all community development themes:

- Drive / support implementation of Hamad Ela health centre;
- Work with local government to increase the availability of both government and community alternative basic schools;
- Work with other local mining companies and the Government of Ethiopia to identify enterprise and skills needs to develop capacity for future industrial developments;
- Facilitate Small and Medium Enterprise development for vulnerable groups;
- Work with local authorities to increase their capacity and to create more positive local business environment;
- Vocational skills development for local communities and employees, both pre-employment and on-the-job. This will include certification of core skills to enable skills recognition and transfer;
- Business skills training including literacy, book keeping and identification of new markets and opportunities from construction. This training should link to enterprise development initiatives;
- Providing bursaries to secondary school students / other relevant applicants to attend university;
- Using skilled healthcare professionals from ANRS or Mekele to train community members in healthcare services; and
- Promotion of mining skills.

6.2.5 *Long-term Project Options*

The following long term activity was identified across all community development themes:

- Work with local government to increase household access to electricity.

6.3 *MANAGEMENT ACTIONS*

In order to prioritise projects, management should ensure that the following tasks are undertaken.

6.3.1 *Desktop Research*

To provide context to support the identification of priority projects and to inform subsequent discussions with potential partners the following information should first be gathered.

- Identify and gather details of International and Ethiopian NGOs.
- Review regional or district level development plans (if available); and
- Identify relevant donor programmes taking place in-country.

6.3.2 *Identify Potential Partners*

To identify potential partners to carry out community development activities it is recommended that Allana:

- Meet with development agencies identified during the desktop review and during the initial social baseline data collection field trip.
- Meet with NGOs identified during the desktop review, and to identify any other local NGO's with partnership potential; and
- Meetings should be held with a cross-section of relevant stakeholders including, for example, Department for International Development (DFID), United Nations Development Programme (UNDP), local NGO's and ministries for regional, district or provincial development.

The aim of these meetings will be to:

- Better understand development priorities in the Study Area.
- Better understand organisational areas of focus and expertise.
- Understand and assess organisational capacity for partnering; and

- Depending on the project timelines, at this stage proposals for CDP projects could be requested from potential partners to be used at the workshop with the Allana Project team.

6.3.3 *In-Country Stakeholder Engagement on CDP Projects*

To confirm local needs and discuss priorities and options for community development projects it is suggested that specific in-country community stakeholder engagement is undertaken related to the CDP. Engagement would be limited to key opinion leaders and would be carried out in a manner that would seek not to raise expectations.

6.3.4 *Community Development Plan Workshop*

Management must ensure that a workshop is conducted with the local Allana team to discuss and agree:

- Goals, objectives and activities of the CDP.
- Projects to be supported.
- Steps and responsibilities for engaging local partners.
- Implementation and management responsibilities.
- Budgeting and resourcing.
- Conditions of support.
- Timelines for implementation.
- Key performance indicators.
- Monitoring and evaluation.
- Communication strategy; and
- Exit plan.

This should include a range of internal stakeholders from senior management to drilling engineers and community relations staff etc. in order to gain a cross-section of perspectives regarding the themes and practicalities of any proposed community investment.

6.3.5 *Update the CDP and Implementation Plan*

The outcome of the steps above should be used to update the CDP and create and implementation plan, including details of budgets, resources and schedules to take the projects forward.

6.4 *RESPONSIBILITY*

As discussed in *Section 3* the responsibility for implementing this plan lies with Allana's ELCR Department with support from other functions within the Allana Project team who will need to support the resourcing and roll-out of the CDP, specifically HR and Procurement. It is essential that there are clear and specific roles and responsibilities for both Allana and any partner organisations for their role in implementing the CDP.

OBJECTIVE AND TARGETS

Objectives and targets must be approved by management to ensure that CDP projects and activities are appropriately identified, prioritised and resourced including:

- Desktop research completed to identify potential partners and relevant regional development plans by end Q4 2012.
- In-country identification of potential partners and capabilities by end March 2013.
- Participatory engagement to confirm and prioritise projects completed by end March 2013.
- Short-term plans identified by end February 2013.
- Detailed CDP implementation plans developed for identified projects by end March 2013; and
- Roles, responsibilities and resources identified and confirmed by end March 2013.

Once chosen, specific objectives and targets must also be created specific to each CDP activity and related objective(s).

7 VERIFICATION AND MONITORING

7.1 VERIFICATION AND MONITORING MEASURES

Projects should be monitored, in the first stages more frequently (e.g. monthly) and subsequently quarterly or annually depending on the nature of the project to ensure that:

- There is a regular review of the progress of various programmes and any issues have been promptly addressed.
- Project objectives are relevant, and if required are changed.
- Benefits are reaching the intended stakeholders.
- Funds are being appropriately used; and
- Feedback from beneficiaries as well as partners is regularly sought and any required actions are administered.

7.2 INFORMATION FROM COMMUNITY DEVELOPMENT PLAN PARTNERS

To aid this process, partners involved in the implementation of the community can be asked to provide monthly progress reports to Allana, including:

- A breakdown of budget usage (which can be shared publically to ensure transparency).
- Progress against key performance indicators; and
- Any difficulties or issues which have arisen during the period.

In addition to this, the facilitating partner NGO or organisation can be asked to provide detailed information including:

- A breakdown of budget usage (which can be shared publically to ensure transparency).
- Progress against key performance indicators; and
- Any difficulties or issues which have arisen during the period (including community feedback, tensions or conflict with directly affected communities).

7.3 *EXIT STRATEGY*

For each of the projects above, an exit strategy must be planned for the project, including linkages to monitoring and evaluation over time.

7.4 *RESPONSIBILITIES*

Monitoring and evaluation will be completed by team internal to Allana, however external (third party) review of the CDP will be periodically undertaken to provide an objective assessment of programme success (this could be done by an NGO or consultant). This assurance approach can be used to increase donor confidence and therefore increase the potential for partner funding.

It is important that Allana report back to a range of internal and external stakeholders regarding the CDP process, progress and outcomes as well as lessons learnt. Allana will communicate proactively in order to maximise the benefits of the CDP, and to manage expectations, build trust, credibility and to foster positive relationships with local stakeholders.

Allana will use the data collected from the monitoring systems put in place to compile reports annually pertaining to Allana's community development activities. This will include relevant reports from NGO partners as well as verification and monitoring information.

8.1 *GOVERNMENT/AUTHORITY REPORTING*

Annual reports will be provided at the regional level to the Bureau of Finance and Economic Development for the Afar Region. At the district level this information will be communicated to the Woreda Bureau for Finance and Economic Development in a manner that is easily understandable and relevant to them.

8.2 *LENDER REPORTING*

Performance reports on the CDP and associated activities will also be submitted to the IFC and any other lenders providing finance. Reports can also be tailored to suit specific requirements of the IFC.

8.3 *INTERNAL REPORTING*

Allana will report on the CDP activities in a variety of ways including:

- Directly reporting to Project Management and Board; and
- The compilation of annual reports.

A reporting programme will be developed and kept up to date to ensure all requirements are met. A report will be published at least annually on the CDP performance of the proposed Project including monitoring and verification results.

8.4 *COMMUNITY REPORTING*

The results of monitoring will also be communicated to local communities in particular proposed Project affected communities. Performance reports and

their communication will need to be tailored to meet the needs and circumstances of the communities, in a manner that is easily understandable and relevant to communities.

Table 9.1 *Actions to Prioritise and Develop CDP Activities*

Action and objective	KPI Monitoring	Timing/ Frequency	Responsibility
Desktop research completed to identify potential partners and relevant regional development plans	On completion	By end Q4 2012	Allana's Environmental, Land and Community Relations function
In-country identification of potential partners and capabilities	On completion	By end March 2013	Allana's Environmental, Land and Community Relations function
Participatory engagement to confirm and prioritise projects	On completion	By end March 2013	Allana's Environmental, Land and Community Relations function
Short-term CDP activities identified	On completion	By end February 2013	Allana's Environmental, Land and Community Relations function
Detailed CDP implementation plans developed for identified projects	On completion	By end March 2013	Allana's Environmental, Land and Community Relations function Specific responsibilities assigned to other members of the team related to project deliverables (e.g. HR, Finance, Logistics etc.)
Roles, responsibilities and resources identified and confirmed	Monthly monitoring related to each project Annual reporting	By end March 2013	Allana's Environmental, Land and Community Relations function Specific responsibilities assigned to other members of the team related to project deliverables (e.g. HR, Finance, Logistics etc.)

Community Health, Safety and Security Management Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana for Review
CHSSMP Version_0143047_v2.0	Nomsa Fulbrook- Bhembe and Alastair Gow-Smith	Philippa Spence	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AfDB	African Development Bank
AIDs	Acquired Immunodeficiency Syndrome
ANRS	Afar National Regional State
AQMP	Air Quality Management Plan
BMP	Biodiversity Management Plan
CDP	Community Development Plan
CHS	Community, Health and Safety
CHSS	Community, Health, Safety and Security
CHSSMP	Community Health, Safety and Security Management Plan
EPA	Environmental Protection Authority
ESMS	Environmental and Social Management System
ESHIA	Environmental, Social and Health Impact Assessment
GoE	Government of Ethiopia
HIV	Human Immunodeficiency Virus
HR	Human Resources
IFC	International Finance Corporation
IMCP	Integrated Mine Closure Plan
IMMP	In-Migration Management Plan
LLITNs	Long Lasting Insecticide Treated Nets
LoM	Life of Mine
LRP	Livelihood Restoration Plan
OHS	Occupational Health and Safety
PIIM	Project-Induced In-Migration
PS	Performance Standard
RAP	Resettlement Action Plan
SEP	Stakeholder Engagement Plan
SES	Stakeholder Engagement Strategy
SPCCP	Spill Prevention Control and Contamination Plan
STIs	Sexually Transmitted Infections
TMP	Traffic Management Plan
VPs	Voluntary Principles
WHO	World Health Organisation
WMP	Waste Management Plan
WkMP	Worker Management Plan

DEFINITIONS

Decommissioning: is the process by which options for the final status of structures at the end of their working life are assessed for their dismantling, physical removal, disposal or modification (if beneficial usage of existing Project infrastructure is a component of the closure scheme).

Employer: the organisation Allana Potash Corp., which utilises the services of someone for remuneration or compensation in return.

Employee: any person, excluding an independent contractor, who works for another person and who receives, or is entitled to receive, remuneration and refers to any other person who in any manner assists in carrying out or conducting the business of an employer and the term “employer” has a corresponding meaning.

Recruitment: the process of advertising, selecting and appointing a suitable candidate for a vacant position.

Third Party Contractors: contractors supplying a service to Allana Potash for any activity associated with the construction, operation or decommissioning phases of the proposed Project.

Allana Potash Corp. (Allana) hold one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 and 1878/2002 from the Ethiopian Ministry of Mines and Energy), in the Danakil Depression, Afar National Regional State (ANRS) in the *Woredas* of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans have been developed in response to legal and policy requirements and consideration has been given within the development process to the comments of the public and the relevant authorities.

The management plans address impacts identified in the ESHIA and will be implemented as part of an Environmental Management System (EMS) for the proposed Dallol Potash Project. This document is the Community Health, Safety and Security Management Plan (CHSSMP) and seeks to describe the approach to managing the relevant impacts related to community health safety and security.

1.1 POLICY STATEMENT

Allana is committed to ensuring the health, safety and security of all parties who are affected by its activities including local communities and the broader public.

Allana will anticipate, and avoid or manage adverse impacts on the health, safety and security of local communities throughout the Life of Mine (LoM), from both routine and non-routine circumstances. Allana will also ensure that the protection of personnel and property is in line with relevant human rights principles, and is carried out in a manner that avoids or minimises risks to community's health, safety and security (CHSS).

Allana will work with relevant authorities to promote issues of health, safety and security in and around the proposed Project area, consistent with International Finance Corporation Performance Standard (IFC PS) 4 that acknowledges it is also the relevant authorities' responsibility to manage issues around CHSS.

1.2 OBJECTIVES

The objectives of the CHSSMP are to:

- Continuously identify, evaluate and prioritise the risks and impacts of Allana’s activities on the health, safety and security of local communities;
- Proactively prevent and avoid impacts to community health safety and security, and enhance any positive impacts related to community health and safety;
- Identify strategies that provide adequate health related information and prevention measures through which communities can manage their own health and safety in an optimum manner; and
- Implement security that protects Allana’s employees, assets and business continuity in a manner that adheres to Ethiopian legislation, and is consistent with the Voluntary Principles on Security and Human Rights (VPs)¹.

1.3 *PURPOSE*

The purpose of the CHSSMP is to present the structures and actions that will be implemented to avoid and manage impacts to CHSS, paying particular attention to vulnerable groups.

1.4 *SCOPE*

The CHSSMP is applicable to the construction, operation and decommissioning and closure phases of the proposed Project. The CHSSMP is relevant to Allana and all third party contractors.

The CHSSMP covers the following areas identified in the ESHIA:

- Community health including exposure to disease, changes in availability and quality of water resources and food insecurity and nutritional status;
- Changes to livelihoods and income generating opportunities and subsequent effects on community access to social and physical infrastructure;
- Community health and wellbeing including changes to social and cultural cohesion; and
- Community safety related to traffic, emergency responses, unplanned events, crime and conflict.

¹ The VPs are a set of principles developed by the governments of the UK and USA and companies in the extractive and energy sectors and NGOs to guide companies in maintaining the safety and security of their operations within an operating framework that ensures respect for human rights and fundamental freedoms.

A component of community health includes community well-being, which looks beyond physical health or absence of disease, and incorporates a broader bio-psycho-social construct that includes physical, mental and social health. Wellbeing considers the ability of an individual to realise their potential within society, work productively, build strong and positive relationships with others and contribute to their community ⁽¹⁾. Factors such as self-esteem, coping, resilience and stress response are important in determining an individual's wellbeing.

1.5 LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS

This CHSSMP should be read in the context the Environmental, Social and Health Management System (ESH-MS - discussed in *Chapter 13 of the ESHIA*). The ESH-MS provides the framework for a suite of management plans, described in *Chapter 13* and *Volume III Annex A to N*, which have been designed to address social and environmental risks and impacts associated with the proposed Project.

It is recognised that the ESH-MS and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

Specifically, this plan related to the management plans, shown in *Table 1.1*.

Table 1.1 Linkage to Other Management Plans

Management Plan	Overlap of this Plan with Content of Other Plans
ENVIRONMENTAL PLANS	
Emergency Response Plan (ERP)	The ERP outlines emergency response measures in the event of unplanned events occurring at the proposed Project. This includes stakeholder engagement during emergency events.
Air Quality Management Plan (AQMP)	Air quality has a direct consequence for human health. The AQMP discusses the avoidance, mitigation and management measures required to protect human health.
CLOSURE PLANS	
Integrated Mine Closure Plan (IMCP)	Discusses measures related to the long-term health and safety related to closure planning.
SOCIAL PLANS	
Waste Management Plan (WMP)	Management of waste is directly related to community health and safety. The WMP includes measures related to hazardous materials and environmental and natural resources. And considers human health.
Community Development Plan (CDP)	Given Allana's commitment to health as a component of community development, the CDP will have overlapping objectives and targets with the CHSSMP.
In-Migration Management Plan (IMMP)	The IMMP discusses mitigation and management measures related to in-migration and the consequences community health, safety and security.
Worker Management Plan (WkMP)	The WkMP discusses worker code of conduct, and includes measures to avoid or manage impacts related to workers community interactions.

(1) World Health Organisation, 2012 and Government Office for Science, 2005

Management Plan	Overlap of this Plan with Content of Other Plans
ENVIRONMENTAL PLANS	
Stakeholder Engagement Strategy (SES)	The SES outlines the requirements for stakeholder engagement aligned to the proposed Project lifecycle and relevant to managing community health, safety and security (CHSS).

A summary of the legal requirements and standards relevant to the CHSSMP are presented in this section. The legal requirements included in this summary may not be comprehensive.

2.1 NATIONAL LEGISLATION AND POLICY

There are several legislative instruments in Ethiopia pertaining to the protection of the environment. The relationship between environmental protection and integrity, and community health and safety is indicated within some of these instruments.

2.1.1 *The Ethiopian Constitution – Article 92 and 44*

Article 44 states that all persons have the right to a clean and healthy environment.

This is echoed in Article 92 that outlines environmental objectives of the Constitution stating that the Government of Ethiopian (GoE) shall endeavour to ensure that all Ethiopians live in a clean and healthy environment. Furthermore the design and implementation of programmes and projects of development shall not damage or destroy the environment, and people have the right to full consultation and to the expression of views in the planning and implementation of environmental policies and projects that affect them directly.

2.1.2 *The Environmental Policy of Ethiopia, 1997*

Consistent with Article 44 and 92 of the Constitution, the Environmental Policy states that the people are assured of their fundamental rights to an environment that is clean and healthy.

2.1.3 *Environmental Pollution Control Proclamation (n^o 300/2002)*

The Proclamation advocates a ‘polluter pays’ policy and the Environmental Protection Authority (EPA) or relevant regional environmental agency has the right to close or relocate any enterprise if the activity being carried out poses a risk to human health or to the environment. The Proclamation also outlines the EPA’s requirements on the management of municipal wastes, hazardous waste, and chemical and radioactive substances.

2.1.4 *Prevention of Industrial Pollution Council of Ministers Regulation (n^o 159/2008)*

Certain sections of the Regulation can be deemed applicable to the proposed Project. These sections include the need for emergency response systems and the need for monitoring of environmental safety.

2.1.5 *Water Resource Management Proclamation (n^o 197/2000)*

This proclamation addresses the protection and management of surface and groundwater resources, requiring that environmental conservation and water resource protection measures are incorporated into water resource planning and project development.

2.1.6 *Public Health Proclamation (n^o 200/2000)*

This proclamation prohibits discharging of untreated liquid waste generated from septic tanks, seepage pits and industries into water bodies or water convergences. It also prohibits the disposal of solid or liquid or any other waste in a manner which contaminates the environment or affect the health of civil society.

2.1.7 *Environmental Standards for Industrial Pollution Control in Ethiopia*

The Ethiopian Federal Government has developed a list of environmental standards for the purposes of preventing significant industrial pollution. These standards present pollution limits for emissions to atmosphere and water resources and noise emissions.

2.2 *INTERNATIONAL LEGISLATION AND STANDARDS*

2.2.1 *IFC Performance Standards*

Allana have committed to meeting the International Finance Corporation's Performance Standards on Environmental and Social Sustainability (IFC PSs). In practical terms related to the CHSSMP, this means that Allana and its contractors will satisfy the requirements of IFC PS4.

IFC PS4 outlines a project's responsibility to avoid or minimise the risks and impacts to community health, safety, and security that may arise from proposed activities, paying particular attention to vulnerable groups. Furthermore focused attention and effort should be made in conflict or post-conflict areas where a project could exacerbate an already sensitive local situation, and stress scarce local resources potentially leading to further conflict.

2.2.2 *IFC General EHS Guidelines*

These guidelines cover a variety of issues related to emergency response planning and preparedness including fire prevention, disease prevention, management and transport of hazardous materials, traffic safety, general site hazards, management of change and financing.

2.2.3 *IFC Mining Sector Guidelines*

The mining sector guidelines cover community health and safety specific to mining activities including management of water storage dams, emergency response and preparedness, disease transmission and control.

2.2.4 *Voluntary Principles on Security and Human Rights*

Several governments (USA, UK, Netherlands and Norway), companies in the extractive and energy sectors, and NGOs have engaged in a dialogue on security and human rights. The participants recognise the importance of the promotion and protection of human rights throughout the world and the constructive role business and civil society - including NGOs, labour/trade unions, and local communities - can play in advancing these goals.

To achieve this, a set of Voluntary Principles has been developed to guide companies in maintaining the safety and security of their operations within an operating framework that ensures respect for human rights and fundamental freedoms.

2.2.5 *United Nations Guiding Principles for "Protect, Respect and Remedy" Human Rights Framework*

The United Nations (UN) Human Rights Council have endorsed the Guiding Principles for the Implementation of the UN "Protect, Respect and Remedy" Framework. The UN Guiding Principles provide a standard for preventing and addressing the risk of adverse impacts on human rights linked to business activity. The Guiding Principles clarify the meaning of the corporate responsibility to respect human rights, which is also a key component of Global Compact Principle 1.

2.2.6 *African Development Bank Standards and Policies*

The African Development Bank (AfDB) integrated environmental and social impact assessment guidelines identify the bank's new vision and emerging priorities, particularly crosscutting themes. One of the crosscutting issues prioritised by the AfDB is health acknowledging that many factors influence people's health, particularly economic opportunities, the social context and the natural environment.

The responsibility for implementing this plan will lie with the Environmental, Land and Community Relations Manager (ELCR).

The Quality, Health and Security (QHS) function will also assist in the implementation of this plan. The Security Manager will be responsible for implementing measures related to both internal and external security, and Movement Control will be responsible for implementation and coordination of proposed Project vehicle movement.

All employees including contractors (and their employees) will be required to adhere to the requirements of the CHSSMP.

Contractors will be required to take a level of responsibility for ensuring the application of this plan to their staff, under the supervision of the ELCR Manager.

4.1 SUMMARY OF IMPACT MANAGEMENT

The CHSSMP outlines measures to avoid or mitigate negative impacts and enhance positive impacts related to the health, safety and security of local communities.

Impacts related to community health, safety and security identified in the ESHIA include:

- Decline in health profile due to decreased availability and /or quality of water resources;
- The resettlement of Mororo and Alai Lai due to their proximity to the proposed area used for solution mining, and the health and safety risks and noise impacts posed to them;
- Impacts to key local livelihoods and subsequent impacts on community health including reduced income generation, access to healthcare and general wellbeing;
- Increase in vector borne and communicable disease;
- Worsening of health profile related to spills, emissions and contamination;
- Increased injuries and mortality from traffic accidents;
- Increased intra and inter community competition and conflict;
- Increased marginalisation of vulnerable and sensitive groups;
- Increased anti-social behaviour;
- Increased violence and conflict between community and security providers; and
- Reduced access, pressure and overburdening of social and physical infrastructure.

Impacts are identified and addressed across the construction, operation, decommissioning and closure phases.

4.2 *MANAGEMENT DURING CONSTRUCTION*

4.2.1 *Impacts*

The impacts during construction will be similar to those identified in *Section 4.1*.

The increased number of vehicles used to deliver materials and supplies for construction may result in a higher number of injuries and mortalities from traffic accidents, as well as spills of hazardous materials being transported. During construction, the potential for traffic accidents may be exacerbated by low community awareness and low exposure to increased volumes of traffic in the area.

Construction activities will also limit access to natural resources in the concession area, in particular areas used for palm collection and grazing, thereby impacting income generating / subsistence opportunities from these livelihoods.

Furthermore, the commencement of Allana's construction activities, in addition to other activities occurring in the area (i.e. the presence of other mining companies and the construction of the Government road) may encourage in-migration. This may cause an increase in vector borne and communicable disease, community conflict over land and resources etc.

4.2.2 *Objectives and Targets*

The objectives of the CHSSMP during construction will be consistent with those identified in *Section 1.2*. Specifically during construction this will include measures to:

- Avoid, minimise or compensate for the potential for community exposure to hazardous materials and substances during construction;
- Avoid, minimise or compensate for the potential for traffic related accidents;
- Avoid, minimise or compensate for the proposed Project's direct impacts on priority ecosystem services which may result in subsequent impacts to local income generating opportunities;
- Avoid, minimise or compensate for the potential for community exposure to communicable and vector-borne diseases;
- Avoid, minimise or compensate for a decline in the availability and / or quality of water resources available to local communities;

- Assist and collaborate with the local communities, local government, and other relevant partners, in their preparations to respond effectively to emergency situations; and
- Assess and manage risks and impacts posed by Allana's security arrangements to those within and outside the proposed Project site.

In achieving these objectives Allana will consider the differentiated exposure of different local communities to impacts, in addition to the higher sensitivity of vulnerable groups.

4.2.3 *Management Actions*

The management actions required to fulfil the objectives of the CHSSMP during construction are discussed in greater detail in *Table 7.1*.

Livelihood Restoration Related to Local Palm Derived Livelihoods

Impacts to palm-based livelihoods will be both through limited access to palms, and reduced availability of palms. The latter impact is dependent on the proposed Project's impacts to groundwater and ecological resources. In order to manage these impacts Allana will continue to conduct groundwater, ecological and livelihood analysis to understand the spatial extent and magnitude of the impact to palms. The results of this will inform the development of the Livelihood Restoration Framework / Plan (LRF / LRP) that will identify the geographical extent to which people rely on the impacted palm resource, and the specific required mitigation and / or compensation for affected households.

As part of the LRP development, consultation may (if required) be conducted with affected communities and their leaders to agree on the process and mechanism for compensation.

Potential specific mitigation measures, dependent on the results of monitoring and on-going analysis, include the establishment of a palm offset area and nursery to increase palms accessible to impacted people, and training for community members on the sustainable management of the palm area. The applicability of these mitigation measures will be determined following the results of Allana's studies and development of the LRP.

Furthermore the resettlement of Alai Lai and Mororo away from the proposed area for solution mining will involve specific consideration of livelihood restoration and improvement as part of a Resettlement Action Plan (RAP).

Managing Impacts to Areas used by Livestock

As part of on-going monitoring of groundwater and ecological impacts Allana will consider the requirements for the provision of replacement fodder.

Additional mitigation measures will include the development of a driving policy that limits the requirement for off road driving wherever possible, limiting disturbance to areas used for pasture. The identification of alternative pasture areas, taking into account seasonal change and alternative resource users, will require consultation with affected communities.

Allana will monitor the productivity of pastoralist livelihoods through a process of stakeholder engagement (refer to the SES Volume III *Annex M*) and will prepare the system to, where required, provide a supply of livestock fodder annually to impacted Afar households.

Managing Impacts to Artisanal Salt Mining

Management measures related to artisanal salt mining will mainly focus on two approaches: management of proposed Project traffic and management of the output of the solution mining process.

Management of impacts related to traffic include the development a driving policy that will include clear limitations for driving on areas that are exploited for artisanal salt mining. In addition Allana will consult with formal and customary authorities, the Berahale Salt Selling Association, and *Arho* transporters to identify areas and the means for camel trains to cross roads in agreed locations. To plan for any potential traffic accidents associated with camel and / or donkey trains Allana will conduct further engagement with the identified stakeholders to develop an agreed process, mechanism and entitlement matrix for compensation in the event of an accident.

The solution mining process will produce salt as a by-product (waste salt). Options for management of this by-product include identifying international buyers for use in industrial processes, stockpiling the waste salt for the duration of LoM, not selling the salt to regional buyers or only selling the waste salt in products that do not provide competition to artisanal salt miners.

Allana will engage with stakeholders and disclose up-to-date information on the management of waste salt throughout the operations phase. This will seek to explain the on-going plans for the material and manage expectations and concerns.

It is important for Allana to engage with government to understand government strategy on the salt iodisation programme, particularly in relation to the artisanal salt mining at Lake Assale. As part of investment in enterprise development, identified in the CDP, Allana will assess the potential to work with local salt trade workers and other relevant stakeholders (e.g. the Berahale Salt Selling Association) to build their capacity in creating a local salt iodisation process, where the salt can then be sold to the regional and national market.

Managing Impacts to Tourism

In consultation and partnership with traditional and formal leaders Allana will establish and sponsor a tourist information office in Hamad Ela. This office will include discussion of key geological and geochemical activities in the area, displays of archaeological finds made in the area and descriptions of the different types of cairns in the area. In addition Allana will display and map the archaeological site 'discovered' during the ESHIA fieldwork to the south (refer to *Chapter 9*) and discuss the significance of the finding.

The tourist information office will also be designed taking into account Allana's CDP and relevant partners. This will include developing opportunities to provide services to tourists visiting the area both through their tourist information office, and through collaboration with relevant partners. This will include installing a series of 'western' toilets and bathroom facilities at the office. In addition as part of the enterprise development element of the CDP, Allana will assess livelihood development and diversification opportunities for Afar women including the production and sale of local products including baskets, water bags, *senan*, Afar jewellery etc. at the office. The skills development programme will also provide opportunities including evening classes that local young men can use to improve their language capabilities and serve as tourist guides in area, as well as identify potential business development opportunities in the tourism sector. Please refer to the CDP (Volume III *Annex I*) for further detailed information.

Livelihood Diversification

Potential opportunities for livelihood diversification in relation to tourism have been discussed, but more specifically Allana will look to develop and support an appropriate programme that focuses on enterprise development and livelihood diversification. The aim of the programme will be to improve levels of income in the Study Area. This will require detailed consultation and analysis of different opportunities with local formal and traditional authorities, communities and identified partners. Information on Allana's community development initiative and livelihood diversification is discussed in greater detail in the CDP (refer to Volume III *Annex I*).

Management of Vector Borne and Communicable Disease

Allana will manage vector borne and communicable diseases by developing and implementing measures directly applicable to their workforce, and through collaboration with local communities, government and relevant partners as part of their CDP. Management of vector borne and communicable diseases in relation Allana's workforce are outlined in the WkMP (refer to Volume III *Annex N*), and includes the pre-placement medical examination of all workers, taking specific consideration of communicable diseases that could be passed onto other workers. This will be supported by periodic medical examinations that are supplemented by regular voluntary Worker Medical

Screening Program onsite and a Monitoring and Evaluation (M&E) system. In addition a workplace policy and programme on HIV prevention and mitigation of HIV impacts will be implemented.

Allana will also work with local healthcare service through their CDP to avoid and mitigate the transmission of vector borne and communicable disease. This work will be planned in collaboration with suitable and trained partner organisations. Areas for potential collaboration include:

- Providing local educational programmes on the prevention of communicable disease and Sexually Transmitted Infections (STIs), in particular HIV /AIDs, ensuring that these are accessible to women and youth;
- Providing support to the local Health Centre and Health Extension Workers;
- Working in partnership with the local and regional healthcare facilities (such as local Health Post and Mekele Hospital) to develop an information management system to be used to analyse all relevant health data, particularly infections of HIV and other communicable diseases amongst employees and the affected villages; and
- Establish appropriate communication systems with local and regional health facilities and leaders of potentially affected communities as part of emergency response plans.

Management of Traffic

The CHSSMP considers traffic impacts related to the transportation of materials to the Allana concession for construction and traffic related to the operation of the proposed Project (including worker transportation and light vehicle movements). The assessment does not consider the construction of a Haul Road or its use for transportation of potash product from the Allana concession to a port in Tadjoura in Djibouti.

As part of the on-going management of vehicle movements Allana will conduct an assessment of potential transportation routes for potash product from the Allana concession to Tadjoura Port in Djibouti in a Traffic Management Plan (TMP). This will include a screening exercise and the identification, assessment and management of impacts related to vehicle movements along the selected transportation route. Mitigation measures may include the following:

- Global Positioning Systems in all Allana vehicles;
- Drivers will undergo a safe driving test and defensive driver training based on Allana's driving policies, and emergency procedures;

- Maintenance of a register of all vehicles entering or leaving the site. In event of a complaint from the public concerning behaviour of an Allana vehicle, this can be monitored and action taken;
- Traffic calming measures (e.g. speed bumps, road restriction) will be implemented in identified sensitive areas;
- Erection of signage (traffic and general cautions) warning local residents of potential Project-related dangers;
- Arrangements with district hospitals to ensure accessibility and treatment in case of emergencies. Allana will transport any local residents involved in traffic or other Project related accidents to an appropriate health facility;
- All heavy goods vehicles will enter and leave the site through a specific route only;
- Stakeholders will be engaged to identify potential high risk areas (areas commonly frequented by locals) and disseminate Project information; and
- Inform communities regarding areas that will be partially inaccessible due to construction activities and present relevant safety signage before conducting any activities that will increase Project traffic.

Managing Unplanned Events

The Spill Prevention Control and Contamination Plan (SPCCP) and ERP (Volume III *Annex C*) include further detail of avoiding or mitigating impacts related to spills, emissions and contamination. The SPCCP and ERP ensure that all materials (hazardous and no-hazardous) are correctly handled, stored, transported and disposed of.

Most relevant to the CHSSMP are the measures to ensure that emergency communication procedures and responses are developed in consultation with relevant stakeholders including local Health Clinics, Health Offices, and local community leaders.

Managing Mine Security

In alignment with the United Nations 'Protect, Respect and Remedy Framework' Allana will develop a corporate commitment to respect human rights. As a means to implement this commitment Allana will implement a policy that stipulates the enterprise's human rights expectations, is publically available and is reflected in operational policies and procedures. In order to identify, prevent, mitigate and account for how they address human rights Allana will carry out a Human Rights Due Diligence. The process should include assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed.

In addition in order to manage interactions between Allana security forces and local communities Allana will:

- Undertake a risk assessment examining the potential risks associated with mine security.
- Ensure selected security forces possess required standards of training. This training will include security specific subjects, Health, Safety and Environment mandatory training, First Aid, legal rights and the rights of local residents, fundamentals of the VPs and supervisory skills for selected members of the security force;
- Ensure certification of security that undertake this training and provision of a detailed Rules of Engagement card made available in each guard's basic equipment issue;
- Implement a programme of culturally appropriate engagement with potentially impacted communities surrounding the planned security forces and their conduct. Within this develop a culturally appropriate community feedback mechanism;
- Ensure the easy accessibility of Allana's grievance mechanism to anyone who wants to report a grievance;
- Establish a system of management of security providers (public and private) that complies with the VPs; and
- Establish a system of monitoring and auditing the conduct of security providers, particularly focusing on the rights of potentially vulnerable groups through culturally appropriate means.

Allana will aim to hire security providers whose personnel are a mixture of locals and non-locals (including but not limited to other Ethiopian ethnic groups), to avoid exacerbating any local negative sentiment that may exist to outsiders.

Access to Social and Physical Infrastructure

Allana will work with potentially impacted communities, and the relevant local government authorities to support them in securing safe and sustainable water supplies and waste management infrastructure. Based on the results of groundwater modelling and monitoring and the effect on community water sources this may involve providing direct support for the construction of local infrastructure for safe water supply, sanitation, wastewater treatment and solid waste disposal through collaboration with partner organisation such as NGOs. As part of providing direct support Allana should also focus on raising awareness and building community capacity in maintaining any water or waste management infrastructure that is provided.

This may involve the provision of local authorities and recipient communities with training and awareness raising campaigns in the planning, provision and use of community sanitation services. In addition Allana may consider promoting or enabling a mechanism for providing potable water in impacted communities through the installation of wells, boreholes etc.

Water Management Plan

Measures to manage water resources are outlined in further detail in the *Chapter 10*.

Water management measures provide measures to ensure that the availability of water for local consumption is not affected, and where possible identify measures to enhance the availability to local users. In addition water management include measures to monitor the quality and availability of water to villages, and develop infrastructure to supply water (at a minimum of the same standard available prior to impact) to all potentially impacted communities based on the results of the ground water study. This may include the construction of centralised village boreholes, solar powered pumps, and / or pipework.

The management of air quality in the proposed Project is also of relevance to CHSS and measures are detailed in the AQMP (refer to Volume III *Annex A*).

4.2.4 *Responsibility*

The overall accountability and responsibility for implementing these mitigation and avoidance measures will lie with the ELCR Department, however other functions will also be responsible for implementation of measures including the QHS, Security and Human Resources (HR) functions.

Table 7.1 identifies the specific targets and management measures associated with the identified impacts, including monitoring measures and personnel responsible.

4.3 *MANAGEMENT DURING OPERATION*

4.3.1 *Impacts*

Impacts to CHSS that occur during operation will be similar to those identified during construction (*Section 4.2.1*). However if the identified mitigation measures are implemented during construction the likelihood and significance of impacts occurring during operations may be lower. In particular the likelihood of unplanned events occurring may be lower due the implementation of training programs, higher awareness in communities and an implemented and practiced emergency response procedure.

The transmission of vector borne and communicable disease may continue during operation. This may occur at a lower rate due to a smaller workforce; however rates of transmission will also be dependent on rates on in-migration.

In addition the social and demographic dynamic of the proposed Project area may change as result of numerous factors, and may result in changes to groups that are identified to be vulnerable or marginalised.

4.3.2 Objectives and Targets

The objectives of the CHSSMP during operations will be similar to those outlined in *Section 4.2.2*.

Allana will continue to collaborate with local healthcare services, government and relevant partners in ensuring that measures implemented during construction focused on community access to social and physical infrastructure continue. This may involve Allana monitoring the accessibility and functionality of infrastructure, and providing training to communities on maintaining and developing infrastructure.

Allana will continue to monitor the impacts to vulnerable and marginalised groups, and their inclusion and benefit from measures implemented. A key way in which this will be addressed is through on-going stakeholder and vulnerability analysis, and the establishment of engagement 'working groups' that represent the interests of vulnerable parties who may not be able to speak out during other engagement activities. Further details are included in the SES (refer to Volume III *Annex M*).

4.3.3 Management Actions

During operations Allana will continue to monitor impacts to CHSS including:

- Monitoring of the quality and availability of water resources in and around the proposed Project as per actions outlined in the *Chapter 10*;
- Continued monitoring of impacts to local livelihoods and the applicability of the livelihood restoration plan for managing impacts;
- In partnership with local health authorities, monitor increased demands on health infrastructure;
- Continue to provide induction, training and voluntary testing facilities for communicable diseases and STIs including HIV / AIDS for new personnel;
- Continue auditing security providers reflecting on issues identified and lessons learnt during construction;

- Implementation of a tailored TMP for traffic requirements during operations;
- Implementation of an Operations Phase Stakeholder Engagement Plan (SEP) aligned to activities and impacts of operations;
- As part of the CDP, develop a handover plan with government and relevant parties to ensure that projects are sustainably managed by local communities and government.

As the operations phase nears completion Allana will partner with government to implement a financial planning programme for local employees and residents to prepare financially for closure, and the loss of economic resources needed to ensure adequate nutrition.

4.3.4 *Responsibility*

Personnel responsible for implementation will be similar to those identified in *Section 4.2.4*. Further details on the personnel responsible for implementing specific management measures are included in *Table 7.1*.

4.4 *MANAGEMENT FOR DECOMMISSIONING AND CLOSURE*

4.4.1 *Impacts*

The impacts during decommissioning and closure will be similar to those identified in *Section 4.1*, however as a result of the successful implementation of mitigation measures identified in *Sections 4.2.3* and *4.3.3* impacts related to access and pressure on social and physical infrastructure, and decreased availability and quality of water resource should not occur. Key impacts will relate to reduced health and well-being as a result of lost income associated with the downsizing and decommissioning of the mine. Those affected will include local employees and their families and those providing goods and services to the mine and to its employees.

4.4.2 *Objectives and Targets*

The objectives during decommissioning and closure will be to ensure that the objectives identified in *Section 1.2* are achieved, and in addition, to ensure that impacts arising from the loss of income and reduction in the local economy are reduced as far as is practicable.

In addition planning for this phase will be focused on the objective of ensuring public health and safety post-closure. Where Allana have been contributing to the improvement of local health and safety, sustainable alternatives should be identified in line with the CDP that include planned and measured withdrawal from any responsibilities and handover to government / other partner organisation.

4.4.3 *Management Actions*

Key management actions will be aligned to those outlined in *Section 4.3.3*, in addition to the following:

- Manage environmental pollution including impacts to air quality during the dismantling of proposed Project infrastructure. The AQMP (refer to Volume III *Annex A*) contain further detail on management actions;
- Train and test new employees on driving standards, and the transportation and handling of hazardous materials where relevant;
- Implement a handover and exit strategy for projects implemented under the CDP aligned to community health and safety;
- Manage the retrenchment of employees, and the associated loss of income, in a manner that will avoid or minimise potential impacts through a retrenchment plan in advance of decommissioning and closure;
- Actively plan to promote livelihood diversification and skill and capacity development, seeking to reduce the economic impact of decommissioning and closure on the local socio-economic system; and
- In keeping with the objectives of the SES ensure timely and open information sharing about proposed Project activities, and expected changes in proposed Project activities.

4.4.4 *Responsibility*

Personnel responsible for implementation will be similar to those identified in *Section 4.2.4*. Further details on the personnel responsible for implementing specific management measures are included in *Table 7.1*.

In order to verify the management measures, Allana will require several monitoring systems as part of its overall Environmental and Social Management System (ESMS). These will include the following:

- **Traffic Database:** this will log all vehicles entering or leaving the site, registration number, drivers and passengers' names, date and time of arrival and departure etc. This will be linked to the Traffic Surveillance and Monitoring System to log and identify any accidents or non-compliance related to traffic.
- **Community Feedback and Grievance Mechanism:** will log all grievances, issues and concerns raised during engagement sessions. The system will also include areas to record information on actions required to address issues, timeframes, personnel responsible and any subsequent feedback that is required.
- **Stakeholder Engagement Database:** will be used to track and record the dates, minutes and attendance at engagement activities. In addition the database will be used to log relevant stakeholders and contact details.
- **Traffic Surveillance and Monitoring System:** used to record number and type of accidents occurring, actions required to address incidents, and the re-occurrence of type of incidents. In addition the system should identify personnel responsible for addressing incidents.
- **Health Surveillance and Monitoring System:** this system will include both an OHS and CHS monitoring system so as to avoid duplication in creation of two separate systems. Both systems will be configured to record health details, identifying actions or follow-up where necessary, and the type of healthcare that is being sought. This information can be used to tailor health awareness and training programmes put in place. Records will be kept strictly confidential.
- **Emergency Response System:** this system will include a risk-based approach which assesses vulnerability to key hazards and emergencies, identify the roles, and responsibilities of personnel in the event of an emergency, communication channels with relevant local authorities and activities to be executed. Following an emergency, actions to prevent the recurrence of an event should be identified and implemented.
- **Water Quality Database:** a database of water quality test from community water sources surrounding the study area or from water sources installed by Allana.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

Allana will comply with Ethiopian regulations pertaining to reporting requirements relating to in-migration management.

6.2 *LENDER REPORTING*

Performance reports will be prepared and submitted to the IFC (and other lenders) as required according to their reporting schedule.

6.3 *INTERNAL REPORTING*

Allana will report on CHSS activities internally by:

- Directly reporting to the ELCR Manager of CHSS incidents;
- Regular reporting at production meetings in relation to worker - community health, safety and security issues; and
- The compilation of annual reports.

A reporting programme will be developed and kept up to date to ensure all requirements are met. A report will be published at least annually.

6.4 *COMMUNITY REPORTING*

As part of Allana's stakeholder engagement process Allana will provide updates (the frequency of which will vary according to Project phase) to key villages on CHSS management objectives and activities around these.

Allana will make all statements related to CHSS management public, in a culturally appropriate manner and in local languages in relevant places including community notice boards and Allana's local offices in Hamad Ela and Berahale.

Table 7.1 Management Measures for Construction, Operation, Decommissioning and Closure

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
MANAGEMENT OF COMMUNITY WATER RESOURCES - AVAILABILITY AND QUALITY							
✓			Provision of water to potentially impacted communities (if necessary based on results of ground water modelling and monitoring)	Engagement with local communities and authorities to plan for infrastructure provision, monitoring and maintenance.	<ul style="list-style-type: none"> Records of community engagement including community requirements and opinions 	Q1 2013	ELCR Manager
✓	✓			Assessment of the need for water provision as a result of impact to existing sources	<ul style="list-style-type: none"> Assessments/ Monitoring records demonstrating impact to water resources requiring mitigation 	Q1 2013, on-going thereafter as required	ELCR Manager
✓	✓			Construction of required infrastructure in impacted villages (e.g. Hamad Ela, Asabolo, Ambule, Fiae, Badle etc.) including centralised village boreholes, solar powered pumps, and / or pipework.	<ul style="list-style-type: none"> Number of water infrastructure items developed 	Q2 2013, on-going thereafter as required	ELCR Manager
✓	✓	✓		Monitor water quality at locations potentially impacted by Allana	<ul style="list-style-type: none"> Water Quality monitoring results 	Monthly	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				activities.			
✓	✓	✓		Monitor water quality at locations where infrastructure has been installed.	<ul style="list-style-type: none"> Water Quality monitoring results 	Monthly	ELCR Manager
✓	✓	✓	Develop Water Resources Management Plan	Protection of water resources (ground and surface) from pollution and contamination, in addition to monitoring availability to local communities.	<ul style="list-style-type: none"> Water quality monitoring results 	Developed by Q1 2013	Groundwater specialist ELCR Manager
✓	✓			Provide support in health education programmes on prevention of faecal / oral transmission of disease, treatment of drinking water, and construction of communal water taps.	<ul style="list-style-type: none"> Health education programmes implemented Amount of funding / logistical support provided 	Review progress annually	ELCR Manager Identified partners
✓	✓	✓	Implement actions in the WMP related to avoiding and managing waste to protect community water resources (surface and ground)	Refer to the WMP (Volume III Annex F).	Refer to the WMP (Volume III Annex F).	Refer to the WMP (Volume III Annex F).	Refer to the WMP (Volume III Annex F).
✓	✓	✓	Develop and implement participatory community water monitoring program.	Allana develop and train a community monitoring team in basic groundwater monitoring.	<ul style="list-style-type: none"> Records of community engagement and training 	Developed by Q1 2013	ELCR Manager
✓	✓	✓		Allana involve community monitoring team in all groundwater data collection	<ul style="list-style-type: none"> Records of community involvement in water monitoring 	Developed by Q1 2013	ELCR Manager
✓	✓	✓		Allana provide on-going	<ul style="list-style-type: none"> Records of 	On-going depending	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				engagement and feedback on results of groundwater modelling	community engagement including community requirements and opinions	on monitoring schedule in WMP (refer to Volume III Annex F).	
LIVELIHOOD RESTORATION AND DIVERSIFICATION							
✓			Develop Livelihood Restoration Plan	Identify and confirm geographical extent of impacts using results of groundwater and ecological studies, and in consultation with communities and formal and traditional leaders.	<ul style="list-style-type: none"> Records of stakeholder engagement Livelihood restoration Plan developed 	Developed by Q2 2013	ELCR Manager
✓				Identify potential offset areas for palm collection and pasture in consultation with communities and formal and traditional leaders (if required based on on-going groundwater modelling and monitoring).	<ul style="list-style-type: none"> Records of stakeholder engagement Working group established Number of community members trained 	Identified and developed by Q3 2013	ELCR Manager
✓	✓	✓		Establish a company-community working group for offset areas, and provide training on sustainable management of areas.	<ul style="list-style-type: none"> Number of community members that use offset area 		
✓			Develop and implement procedures to avoid and manage impacts to community pasture areas	Identify key community pasture areas, and incorporate into the final design of roads and infrastructure placing them away from these	<ul style="list-style-type: none"> Records of stakeholder engagement Finalised project 	Finalised design by Q1 2013	ELCR Manager Project Engineers

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility	
Construction	Operation	Decommissioning and Closure						
✓	✓	✓		areas. Develop and implement driving policy to avoid key pasture areas.	design <ul style="list-style-type: none"> Driving policy developed Number of drivers that receive training on policy Number of community complaints regarding disturbance of pasture 	Developed by Q2 2013 Review and monitoring of driving monthly (construction and decommissioning) and bi-monthly (operations)	ELCR Manager QHS Manager Contractor HSE Manager	
✓	✓	✓		Conduct regular engagement with communities to monitor the productivity of pastoral livelihoods, and provide fodder where required (based on monitoring).	<ul style="list-style-type: none"> Records of engagement documenting productivity of pasture and livestock 	Engagement prior to construction and quarterly thereafter		ELCR Manager
✓	✓	✓		Develop and implement procedures to avoid and manage impacts to artisanal salt mining	Develop and implement driving policy that includes rules on avoiding disturbance to key salt mining areas, and identification of crossing points for salt transporters and their animals.	<ul style="list-style-type: none"> Driving policy developed Number of drivers that receive training on policy Signage erected at cross over points 		Developed by Q2 2013 Monthly monitoring (construction and decommissioning) and quarterly (operations)
✓				Develop a mechanism and process for compensation, in consultation with communities in the event of an accident with camels / donkeys.	<ul style="list-style-type: none"> Compensation mechanism developed Records of stakeholder 	Developed by Q2 2013	ELCR Manager	

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
					<ul style="list-style-type: none"> engagement including grievances Records of accidents and compensation provided 		
	✓			Engage with key stakeholders on management measures for the waste salt, and identify the most feasible option.	<ul style="list-style-type: none"> Records of engagement with stakeholders Most feasible options identified 	Within Q4 2013	ELCR Manager
✓				Engage with key stakeholders on the Government's iodisation programme to understand impacts to local artisanal salt mining, and the potential for capacity building programmes as part of the CDP.	<ul style="list-style-type: none"> Records of stakeholder engagement Capacity development programme developed (if identified to be relevant) 	Within Q4 2013	ELCR Manager
✓	✓	✓	Develop and implement procedures to avoid and manage impacts to tourism	Design, construct and sponsor a tourism information office in consultation with local formal and traditional leaders.	<ul style="list-style-type: none"> Tourist information office developed Records of stakeholder engagement 	Q1 2014	ELCR Manager Relevant partners
✓	✓	✓		Identify opportunities to develop tourism services using the tourist information office and through the CDP.	<ul style="list-style-type: none"> Development of programmes in line with the CDP Number of 	Developed within Q4 2013 Review progress	ELCR Manager Relevant partners

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
					community members enrolled / involved in programmes	annually	
✓			Develop and implement a livelihood support and diversification programme as part of the CDP	Prioritise measures for implementation identified in the CDP for livelihood diversification. Refer to the CDP (Volume III Annex I).	<ul style="list-style-type: none"> Identified measures implemented 	Develop by Q4 2013 Review progress annually	ELCR Manager
VECTOR BORNE AND COMMUNICABLE DISEASE							
✓	✓		Management of vector borne and communicable disease	Strengthen local educational programmes that are 'women and youth friendly', focusing on the control of STIs and particularly HIV / AIDs.	<ul style="list-style-type: none"> Presence of educational programmes Records of women and youth enrolment Records on prevalence and incidence of STIs Refer to the CDP (Volume III Annex I).	Commence in Q1 2013 Review progress annually	ELCR Manager
✓	✓			Providing support to Health Extension Workers and community volunteers for educational programmes focusing on the mitigation and control of malaria and other vector borne diseases.	<ul style="list-style-type: none"> Presence of educational programmes Records on prevalence and 	Commence in Q1 2013 Review annually	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓			Providing support to the local Health Office investing into Health Centres distributing Long-Lasting Insecticide-Treated Nets (LLITNs).	incidence of malaria and other vector borne diseases Refer to the CDP (Volume III Annex I).	Commence following agreement with Health Centre Review progress annually	ELCR Manager
✓	✓			Engage and collaborate with local healthcare services and NGOs to identify current hygiene and sanitation projects. Refer to the CDP (Volume III Annex I).	<ul style="list-style-type: none"> Records of engagement and agreements Refer to the CDP (Volume III Annex I).	Commence in Q1 2013	ELCR Manager
✓	✓			Provide educational programmes to communities on basic control measures against communicable diseases.	<ul style="list-style-type: none"> Presence of educational programmes Number of communities involved in programme 	Commence once partners are identified Review progress annually	ELCR Manager
✓	✓	✓	Implement actions in the WkMP related to the health of Allana's workforce and the provision of recreational activities.	Refer to WkMP (Volume III Annex N)	Refer to WkMP (Volume III Annex N)	Refer to WkMP (Volume III Annex N)	Refer to WkMP (Volume III Annex N)
SPILLS CONTAMINATION AND EMISSIONS							
✓	✓	✓	Spill Prevention, Control and Containment	Implement measures in the Spill Prevention, Control and Containment Plan and develop comprehensive operating	<ul style="list-style-type: none"> Records of volumes of potentially harmful 	Plan developed for Q1 2013 Bi-weekly inspections	ELCR Manager Site Operations Manager Contractor HSE

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>procedures to prevent, control and mitigate spills both for onsite activities and transportation of materials.</p> <p>Refer to SPCCP (Volume III <i>Annex E</i>).</p>	<p>material transported and handled</p> <ul style="list-style-type: none"> Records of number of spills and releases Number of employees trained on spills response plan, first aid and chemical environment and safety. <p>Refer to SPCCP (Volume III <i>Annex E</i>).</p>	Biannual spill response drills	Manager
TRAFFIC ACCIDENTS							
✓			Manage future traffic impacts related to transportation of potash products	<p>Screen potential transportation routes for movements of potash from the site to Djibouti.</p> <p>Assess impacts of selected transportation routes and provide detailed mitigation to be implemented in Traffic Management Plan.</p>	<ul style="list-style-type: none"> Transportation Route Screening Transportation Route Impact Assessment Traffic Management Plan 	<p>Q4 2013</p> <p>Q4 2013</p>	<p>ELCR Manager</p> <p>ELCR Manager</p>
✓			Improve Road Signage	Implement road signs demarcating speed limits and identifying common pedestrian / livestock crossings.	<ul style="list-style-type: none"> Number of signs erected Demarcation of pedestrian and livestock routes 	Signs and demarcations produced by Q3 2013	<p>ELCR Manager</p> <p>QHS Manager</p>

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop and implement vehicle monitoring	Install GPS equipment to monitor vehicle speed and proactively manage driver speed.	<ul style="list-style-type: none"> Number of vehicles installed with GPS system Average speed readings 	Q4 2013	ELCR Manager QHS Manager Contractor HSE Manager
✓	✓	✓	Develop and implement driver policy and training	Provide a safe driving test for workforce that operate vehicles.	<ul style="list-style-type: none"> Number of employees who pass driving test 	Upon recruitment Review policy, training and procedures annually	ELCR Manager QHS Manager Contractor HSE Manager
✓	✓	✓		Provide defensive driving course and training on safe driving standards and policies consistent with those outlined in the WkMP.	<ul style="list-style-type: none"> Number of employees that receive training 		
✓	✓	✓		Develop worker fatigue and stress management programme for long haul truck drivers.	<ul style="list-style-type: none"> Presence of programme 		
✓	✓	✓	Develop community awareness and coordination procedure on public safety	Conduct community consultations to identify potential high risk areas for traffic accidents.	<ul style="list-style-type: none"> Records of engagement 	Within Q3 2013	ELCR Manager ELCR Officer
✓	✓	✓		Inform communities when traffic will increase prior to vehicle movements commencing.	<ul style="list-style-type: none"> Records of information dispersal / engagement Number of notices placed on community notice boards Number of signs erected 	Inform 2 months prior and follow up engagement every 2 weeks 1 month prior to activities commencing	ELCR Manager
✓	✓	✓		Engage with communities along	<ul style="list-style-type: none"> Records of 	Within Q3 2013	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				transport routes on road safety and accident prevention.	engagement	Follow up engagement monthly through SES and SEP	
✓	✓	✓		Develop capacity building programme around traffic management for communities identified to be at high risk to accidents.	<ul style="list-style-type: none"> • Training and capacity building programme developed • Number of traffic accidents related to community members 	Developed by Q3 2013 Review quarterly (construction) and annually operations and decommissioning)	ELCR Manager
✓	✓	✓		Identify and coordinate with national / regional services in the event of an emergency as specified in the ERP (refer to Volume III Annex C).	<ul style="list-style-type: none"> • Record of engagement • Records of agreement and responsibilities 	Identify services by Q3 2013	QHS Manager ELCR Manager
✓	✓	✓	Ensure contractors develop and implement health and safety management procedures	Ensure work sites and areas are clearly marked with appropriate signage and barricades.	<ul style="list-style-type: none"> • Number of signs and barricades erected 	Developed by Q3 2013 Review quarterly (construction) and annually operations and decommissioning)	Site Operations Manager Contractor HSE Manager QHS Manager
✓	✓	✓		Audit contractors' performance in relation to traffic safety standards and operating procedures.	<ul style="list-style-type: none"> • Number of contractor related traffic accidents • Audit findings 	From Q3 2013	Site Operations Manager Contractor HSE Manager QHS Manager
✓	✓	✓		Train employees on health and safety standards in particular those	<ul style="list-style-type: none"> • Number of employees that 	Upon recruitment	Contractor HSE Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				with limited prior experience / exposure.	receive training	Review quarterly (construction) and biannually operations and decommissioning)	HSE Manager
INTRA AND INTER COMMUNITY COMPETITION AND CONFLICT							
✓	✓	✓	Implement actions in the In-Migration Management Plan and Stakeholder Engagement Strategy to avoid, manage and monitor in-migration and potential impacts to community completion and conflict.	Refer to IMMP and SES (Volume III <i>Annex K and M</i>)	Refer to IMMP and SES (Volume III <i>Annex K and M</i>)	Refer to IMMP and SES (Volume III <i>Annex K and M</i>)	Refer to IMMP and SES (Volume III <i>Annex K and M</i>)
ANTI-SOCIAL BEHAVIOUR							
✓			Collaborate with local partners and government to provide education and awareness programme focused at managing anti-social behaviour	Engage with local authorities (local and traditional) and partners to identify programmes and requirements for implementation.	• Records of engagement	Engage by Q3 2013	ELCR Manager
✓	✓			Support an education and awareness programme targeted at managing anti-social behaviour.	• Funding awarded • Numbers of education events implemented	Identify by Q4 2013 Review progress annually	ELCR Manager
FOOD INSECURITY AND EFFECTS OF LOCALISED INFLATION							
✓	✓		Management of community food security and nutrition	Provide support (through funding, personnel or training) to local programmes focused on the hygienic handling of food, and the importance of a balanced diet.	• Programme developed • Funding or training provided for programme	Identify programmes by Q4 2013 Review progress annually	ELCR Manager
✓	✓			Provide support to current programmes targeting	• Presence of programme	Identify programmes by Q4 2013	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				malnutrition and anaemia.	<ul style="list-style-type: none"> Funding or training provided Number of people treated 	Review progress annually	
✓	✓			Provide support to the Berahale Health Clinic in providing deworming and vitamin A supplementation programmes for local schools.	<ul style="list-style-type: none"> Presence of programme Funding or training provided for programme Number of people treated 	Commence engagement within Q3 2013	ELCR Manager
✓	✓		Implement actions in the IMMP on emergency food aid procedure. Refer to IMMP (Volume III Annex K)	Refer to IMMP (Volume III Annex K)	Refer to IMMP (Volume III Annex K)	Refer to IMMP (Volume III Annex K)	Refer to IMMP (Volume III Annex K)
COMMUNITY CONFLICT AND COMPETITION WITH SECURITY PROVIDERS							
✓	✓	✓	Provide training to private (and where possible public) security forces used for the proposed Project	Training will include guidance on Allana's Human Rights policy and its practicable application, appropriate use of force, interactions with local communities, and protection of human rights.	<ul style="list-style-type: none"> Development of relevant training materials Training records of number of staff / public security providers trained Numbers of grievances received relevant to security forces. 	Develop and implement training by Q1 2013 Review annually	ELCR Manager HR Manager
✓	✓	✓	Conduct human rights due	In order to identify, prevent,	<ul style="list-style-type: none"> Presence of human 	Develop due diligence	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
			diligence	mitigate and account for how they address human rights Allana will carry out a Human Rights Due Diligence. The process should include assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed.	<ul style="list-style-type: none"> right due diligence process Update of risk register with findings 	<p>report by Q3 2013</p> <p>Review annually</p>	
✓	✓	✓	Develop and implement Security Policy and corporate commitment to respect human rights according to Voluntary Principles on Security and Human Rights (VPs)	Develop security policy and procedures.	<ul style="list-style-type: none"> Procedure and Policies present Updated schedule Number of security related grievances received Audit security providers for compliance 	<p>Develop procedures by Q1 2013</p> <p>Review annually</p>	ELCR Manager
✓	✓	✓	Develop and implement risk assessment procedure	Develop risk assessment system and risk register specifically considering risk associated with security providers.	<ul style="list-style-type: none"> Risk assessment procedure in place 	<p>Develop procedures by Q1 2013</p> <p>Review annually</p>	ELCR Manager
✓	✓	✓	Implement stakeholder engagement programme relevant to security provision (refer to SES for details)	Engage with potentially affected communities on Allana's requirements for security provision, the feedback mechanism and objective to protect human	<ul style="list-style-type: none"> Records of engagement Community feedback mechanism 	<p>Preliminary engagement Q1 2013</p> <p>Review mechanism annually</p>	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop and implement monitoring and auditing programme for security providers	rights. Audit security providers for adherence to policy and procedures and suitability of interactions with local stakeholders including vulnerable groups.	<ul style="list-style-type: none"> • Number of audits undertaken of contractors • Number of gaps identified • Number of gaps addressed 	Conduct audits annually	ELCR Manager
✓	✓	✓	Develop and implement community feedback mechanism (refer to SES on proactive on-going engagement) that is culturally appropriate, readily accessible, transparent, with no cost implication and without retribution	Undertake engagement with communities and local leaders to design and identify approach to feedback mechanism, including roles and responsibilities in managing and monitoring feedback.	<ul style="list-style-type: none"> • Feedback mechanism developed • Record of engagement sessions • Record of feedback and responses generated • Monitoring system developed 	Commence engagement within Q1 2013 Develop monitoring system by Q2 2013 Review quarterly	ELCR Manager
✓	✓	✓		Implement feedback mechanism and use to identify community opinion of security providers, and monitor potential changes in opinions.	<ul style="list-style-type: none"> • Records of engagement • Records of community issues raised 	Implement mechanism by Q2 2013	ELCR Manager
✓	✓	✓		Use the mechanism to report incidents and progress in addressing incidents, to communities.	<ul style="list-style-type: none"> • Records of incidents • Actions developed to address incidents 	Review quarterly	ELCR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
					<ul style="list-style-type: none"> Number of incidents closed out 		
GENERAL							
✓	✓	✓	Implement actions in the ERP on emergency communication and coordination with regards to communities.	Refer to the ERP (Volume III <i>Annex C</i>).	Refer to the ERP (Volume III <i>Annex C</i>).	Refer to the ERP (Volume III <i>Annex C</i>).	Refer to the ERP (Volume III <i>Annex C</i>).
✓	✓	✓	Implement actions in the SES on community engagement regarding health, safety and security.	Refer to the SES (Volume III <i>Annex M</i>).	Refer to the SES (Volume III <i>Annex M</i>).	Refer to the SES (Volume III <i>Annex M</i>).	Refer to the SES (Volume III <i>Annex M</i>).
HEALTH IMPACTS ASSOCIATED WITH CLOSURE							
✓		✓	Develop retrenchment policies	<p>In the event of large-scale retrenchment being required, develop and apply a retrenchment plan based on IFC PS 2, including: seeking alternatives to retrenchment, consultation with workers, non-discrimination, compliance with national law and collective bargaining agreements, and ensuring that all relevant payments are made to workers.</p> <p>Refer to the WkMP (Volume III <i>Annex N</i>).</p>	Refer to the WkMP (Volume III <i>Annex N</i>).	Refer to the WkMP (Volume III <i>Annex N</i>).	Refer to the WkMP (Volume III <i>Annex N</i>).
		✓	Develop a sustainable decommissioning and closure process (refer to	Develop a plan to support local workers to diversify and develop alternative and sustainable	Refer to the WkMP (Volume III <i>Annex N</i>).	Refer to the WkMP (Volume III <i>Annex N</i>).	Refer to the WkMP (Volume III <i>Annex N</i>).

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
			IMCP for further detail)	livelihoods following mine closure. This should be included in the IMCP. Refer to the WkMP (Volume III <i>Annex N</i>).			
		✓	Manage closure process to protect the receiving environment from spills and contamination	Refer to the IMCP and SPCCP (Volume III <i>Annex D</i> and <i>E</i>).	Refer to the IMCP and SPCCP (Volume III <i>Annex D</i> and <i>E</i>).	Refer to the IMCP and SPCCP (Volume III <i>Annex D</i> and <i>E</i>).	Refer to the IMCP and SPCCP (Volume III <i>Annex D</i> and <i>E</i>).
✓	✓	✓	Promote social development through livelihood diversification, skill and capacity development.	Minimum of five year prior to decommissioning prepare detailed closure focussed social development planning aimed at developing specific pragmatic and implementable measures related to avoiding or managing CHSS impacts related to closure Provision, in collaboration with partner organisation, of training, capacity development and adult education initiatives. Refer to CDP (Volume III <i>Annex I</i>).	Plan developed Refer to CDP (Volume III <i>Annex I</i>).	Minimum of five years prior to decommissioning Refer to CDP (Volume III <i>Annex I</i>).	ELCR Manager Refer to CDP (Volume III <i>Annex I</i>).
				Work with partner organisations to develop micro-finance organisations targeted at local Afar people.	Refer to CDP (Volume III <i>Annex I</i>).	Refer to CDP (Volume III <i>Annex I</i>).	Refer to CDP (Volume III <i>Annex I</i>).

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In-Migration Management Plan

Version 2.0

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LIST OF ACRONYMS

Abbreviation	Full Definition
IMRA	In-Migration Risk Assessment
PIIM	Project-Induced In-Migration
ESHIA	Environmental, Social and Health Impact Assessment
SSA	Social Study Area
AoI	Area of Influence
ANRS	Afar National Regional State
IDP	Internally Displaced Person
DPPB	Afar Disaster Prevention and Preparedness Bureau
FGDs	Focus Group Discussions
SRPMP	Sourcing, Recruitment and Procurement Management Plan
SES	Stakeholder Engagement Strategy
CHMP	Cultural Heritage Management Plan
WkMP	Worker Management Plan
CHSSMP	Community Health, Safety and Security Management Plan
GoE	Government of Ethiopia
ANRS	Afar National Regional State
EMS	Environmental Management System

DEFINITIONS

Social Study Area: The area where primary social baseline data was collected

Social Area of Influence: is indicative of the potential geographic extent of social impacts that may occur due to the proposed Project. This has been developed based on the prediction of social impacts during the scoping phase of the Environmental Social and Health Impact Assessment (ESHIA).

Internally Displaced Person: is someone who is forced to flee his or her home but who remains within his or her country's borders.

Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 and 1878/2002 from the Ethiopian Ministry of Mines and Energy), in the Danakil Depression, Afar National Regional State (ANRS) in the Woredas of Dallol and Berahale, in north eastern Ethiopia. Allana propose to develop a potash mine, within their concession area. As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans have been developed in response to legal and policy requirements and consideration has been given within the assessment process to the comments of the public and the relevant authorities.

The management plans address impacts identified in the ESHIA and will be implemented as part of an Environmental Management System (EMS) for the proposed Dallol Potash Project. This document is the In-Migration Management Plan (IMMP) and seeks to describe the approach to managing the potential impacts and consequences of Project-Induced In-Migration (PIIM).

1.1

IN-MIGRATION CONTEXT

The Dallol Potash Project is being developed in an area that is undergoing a process of considerable social change. Whilst the proposed Project is an important driver of such change, there are other processes and developments that are occurring at the same time and will be important contributing factors. These include the potential development of a number of other exploration and mining concessions, as an emerging local tourism industry and the construction by the Government of Ethiopia (GoE) of a new road from Mekele to Bada road (on-going at the time of writing). Given the low level of infrastructure and resources and low population density, even relatively low rates of PIIM may have potentially significant local social impacts on the area. This is discussed further in In-migration Risk Assessment (IMRA) (Volume II *Annex F*).

The first challenge to the effective management of PIIM will be to identify forms of in-migration that may occur in the proposed Social Area of Influence (AoI). The (IMRA in has identified potential in-migration 'hotspots' that include:

- Hamad Ela;
- Berahale;
- Ambule; and

- Any new settlements that develop alongside or in close proximity to newly constructed project or road infrastructure.

It is important to appreciate the combined effect that a number of projects, being developed in the same area at a similar time, could have on in-migration. The total scale of in-migration may therefore be greater than the sum of the in-migration that individual projects may cause.

Some migrants may be attracted to the area on the basis of specific information (or *mis*-information, as is sometimes the case) relating to project-related opportunities, such as employment. However as more projects begin to gain momentum in the same area, in-migrants may be attracted by a general resultant surge in economic activity in an area, rather than any activity associated with one particular project. This is particularly the case for in-migrants attracted to an area by opportunities that are related indirectly to project activities. In other words, the net effect of PIIM that will be generated by the proposed Project includes those migrants that are attracted directly by the promise of opportunities associated with the Dallol Project, as well as those attracted by the Project's contribution (or perceived contribution) to the overall development of the local economy.

In planning for the management of PIIM, it is important to bear in mind that a certain degree of in-migration is not only an inevitable outcome in a development of this type, it is also important, both to the success of the proposed Project and to realizing the long-term economic benefits to the local area. An enhanced possibility for increased exchange and concentration of people, goods and services is recognized as an important ingredient to development activities. The effective management of PIIM is not, therefore, an exercise in limiting migration and preventing people from creating or accessing new opportunities. The responsibility of the proposed Project is to ensure that related processes of in-migration do not impact negatively on the existing local communities in ways that are unmanaged. Mitigation should therefore strive to balance any interventions that seek to reduce the negative impacts of in-migrants with the many potential ways that in-migration can build economically stronger, healthier and more resilient local economies and communities.

It should be noted that the number of in-migrants that an area is able to accommodate successfully is conceptualised as the 'absorptive capacity' of local communities, highlighted in the IMRA in Volume II *Annex F*. This capacity is highly context-specific and may vary considerably from one site to the next; two sites with similar populations or similar local economies may have vastly different absorptive capacities, depending on a broad range of interacting social and economic variables. The prevailing social and environmental conditions in the Social Study Area (SSA) suggest that there is a general low absorptive capacity with relatively low potential to accommodate in-migration. Mitigation related to PIIM is therefore likely to be required in response to what may appear to be relatively low absolute levels of in-migration.

1.2 *POLICY STATEMENT*

Allana's current policies do not include specific reference to in-migration. However they do state that they intend to:

"Evaluate, plan, construct, and operate all projects and facilities to reduce adverse environmental impacts and to meet or exceed applicable environmental laws, regulations, and standards. In the absence of applicable regulations, the Company will apply cost effective best management practices to protect the environment."

Allana will seek to monitor PIIM so as to avoid unplanned and unmanaged PIIM; mitigate and manage any negative impacts, and enhance and promote any positive impact related to PIIM that does occur.

1.3 *OBJECTIVES*

The objectives of the IMMP are to establish the process to:

- Monitor the scale of PIIM into the Social AoI and specific in-migration 'hotspots';
- Avoid unplanned and unmanaged in-migration into the Social AoI; and
- Mitigate and manage any negative impacts and enhance and promote any positive impact related to PIIM.

1.4 *PURPOSE*

The IMMP has been developed to monitor and manage the process and impacts related to PIIM within the context of meeting national and international requirements and standards, as set out in *Section 2*.

1.5 *SCOPE*

The IMMP is applicable to construction, operations and decommissioning phase of the proposed Project. It will be relevant to Allana and all third party contractors at the proposed Project. This plan will be regularly reviewed and updated to reflect revised Project design, socio-economic changes and learning experienced during its implementation.

1.6 *LINKAGES TO OTHER ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS*

This IMMP should be read in the context of the Environmental, Social and Health Management System (ESH-MS - discussed in *Chapter 13* of the ESHIA).

The ESH-MS provides the framework for a suite of management plans, described in Volume III *Annexes A to N*, which have been designed to address social and environmental risks and impacts associated with the proposed Project.

It is recognised that the ESH-MS and associated plans are living tools that will be constantly updated to accommodate changing circumstances.

Specifically, this plan related to the following management plans, as shown in *Table 1.1*.

Table 1.1 *Linkage to Other Management Plans*

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL PLANS	
Stakeholder Engagement Strategy (SES)	Discusses the engagement measures relevant to managing PIIM.
Sourcing, Recruitment and Procurement Management Plan (SRPMP)	Discusses the procurement of local goods and services in a manner that will seek to dis-incentivise opportunistic non-locals from migrating to the area seeking employment and economic opportunity.
Community Development Plan (CDP)	An element of the CDP is aimed at improving infrastructure and services in the area in partnership with other organisations. This will help to reduce the potential for negative impacts caused by PIIM but may also, conversely, foster greater in-migration. This is a risk which Allana must be aware of and actively manage.
Community Health, Safety and Security Plan (CHSSP)	Discusses the implementation of measures to avoid or mitigate impacts related to community health, safety and security reducing the potential for negative impacts caused by PIIM.
Worker Management Plan (WkMP)	Discusses the implementation of health and labour standards and workforce controls. This will be relevant for managing workforce-community interactions and reducing the potential for PIIM.
CLOSURE PLANS	
Integrated Mine Closure Plan (IMCP)	The IMCP will discuss how to manage the retrenchment of workforce during the decommissioning phase.

A summary of the legal requirements and standards relevant to the IMMP are presented below. It should be noted that this review of requirements may not be comprehensive.

2.1 NATIONAL LEGISLATION AND POLICY

Based on preliminary review no relevant national Ethiopian legislation was uncovered relevant to the requirements related to the management of PIIM.

2.2 INTERNATIONAL LEGISLATION AND POLICY

2.2.1 IFC Performance Standards and Guidance

The IMMP has been guided by international good practice regarding in-migration. This includes the International Finance Corporation's (IFC) handbook on PIIM, *Projects and People: A Handbook for Addressing Project-Induced In-Migration*.

Allana have committed to meeting the International Finance Corporation's Performance Standards for Social and Environmental Sustainability (IFC PSs). The IFC PSs do not include specific requirements regarding managing the potential for in-migration except that Allana will avoid or minimise the transmission of communicable diseases that may be associated with the influx of project labour (Performance Standard Four: Community Health Safety and Security).

The commitments within the IMMP have been developed to ensure that Allana address their social risks and impacts through a management plan as required in Performance Standard 1.

2.3 AFRICAN DEVELOPMENT BANK STANDARDS AND POLICIES

The African Development Bank (AfDB) integrated environmental and social impact assessment guidelines mention the requirement to consider population characteristics and dynamics, including internal and international migration including rural-urban movement. However, the AfDB guidelines do not include specific requirements regarding managing the potential for in-migration.

The Environmental, Land and Community Relations Manager (ELCR) Manager will be responsible for the implementation and management of all measures in relation to the IMMP.

All employees including contractors (and their employees) will be required to adhere to the requirements of the IMMP.

Contractors will be required to take a level of responsibility for ensuring the application of this plan to their staff. This will be the responsibility of contractor staff, under the supervision of the ELCR Manager.

4.1 SUMMARY OF IMPACTS TO BE MANAGED

The IMMP has been developed to manage, avoid and mitigate and / or optimise a number of in-migration related impacts that are likely to result from the Dallol Potash project. These include:

- ***Increased income generating opportunities related to influx:*** the arrival of migrants into the Social Study Area may increase demand for accommodation, goods and services and increase income for local providers.
- ***Increased cost of living due to localised inflation:*** the arrival of migrants into the Social Study Area may result in additional demand for goods and services causing an increase in the cost of basic goods.
- ***Erosion of the traditional governance mechanism:*** the arrival of migrants into the Social Study Area may result in challenges to the traditional governance mechanism's functionality.
- ***Decreased social and cultural cohesion:*** the arrival of migrants into the Social Study Area, each with their associated cultural and social norms, will introduce a range of new norms with the potential to challenge social and cultural systems.
- ***Decline in health profile due to decreased availability and / or quality of water:*** influx may result in increased demand and an increased chance for contamination of water sources as a result from a greater number of users accessing an essentially unmanaged resource.
- ***Increase in vector borne and communicable disease:*** the arrival of migrants into the Social Study Area may lead to increased population densities and in the absence of adequate sanitation the incidence of infectious disease.
- ***Increased intra and inter community competition and conflict:*** the arrival of migrants into the Social Study Area may lead to social tensions over resources and social conduct, potentially causing increased intra and inter community conflict.
- ***Increased anti-social behaviours:*** the arrival of migrants into the Social Study Area may lead to changes in the way that the local community function and increase the practice of activities that are currently taboo in the Afar area, but more widespread across the rest of Ethiopia.

- ***Pressure on infrastructure:*** the arrival of migrants into the Social Study Area may lead to increased demand on infrastructure, services and resources resulting in overburdening of this social infrastructure.
- ***Impacts to cultural heritage and archaeology:*** the arrival of migrants into the Social Study Area may lead to damage or disturbance to the cultural heritage or archaeological items due to looting or failure to identify sensitive sites.

It should be noted that the potential impacts associated with PIIM can be managed more effectively if they are identified early in the project lifecycle. Ideally, many potential negative impacts may be avoided entirely if the correct management measures are promptly and properly implemented.

The following sections consider possible management approaches and the specific strategies that they may be applied throughout the lifecycle of the proposed Dallol Potash Project.

4.2 ***MANAGEMENT DURING CONSTRUCTION***

4.2.1 ***Impacts***

The impacts during construction will be similar to those identified in *Section 4.1*.

It is anticipated that the impacts during construction may be more significant than at any other time in the Project lifecycle. This is due to the currently low absorptive capacity for in-migrants within the Social Study Area and the possibility for a large rate of in-migration to occur, particularly when considered in terms of the number of in-migrants as a percentage of host community populations. This large rate may be caused by the presence of the 'pull factor' of the requirement for hiring of labour during the construction phase, which may be larger and more focused during this phase than at any other time.

4.2.2 ***Objectives and Targets***

The objectives of the IMMP in managing the identified impacts during construction are established in *Section 1.3*. *Table 7.1* identifies the specific targets and management measures associated with this phase of the project lifecycle.

4.2.3 ***Management Actions***

The following sections describe the management actions required to fulfil the objectives of the IMMP during construction. These are discussed in greater detail in *Table 7.1*.

Stakeholder Engagement and Monitoring In-Migration

The first step to managing PIIM effectively includes the development and implementation of a rigorous and regular monitoring and stakeholder engagement process. Monitoring should be conducted on a regular basis, to build up an understanding in-migration patterns and trends.

Monitoring activities should take place on a six-monthly basis during the construction period and continued on an annual basis for the first five years of the project development cycle. If levels of PIIM are both stable and manageable after five years the period between monitoring cycles could be extended to two years. Monitoring of population settlements should take place principally in Hamad-Ela, Berahale, Ambule and any villages that develop in proximity to proposed Project infrastructure (although this should be discouraged through measures discussed later in this management plan).

The purpose of monitoring is to identify any issues related to the rate, scale and social characteristics of PIIM. Monitoring activities should include:

- The analysis of available aerial / satellite photography to assess the expansion of settlements within the AoI;
- The collection of high quality wide-angle digital photographs of settlements from the same vantage point at regular intervals. These can provide information on the rate and scale of settlement expansion and can be used as particularly compelling evidence to demonstrate changing settlement trends;
- Interviews with local authorities and traditional leaders, which are based on a standard interview guideline, to gauge changing perceptions of new migration patterns. These interviews should also include local authorities and other local stakeholders in the area of health, education, and local community infrastructure;
- A six monthly (construction) or annual during operations (for the first five years, periodically thereafter as necessary) household survey of all settlements that have been identified as potential in-migration hotspots (Hamad-Ela, Berahale, Ambule and another Afar villages in the vicinity of the project site). The final village should be selected on the basis of its distance from the project. This final village will serve principally as a 'control group' for the purpose of analysing changing dynamics related to in-migration in potential in-migration hotspots. It will also help to monitor for any unanticipated forms of in-migration. Households should be sampled randomly and samples should be large enough to be representative of their communities (suggested amounts include in excess of 50% of households in settlements under 1,000 people, 25% of households over 1,000 people). Since the aim of the survey is to measure changing rates of in-migration, the sample should not discriminate between migrant and local households. The survey should be

standardised and replicated over each monitoring cycle to enable meaningful comparison of data. The survey needn't be long or elaborate but should include questions that cover the following:

- Household status (i.e. local or in-migrant);
 - Basic socio-economic indicators (e.g. employment levels, housing quality and status, dependency on food aid, school attendance rates, basic health indicators);
 - Perceptions of changing dynamics of in-migration;
 - Experiences of positive impacts of in-migration;
 - Experiences of negative impacts of in-migration; and
 - Household access to services including health, education, housing and water/sanitation.
- The household survey developed as part of the ESHIA social baseline (refer to Volume II *Annex B*) can be used as a starting point for comparison.
 - Conduct selected semi-structured interviews with both migrant and established local residents to identify any potential conflict-related issues that may be related to PIIM. These enquiries should be based on a systematic questionnaire guideline to be able to compare data over time.

In order to appreciate the impact of PIIM on the area that is experiencing in-migration 'pull factors' from a number of projects developed at the same time Allana should consider establishing an In-Migration Management Forum for the region (this may be undertaken as part of the Dallol Mining Forum). This may include participation from all neighbouring projects that may potentially contribute to increased levels of in-migration. If levels of in-migration prove to be higher than anticipated, such a forum may be required to mobilise the 'critical mass' that will be necessary to address negative impacts effectively.

Promote Regional Diversified Growth Opportunities

Recognising that the development of the Afar area and Ethiopia is the responsibility of the GoE and the ANRS Government it will also benefit Allana to promote 'hubs' of regional development away from their AoI to direct PIIM towards other areas. One of the most effective ways of managing the risks and impacts associated with PIIM is to avoid the development of new concentrations of resources and opportunities around the proposed Project infrastructure. This can be done by supporting alternative economic opportunities that are more distant from the Social AoI and the identified in-migration hotspots. This will involve liaison with regional development stakeholders including the ANRS and Ethiopian Government, relevant NGOs and civil society. As part of on-going community development planning Allana will consider how and the extent to which it is possible to support development initiatives that may promote regional diversified growth.

The IFC in their guidance note on PIIM specify that in such circumstances the companies contributing to in-migration must support its management and the development of regional diversified growth opportunities is one of their recommended approaches:

“A project may support the development and implementation of regional growth strategies that create alternative economic opportunities distant from the project area of influence, thereby ensuring that the project does not become the sole locus of economic development and attraction. Development of such strategies requires the participation and support of many stakeholders, including national, regional, and local government, the private sector, civil society, and communities, and typically involves long lead times.”

(IFC guidance on in-migration management)

This will require early implementation, during the construction phase, before new patterns of in-migration become established, and potentially act as pull factors themselves. This strategy also requires a strong commitment of resources and extensive engagement with a broad range of stakeholders in order to be implemented effectively.

Promoting diversified regional economic growth may be an effective strategy for dispersing the points of attraction for in-migration. The use of this strategy should consider the extent to which such interventions create new incentives for *increasing* the overall rate and scale of PIIM. The adoption of an approach that seeks to disperse local economic opportunities should therefore be monitored carefully for any unintended consequences.

Planning Development Along Access Routes

The potential for new settlements to develop along newly constructed or upgraded roadways has been highlighted in the IMRA. In addition, the upgrading of the government road between Mekele and Bada that, at the time of writing, is currently taking place will increase the mobility potential of the population by reducing the cost of transport and increasing opportunities to access transport. However Allana should seek to ensure, to the extent possible, that settlement development along new roads occurs in a planned, safe and sustainable manner through liaison with and provision of support to the GoE and other authorities. Ideally this would be facilitated by engagement with formal government and local and traditional authorities surrounding the development of settlements at the road side. It should however be recognised that Allana do not have remit to influence the design of the Mekele to Bada road and cannot independent entirely influence or control new settlements that are developed. This process will require on-going engagement with relevant stakeholders to collectively manage any settlements that develop at the road side.

All Allana roads within the concession area will be private roads and inaccessible by public users.

It should be noted that should new settlement development may be driven, not by in-migrants, but by local communities seeking to relocate to less isolated sites that have easier access to the potential benefits of improved forms of social and economic connection to larger centres.

Spatial Planning, Administration and Resource Allocation

In order to avoid a proliferation of unplanned construction, intended to meet the demand from new in-migrants Allana will work directly with local authorities (traditional and formal) to anticipate and support settlement expansion that occurs as a consequence of project development. It is important that this planning occurs prior to the realisation of in-migration.

The orderly expansion of infrastructure, services and utilities will require government support and authorization, while the 'zoning' of areas for housing and commercial activities will require the involvement of the traditional leadership. Such planning will lead to a more orderly integration of in-migrants and the generation of more sustainable communities.

Allana will work directly with local authorities and community leaders in Hamad-Ela, Berahale and Ambule to enable planned settlement expansion and associated necessary improvements to public infrastructure, such as water supply and sanitation, improvements to health services and better access to educational facilities. This will involve the development of agreed areas suitable for in-migrants and engagement with government to discuss requirements for targeting infrastructure and services.

In addition Allana will work with local leaders to agree buffer zones around camps and infrastructure where settlement will be controlled and settlers directed to areas zoned to manage new migrants.

Recruitment Policy and Management

Allana's approach to recruitment of labour may be one of the most effective tools for managing potential in-migration. This is discussed in greater detail in the Sourcing, Recruitment and Procurement Management Plan (refer to Volume III *Annex L*).

Some of the recognised strategies to manage in-migration through recruitment planning include:

- Prioritizing the recruitment of labour, particularly for temporary contracts, from candidates who are identified as 'local' to the Study Area. This is intended to reduce the incentive of outsiders to move to the area in search of income generating opportunities. This may require an extensive and on-going effort to communicate clear recruitment policies and the rationale behind these. Importantly, these policies that define and favour 'local' entitlements to employment opportunities need to be developed in close consultation with local traditional authorities and government officials, in

order to ensure that they enjoy widespread legitimacy. These policies should also extend to contractors and labour-recruiters if they are to be effective.

- Recruitment of workers from a centralised area (for example in Berahale), away from the proposed Project camp. This limits the incentive for work-seekers to settle at the gate of the project in hope of picking up opportunities for casual labour. It also encourages recent in-migrants to reside in areas where their settlement is anticipated and planned for. At present it appears that Berahale represents the most appropriate centre for conducting labour recruitment. Labour recruitment operations should be established with a view to identifying and managing any locally specific impacts or issues that arise. Local recruitment will be undertaken from the Allana Berahale Office which is located at the Woreda Administration offices.
- An expatriate workforce may represent an attractive employment market for a spontaneous casual labour force, potentially contributing to migration into the area. In response to this Allana will enforce a closed camp for all employees restricting movements during off-duty hours to all workers to surrounding settlements.
- The provision of transport to workers from more concentrated centres that are better able to cope with the influx of in-migrants, may have a significant impact on reducing in-migration settlement in potential 'hotspots' located close to the project site, such as Hamad-Ela. If workers are able (and encouraged through the provision of transportation services) to live in more developed settlements like Berahale, which the project workforce will have a much lower negative impact on settlements close to the project site (like Hamad Ela and Ambule).

4.2.4 *Responsibility*

The responsibility for implementing these mitigation and avoidance measures is outlined in *Section 3*. In addition *Table 7.1* identifies the specific targets and management measures associated with the identified impacts, including monitoring measures and personnel responsible.

4.3 *MANAGEMENT DURING OPERATIONS*

4.3.1 *Impacts*

In spite of implementing management measures within the construction phase some degree of PIIM is possible and likely. In the event that PIIM does occur the impacts during construction will be similar to those identified in *Section 4.1*.

If the mitigation measures outlined in *Section 4.2* are implemented, it is anticipated that the impacts which occur during operations may be less significant than during the construction phase. This will be due to an increase in the absorptive capacity of potential 'host' communities for in-migration and the reduction in the rate of in-migration into the area. It should be noted that even if the measures outlined in *Section 4.2* are implemented fully, some in-migration is expected to continue during the operations phase, which continue to cause some impacts.

4.3.2 *Objectives and Targets*

The objectives of the IMMP in managing the identified impacts during operations are established in *Section 1.3. Table 7.1* identifies the specific targets and management measures associated with this phase of the project lifecycle.

4.3.3 *Management Actions*

The following sections describe the management actions required to mitigate the PIIM that is anticipated to occur during the operations phase. This focusses on an approach that delivers:

- The effective delivery of project benefits to local 'host communities';
- Strengthening of Project and local governance capacity; and
- Directly addressing negative impacts of in-migration.

Transparent and Effective Delivery of Project Benefits

The effective and transparent delivery of project benefits to appropriate Project-affected people involves the identification of what benefits are available and who is entitled to them in advance of delivery. The absence of ambiguity on this point reduces the incentives for speculative migrants to seek to access opportunities that may not exist or that they are not deemed to be entitled to. The delivery of Project benefits to 'local host communities' is discussed in greater detail in the Community Development Plan and Stakeholder Engagement Strategy (refer to Volume III *Annex I* and *M* respectively).

The delivery of Project benefits may include vocational training, access to micro-finance, enterprise development or other Project sponsored forms of local community development, as described in the Community Development Plan (refer to Volume III *Annex I*).

Strengthening of Project and Local Governance Capacity

In response to PIIM Allana will ensure that adequate systems are in place to manage stakeholder engagement, monitoring, evaluation and community development. This will be managed through the EHS-MS and the measures detailed to ensure that adequate skills and competencies are in place.

In addition Allana will work with the traditional and formal government networks to grow capacity in the areas of planning and infrastructure development based on skills and experience and partnership projects.

Direct Mitigation of Impacts of In-Migration

The anticipated occurrence on in-migration will have specific environmental and social impacts (refer to *Section 4.1*). As a result Allana will develop mitigation measures that address specific impacts; this may include infrastructure improvements (e.g. water sanitation and health infrastructure etc.).

Key to the management of potential conflict driven by in-migration will be work to work with the traditional governance network and the relevant Kebele or Woreda government to promote conflict resolution programmes through a consultation process, including sponsoring discussion between different communities where necessary. In addition Allana will support the organisation / organise a series of cultural activities to help strengthen Afar culture and encourage the current social ties and networks.

It is not possible to identify all of the specific appropriate interventions that may be required to manage PIIM related impact at this stage. Some of the impacts identified which will have an effect on in-migration may be avoided, through planning and pre-emptive investment that reduces the potential for undesirable forms of in-migration to occur. Through intensive monitoring and stakeholder engagement, the proposed Project will be able to identify negative impacts promptly and address these before their effects can escalate.

Table 7.1 provides an outline of some of the basic mitigation measures that may help to mitigate any PIIM related impacts.

4.3.4 *Responsibility*

The responsibility for implementing these mitigation and avoidance measures is outlined in *Section 3*. In addition *Table 7.1* identifies the specific targets and management measures associated with the identified impacts, including monitoring measures and personnel responsible.

4.4 *MANAGEMENT DURING DECOMMISSIONING AND CLOSURE*

4.4.1 *Impacts*

During the decommissioning and closure phases it is anticipated that PIIM will have halted as the draw of economic opportunities has ceased.

Some of the impacts related to PIIM (identified in *Section 4.1*) may however continue to be experienced.

4.4.2 *Objectives and Targets*

The objectives of the IMMP in managing the identified impacts during operations are established in *Section 1.3*. *Table 7.1* identifies the specific targets and management measures associated with this phase of the project lifecycle.

4.4.3 *Management Actions*

The management actions required to mitigate impacts related to PIIM have been described in previous sections.

4.4.4 *Responsibility*

The responsibility for implementing these mitigation and avoidance measures is outlined in *Section 3*. In addition *Table 7.1* identifies the specific targets and management measures associated with the identified impacts, including monitoring measures and personnel responsible.

In order to verify the management measures, Allana will require several monitoring systems as part of its overall Environmental and Social Management System (ESMS). These will include the following:

- **In-Migration Database:** will track the results of PIIM monitoring including aerial / satellite imagery, wide-angle photographs of settlements, interview responses with traditional leaders, local residents and local stakeholders in the area of health, education, and local community infrastructure, food prices, signage developed, zoning maps, and household survey results.
- **Stakeholder Engagement Database:** will be used to track and record the dates, minutes and attendance at engagement activities. In addition the database will be used to log relevant stakeholders and contact details.
- **Community Feedback and Grievance Mechanism:** will log all grievances, issues and concerns raised during engagement sessions. The system will also include areas to record information on measures to address issues, timeframes, personnel responsible and any subsequent feedback that is required.
- **Community Development Funding Database:** will log all funding or support given to partner organisation, NGOs etc. This will include numbers of potential beneficiaries, amount funded, and beneficiary feedback.
- **Worker Transport Database:** will log number of bus journeys made to transport workers and numbers of passengers using services.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT REPORTING*

Allana will comply with Ethiopian regulations pertaining to reporting requirements relating to in-migration management.

6.2 *LENDER REPORTING*

Performance reports will be prepared and submitted to the IFC (and other lenders) as required according to their reporting schedule.

6.3 *INTERNAL REPORTING*

Allana will report on in-migration through the compilation of annual reports.

A reporting programme will be developed and kept up to date to ensure all requirements are met. A report will be published at least annually.

Allana will also seek to provide internal reports to workforce as part of workforce engagement regarding on-going management of potential issues related to recruitment and procurement on a bi-annual basis.

6.4 *COMMUNITY REPORTING*

Allana will make all statements related to in-migration management public in local languages and in relevant places.

Allana will provide annual updates to key villages on in-migration management objectives and management.

Table 7.1 Summary Table

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
MONITORING IN-MIGRATION							
✓	✓		In-Migration Monitoring and Engagement	<p>Analysis of aerial / satellite photography to assess the expansion of Hamad Ela, Berahale, Ambule and Asabolo.</p> <p>Collection of high quality wide-angle digital photographs of Hamad Ela, Berahale, Ambule and Asabolo.</p> <p>Semi-structured interviews according to standardised interview guidelines gauging perceptions of migration patterns. Interviews should be conducted with local and traditional leaders as well as local stakeholders in the area of health, education, and local community infrastructure.</p> <p>Household survey of Hamad Ela, Berahale, Ambule and Asabolo as well as selected village that is not expected to experience in-migration.</p>	<ul style="list-style-type: none"> Database of historical aerial / satellite photography compiled and updated. Inclusion of summary of analysis in internal reports. Database of photo-log. Inclusion of summary of analysis in internal reports. Database of interview notes. Inclusion of summary of analysis in internal reports. Database of household survey results and changes. Inclusion of summary of analysis in internal reports. 	<p>Six monthly during construction and annually during first five years of operations.</p> <p>Review need for on-going management after five years of operations.</p>	ELCR Manager/ ELCR Officer

				<p>Semi-structured interviews according to a standardised interview guide should be conducted with migrant and local residents. Surveys should be targeted at potential PIIM-related conflict.</p> <p>Monitor food prices through the review of the changing cost of a standardised basket of goods.</p>	<ul style="list-style-type: none"> Database of interview notes Inclusion of summary of analysis in internal reports 		
✓	✓	✓		<p>Develop detailed engage plan and schedule related to informing stakeholders of increases in workforce and potential for influx.</p> <p>Refer to Stakeholder Engagement Strategy (Volume III Annex M).</p>	<ul style="list-style-type: none"> Records of engagement undertaken Stakeholder engagement minutes <p>Refer to Stakeholder Engagement Strategy (Volume III Annex M)</p>	Established within Q1 2013. Reviewed on a six monthly basis	
✓	✓	✓		<p>Develop a feedback and grievance mechanism to collect any feedback or grievances related to in-migration.</p> <p>Refer to Stakeholder Engagement Strategy (Volume III Annex M).</p>	<ul style="list-style-type: none"> Database of feedback and grievances Feedback and grievances accepted and responded to within targeted timeframe <p>Refer to Stakeholder Engagement Strategy (Volume III Annex M)</p>	Established within Q1 2013. Reviewed on a six monthly basis	
AVOIDING IN-MIGRATION							
✓	✓		Promote Regional Diversified Growth Opportunities	<p>Support alternative economic opportunities away from the Social AoI through funding / partnership / support for partner organisations with economic development programs in other areas of the Afar Region, away from the Social AoI.</p> <p>Refer to Community Development Plan (Volume III Annex I).</p>	<ul style="list-style-type: none"> Funding (or other support) awarded to partner organisations (NGOs or other) with economic development programs in other areas of the Afar Region, away from the Social AoI Positive qualitative feedback from beneficiaries of these programs <p>Refer to Community Development Plan (Volume III Annex I)</p>	Develop Community Development Implementation Plan during Q1 2013	ELCR Manager/ ELCR Officer

✓	✓		Plan Development Along Access Routes	<p>Engage local formal and traditional authorities around the development of new settlements along the access routes to site.</p> <p>Engage with the inhabitants of any new settlement, in partnership with formal and traditional government to redirect inhabitants to areas planned for development (e.g. in Berahale). This will not include the intimidation, eviction or movement of settlers but the negotiated suggestion of preferable areas to settle, with no consequences should settlers not move.</p>	<ul style="list-style-type: none"> Engagement records with traditional leaders to discuss approach to in-migration Engagement records with inhabitants of new settlements. Numbers of signs places directing new arrivals to other areas. 	<p>Develop engagement approach to in-migration along access routes with leaders within Q1 2013</p> <p>Undertake engagement with new settlements within one week of development.</p> <p>Post signage where certain locations are repeated settled along access routes or near to Allana facilities.</p>	ELCR Manager
✓	✓	✓	Recruitment and Procurement	<p>Plan recruitment and procurement to boost local benefits and avoid the in-migration of opportunistic in-migrants.</p> <p>Refer to Sourcing, Recruitment and Procurement Management Plan (Volume III Annex L).</p>	Refer to Sourcing, Recruitment and Procurement Management Plan (Volume III Annex L).	Refer to Sourcing, Recruitment and Procurement Management Plan (Volume III Annex L).	Refer to Sourcing, Recruitment and Procurement Management Plan (Volume III Annex L).
✓	✓	✓	Camp Management	<p>Allana will develop a camp management policy stating and ensuring that the operations camp is a closed camp. This will forbid unauthorised visitors and mean all employees are restricted to camp during off-duty hours. This will be supported by appropriate engagement with workforce, signage and security / sign-in / out procedures.</p>	<ul style="list-style-type: none"> Presence of camp management policy stating closed camp Security records of workforce sign-in/out 	<p>Establish camp management policy during Q1 2013.</p> <p>Review annually.</p>	Security Manager

✓	✓	✓	Employee Transportation	<p>Allana will provide free transportation for employees from Berahale or Mekele to the site or from Addis to site (by plane for senior employees) to encourage that in-migration is directed away from villages close to the concession areas.</p> <p>All employees going on break will be required to take Allana transportation when leaving site.</p>	<ul style="list-style-type: none"> Numbers of buses transporting workers available to travel from Berahale to site Numbers of bus journeys made on average daily Numbers of users of bus services on average daily 	<p>Establish transportation during Q1 2013. Review annually.</p>	HR Manager, Camp Manager
✓	✓	✓	Project Buffer Zones	<p>Allana will develop buffer zone around their infrastructure, including worker accommodation. This buffer, negotiated with local and traditional government, will be an area not approved for settlement.</p> <p>The development of new settlements within these buffers will trigger engagement, in partnership with formal and traditional government to redirect inhabitants to areas planned for development (e.g. in Berahale).</p> <p>Develop culturally appropriate signage, in partnership with local government inside buffers directing new arrivals to areas planned for development (in Berahale).</p>	<ul style="list-style-type: none"> Engagement records with traditional leaders to discuss approach to in-migration and Project buffers Engagement records with inhabitants of new settlements within buffers 	<p>Develop engagement approach to in-migration in Project buffers with leaders within Q1 2013</p> <p>Undertake engagement with new settlements within one week of development.</p> <p>Post signage within Project buffers</p>	ELCR and Security Manager
✓	✓	✓	Transparent Delivery of Project Benefits	<p>Allana will engage potential Project Affected communities and disseminate relevant information surrounding the anticipated delivery of Project benefits and the entitled recipients seeking to disincentives opportunistic migrants.</p> <p>Refer to Community Development Plan and Stakeholder Engagement Strategy (Volume III <i>Annex I</i> and <i>M</i>).</p>	Refer to Community Development Plan and Stakeholder Engagement Strategy (Volume III <i>Annex I</i> and <i>M</i>).	Refer to Community Development Plan and Stakeholder Engagement Strategy (Volume III <i>Annex I</i> and <i>M</i>).	Refer to Community Development Plan and Stakeholder Engagement Strategy (Volume III <i>Annex I</i> and <i>M</i>).

MANAGE THE IMPACTS ASSOCIATED WITH IN-MIGRATION							
✓	✓	✓	Spatial Planning, Administration and Resource Allocation	<p>Engage local and traditional authorities to support the anticipated expansion of Berahale, Hamad Ela, Ambule and Asabolo.</p> <p>Agree 'zoned' areas of these villages for housing and commercial activity to help manage expansion. Demarcate relevant areas.</p> <p>Engage local and traditional authorities regarding the provision of public infrastructure into in-migration hotspots.</p>	<ul style="list-style-type: none"> Engagement records with traditional leaders to discuss approach to in-migration and Project buffers Record zoned areas in maps Numbers of areas demarcated in relevant settlements 	<p>Develop engagement approach to in-migration with leaders within Q1 2013</p> <p>Develop zoned maps and demarcate areas within Q2 2013</p> <p>Review every six months during construction and annually during first five years of operations.</p>	ELCR Manager
✓	✓	✓	Education Health and Awareness Programmes	<p>Investment in health and education infrastructure and training to mitigate impacts related to PIIM.</p> <p>Refer to Community Development Plan (Volume III Annex I).</p>	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)
✓	✓	✓	Micro-Finance and Enterprise Development	<p>Investment in enterprise development to improve levels of income and enhance positive economic opportunities of PIIM.</p> <p>Refer to Community Development Plan (Volume III Annex I).</p>	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)
✓	✓	✓	Education, Skills and Capacity Development	<p>Investment in education and skill development to improve levels of income and enhance positive economic opportunities of PIIM.</p> <p>Refer to Community Development Plan (Volume III Annex I)</p>	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)	Refer to Community Development Plan (Volume III Annex I)
✓	✓	✓	Emergency Food Aid	<p>Develop relationship with food aid providers to allow increased efficiency in response to emergency food shortages.</p>	<ul style="list-style-type: none"> Updated stakeholder database including details of food aid providers Engagement records with food aid providers 	Develop relationship with food aid providers within Q1 2013.	ELCR Manager

✓	✓		Incentivise Settlement in Berahale	Allana will work with traditional and formal governance to incentivise the settlement of in-migrants in Berahale through the centralisation of basic services and infrastructure.	<ul style="list-style-type: none"> Engagement records with traditional and formal governance regarding service and infrastructure development in Berahale Records infrastructure and services developed 	Engage traditional and formal governance within Q1 2013 Review infrastructure and service development annually	ELCR Manager
✓	✓	✓	Integrated Youth Programmes	Allana will work with local leaders and community groups to support integrated youth programmes related to sport, arts and culture seeking to build bonds and coordination between different ethnic groups. Funding may be presented as grants, sponsorship or through partnership with relevant organisations	<ul style="list-style-type: none"> Engagement records with youth groups and local surrounding priority areas for investment Records of grants issued and programmes supported Qualitative feedback from beneficiaries 	Engage youth and traditional leaders within Q2 2013 Review funding and provision annually	ELCR Manager
✓	✓	✓	Promote Local Conflict Resolution	Allana will work with the traditional governance network and the relevant Kebele or Woreda government to promote conflict resolution programmes through a consultation process, including sponsoring discussion between different communities where necessary.	<ul style="list-style-type: none"> Engagement records with formal and traditional leaders Records of grants issued and programmes supported 	Engage formal and traditional leaders within Q2 2013 Review funding and provision annually	ELCR Manager
✓	✓	✓	Engagement with Other Mining Companies	Allana will engage with other mining companies in the Study Area to align approaches to in-migration management and seek efficiencies.	<ul style="list-style-type: none"> Engagement records with other mining companies 	Engage other mining companies within Q1 2013 Review opportunities for cooperation annually	ELCR Manager

✓	✓	✓	<p>Utilisation of Traditional Governance to Address Key Issues</p>	<p>Allana will work to include the traditional governance network within Community Development and Stakeholder Engagement Activities.</p> <p>The utilisation of the traditional governance mechanism for those involved in the Community Development / Stakeholder Engagement process will be paired with efforts to mobilise other parts of communities less able to become involved in decision making. Specific forums for women, youth and the elderly will be established to ensure that their opinions and views are considered (refer to Volume III <i>Annex M - Stakeholder Engagement Strategy</i>).</p>	<p>refer to Volume III <i>Annex M - Stakeholder Engagement Strategy</i></p>	<p>refer to Volume III <i>Annex M - Stakeholder Engagement Strategy</i></p>	<p>refer to Volume III <i>Annex M - Stakeholder Engagement Strategy</i></p>
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✓	✓	✓	Support Cultural Programmes	<p>Allana will support the organisation / organise a series of cultural activities to help strengthen Afar culture and encourage the current social ties and networks.</p> <p>This may include the provision of presents, food, drink, and petrol during significant holidays, or Allana attending key festivities and celebrations to which they are invited. Other initiatives could include supporting projects / educational programmes at the local schools on Afar culture and identity aimed particularly at the youth in collaboration with Berahale Woreda Sports and Cultural office in such programmes.</p> <p>In addition Allana could support the annual cultural festival and competition held at the regional level by sponsoring or collaborating with the regional Bureau of Culture and Tourism. Such support and the form in which it is provided should be discussed and agreed with communities involved, to ensure that it reflects their preferences.</p>	<ul style="list-style-type: none"> Engagement records with traditional and local governance, schools, and community groups surrounding priority areas for investment Records of grants issued and programmes supported Qualitative feedback from beneficiaries 	<p>Engage formal and traditional leaders within Q2 2013</p> <p>Review funding and provision annually</p>	ELCR Manager
✓	✓	✓	Access to Water	<p>Allana will provide potable water to all communities who will be impacted by abstraction activities worsened by in-migration. The adequacy of this provision will be monitored, taking into consideration impacts of influx into these communities'</p> <p>Refer to Volume III <i>Annex J</i> (Community Health, safety and Security Management Plan).</p>	Refer to Volume III <i>Annex J</i> (Community Health, safety and Security Management Plan).	Refer to Volume III <i>Annex J</i> (Community Health, safety and Security Management Plan).	Refer to Volume III <i>Annex J</i> (Community Health, safety and Security Management Plan).

✓	✓	✓	Worker Health Management	Allana will develop measures to screen and test worker health to manage potential health impact related to community-worker force interactions (which may be worsened by in-migration). Refer to Volume III <i>Annex N</i> (Worker Management Plan).	Refer to Volume III <i>Annex N</i> (Worker Management Plan).	Refer to Volume III <i>Annex N</i> (Worker Management Plan).	Refer to Volume III <i>Annex N</i> (Worker Management Plan).
✓	✓	✓	Traffic Management Plan	Allana will implement a full traffic management study and associated Traffic management plan to manage traffic increases (which may be worsened by in-migration).	• Traffic management study and management plan developed and implemented	Study begun Q1 2013	ELCR Manager
✓	✓	✓	Cultural Heritage and Archaeology Mitigation	Allana will develop suitable archaeological mitigation measures to prevent impacts to cultural heritage from in-migrants. Refer to Volume III <i>Annex H</i> (Archaeology and Cultural Heritage Management Plan).	Refer to Volume III <i>Annex H</i> (Archaeology and Cultural Heritage Management Plan).	Refer to Volume III <i>Annex H</i> (Archaeology and Cultural Heritage Management Plan).	Refer to Volume III <i>Annex H</i> (Archaeology and Cultural Heritage Management Plan).

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Volume III Annex L

Sourcing, Procurement and Recruitment Management Plan

Version 2.0

December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AoI	Area of Influence
SPRMP	Sourcing, Procurement and Recruitment Management Plan
ELCR	Environmental, Land and Community Relations Manager
HR	Human Resources
WkMP	Worker Management Plan
SME	Small And Medium Enterprises
ESHIA	Environmental, Social and Health Impact Assessment
CHSSMP	Community Health, Safety and Security Management Plan
GoE	Government of Ethiopia

DEFINITIONS

Decommissioning: is the process by which options for the final status of structures at the end of their working life are assessed for their dismantling, physical removal, disposal or modification (if beneficial usage of existing project infrastructure is a component of the closure scheme).

Employer: The organisation Allana Potash, which utilises the services of someone for remuneration or compensation in return.

Employee: Any person, excluding an independent contractor, who works for another person and who receives, or is entitled to receive, remuneration and refers to any other person who in any manner assists in carrying out or conducting the business of an employer and the term “employer” has a corresponding meaning.

Post-Closure: is the phase after decommissioning and closure where activities are reduced to monitoring and maintaining specific areas to ensure that environmental and health and safety risks are controlled and minimized.

Recruitment: the process of advertising, selecting and appointing a suitable candidate for a vacant position.

Local supplier: defined as a business enterprise, including sole traders, small and medium enterprises (SME), and corporations, principally owned by permanent resident(s) of Ethiopia with the primary business activity being undertaken within Ethiopia.

Community supplier: defined as a business enterprise, including sole traders, small and medium enterprises (SME), and corporations, principally owned by permanent resident(s) of the Danakil area of the Afar Regions with the primary business activity being undertaken within Danakil Area.

Allana Potash Corp. (Allana) is proposing to develop a potash mine in the Danakil Depression, Ethiopia (the Dallol Potash Project). The development of this mine will result in the construction of a pond site, brine field, processing plant, drill sites, access roads, and ancillary components associated with construction and operation of the mine. In addition the proposed Project will require the hiring of a workforce to construct, operate and decommission the mine.

As part of the approval process for the proposed Project a suite of management plans need to be compiled to address the issues identified in the Environmental, Social and Health Impact Assessment (ESHIA). The management plans have been developed in light of public and authority comment as well as in response to legal and policy requirements. The management plans address impacts identified in the ESHIA and are implemented as part of an environmental management system for the proposed Dallol Potash Project.

Allana will require up to a peak of approximately 1,000 skilled, semi-skilled and unskilled workers during construction. This will be made up of contractors and direct employees. During operation Allana will require a maximum of 442 permanent staff for the operation and maintenance of the mine. This is estimated to be made up of approximately 98 skilled staff, 244 semi-skilled and 100 unskilled workers.

It is assumed that to maximise efficiencies, wherever possible the workforce will be sourced from villages in close proximity to the proposed Project; at a local regional or national level. Given that levels of educational achievement and formal employment experience in relevant sectors are low within the Social Area of Influence (AoI), it is assumed that the majority of local labour sourced may be unskilled or at most semi-skilled.

It is recognised that given the relative immaturity of the mining industry within Ethiopia, and the level of specialism required in solution mining, some expatriate staff will also be required, as well as skilled or semi-skilled staff drawn from other areas in Ethiopia. It is assumed that non-local staff would therefore represent a significant proportion of the Allana workforce.

Nonetheless the Dallol Potash Project will be a significant generator of employment during the construction and operation phases of the mine, especially in the context of a region that has few large scale industrial employers.

In addition to direct and indirect employment the proposed Project will require the procurement of a range of equipment goods and services. It is assumed that the majority of this procurement will be at a regional or national

level due to shortages in suitable industry and service providers in the Social Area of Influence. It is assumed that the majority of procurement will be for specialist goods and services, which can currently be provided by few businesses in Ethiopia. Most contracts will therefore need to be sourced internationally. There is, however, still potential for a level of procurement from smaller businesses at the local, regional, and national levels which may be significant for the local economy.

The Sourcing, Procurement and Recruitment Management Plan (SPRMP) has been created to guide the sourcing and recruitment of the direct and indirect workforce and the procurement of goods and services.

1.1 *POLICY STATEMENT*

Allana are committed to recruiting and retaining the best employees to ensure the efficiency, reliability and quality of the Dallol Potash Project. Wherever possible, Allana Potash will favour the recruitment of local people, and seek to maximise the recruitment, retention and advancement of local people through a process of skills development, career progression and mentorship.

In addition Allana will seek to ensure that all procurement and sourcing related activities are conducted with transparency, and will take responsibility for their activities during all stages of the Project expecting the same standard of performance from their direct and indirect contractors. Allana will aim to maximise local procurement and recruitment, thereby contributing to the economic and social development of the local area.

1.2 *OBJECTIVES*

The SPRP will seek to:

- Eliminate discrimination from the recruitment and procurement process;
- Maximise opportunities for local suppliers to participate in the mine's supply chain;
- Where local suppliers, and enterprises are part of the mine's supply chain, ensure that benefits derived from participation are long lasting and sustainable;
- Maximise opportunities for potentially affected people to gain employment or procurement opportunities¹;

¹ Recognising that promoting employment of communities local to the Project is not an infringement of objectives to eliminate discrimination.

- Enhance the capacity of local residents to gain employment with the proposed Project; and
- Ensure that hiring is transparent, and is conducted in manner that may limit influx and promote Afar culture.

1.3 *PURPOSE*

The SPRP has been developed with the purpose of promoting local benefits from recruitment and procurement for the proposed Project. A key element of this will be to promote equal opportunity and non-discrimination throughout the recruitment and procurement process. This will be done within the context of meeting national and international requirements and standards, as set out in *Section 2*.

1.4 *SCOPE*

The SPRP is applicable to all procurement practices and the recruitment of all Allana’s employees and contractors, including the recruitment of workers and procurement undertaken by third parties.

1.5 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

The management measures identified in the SPRP relate to the Community Development Plan (CDP), Community Health, Safety and Security Plan (CHSSP), Worker Management Plan (WkMP) and the Integrated Mine Closure Plan (IMCP), as shown in *Table 1.1*.

Table 1.1 *Linkage to Other Management Plans*

Management Plan	Overlap of this Plan with Content of Other Plans
Community Development Plan (CDP)	An element of the CDP is aimed at improving literacy and up-skilling local communities. This will work to improve the potential for local people to work for Allana, and to improve understanding of the mining industry, and OHS and labour standards, helping to provide a larger pool of skilled potential employees
Community Health, Safety and Security Management Plan (CHSSMP)	The delivery of benefits in the SPRP is of relevance to livelihood considerations discussed within the CHSSP.
Worker Management Plan (WKMP)	The WKMP include the screening and auditing of suppliers and contractors to meet OHS and labour standards. This will affect the procurement of goods and services. In addition it discusses the medical screening of potential employees, relevant to recruitment of staff.
Integrated Mine Closure Plan (IMCP)	The IMCP will discuss how to manage the retrenchment of workforce during the decommissioning phase.

A summary of the legal requirements and standards relevant to the WKMP are presented below. The legal requirements included in this summary may not be comprehensive.

2.1 NATIONAL LEGISLATION AND POLICY

Ethiopia has established legislative labour requirements associated with:

- Labour and employment conditions;
- Freedom of association, collective bargaining and industrial relations;
- Elimination of forced and child labour;
- Labour administration;
- Tripartite consultation;
- Education and vocational guidance and training;
- Conditions of work;
- Occupational health and safety;
- Social security; and
- Migrant workers.

Some of the specific requirements of these are discussed in the Worker Management Plan (Volume III *Annex N*). Specific requirements related to procurement and recruitment in relation to the national employment policy are discussed in the following sections.

2.1.1 National Employment Policy and Strategy

The National Employment Strategy and Policy of Ethiopia (2009) includes recommendations on Government involvement in mainstreaming gender concerns in employment generation, enhancing youth employment and promoting employment opportunities for persons with disabilities.

2.2 INTERNATIONAL LEGISLATION AND POLICY

2.2.1 IFC Standards

The SRPMP has been guided by international good practice regarding recruitment and procurement.

Allana have committed to meeting the International Finance Corporation's Performance Standards for Social and Environmental Sustainability (*IFC PSs*). In practical terms, this means that Allana Potash and its contractors will satisfy the requirements of IFC PS 2 (Labour and Working Conditions).

IFC PS 2 requires that Allana do not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The employment relationships will be based on the principles of equal opportunity and fair treatment including non-discrimination during recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices. These principles also apply to migrant workers.

It should be noted that IFC Performance Standard 2 stipulates that special measures of protection or assistance to remedy past discrimination will not be deemed as discrimination provided they are consistent with national law.

2.2.2 *African Development Bank Standards and Policies*

The African Development Bank (AfDB) does not mention specific requirements related to recruitment and procurement for private sector Projects within their policy documentation. However policy, guideline and strategy documents consider the following cross-cutting themes:

- **Poverty** – a multidimensional concept that covers income and non-income aspects. It is a state of livelihood characterised by material deprivation, food insecurity and lack of access to productive means.
- **Population** – demographics and factors influencing population growth. Population covers a broad range of issues such as population characteristics and dynamics (size, density, age and gender structure, ethnics, life expectancy, internal and international migration, rural/urban migration, etc.), education and health, economic growth and employment as well as agricultural and natural resources.
- **Gender** – taking into account gender differences in roles, rights, priorities, opportunities and constraints.
- **Participation** – the goal of actively involving the project stakeholders, particularly those who stand to gain or to lose from a project.

2.2.3 *International Labour Organisation*

Ethiopia has ratified several of the International Labour Organisation's (ILO) conventions. Of relevance are the following:

- Right to Organise and Collective Bargaining Convention, 1949 (No. 98);
- Equal Remuneration Convention, 1951 (No. 100);
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111);
- Minimum Age Convention, 1973, (No. 138); and

- Vocational Rehabilitation and Employment (Disabled Persons) Convention, 1983 (No. 159).

The Environmental, Land and Community Relations (ELCR) Manager will be responsible for the implementation and management of all measures in relation to community relations.

The Human Resources (HR) Department will be responsible for the development and implementation of procedures and protocols relating to recruitment and procurement.

All employees including contractors (and their employees) will be required to adhere to the requirements of the SPRMP.

Contractors will be required to take a level of responsibility for ensuring the application of this plan to their staff. This will be the responsibility of contractor Human Resources and Procurement managers.

4.1 SUMMARY OF IMPACTS TO BE MANAGED

The SRPMP arises from the need to manage, mitigate or optimise a number of impacts that are likely to result from the Dallol Potash project. This plan seeks to address impacts such as:

- *Increased income generation opportunities from direct and indirect contracting of workforce and local, regional and national level* by seeking to promote equal opportunities and boost employment and procurement opportunities;
- *Increased intra and inter community competition and conflict* by ensuring the creation of opportunities for local people, reducing the potential for conflict with migrant labourers;
- *Increased marginalisation of vulnerable groups*, by ensuring that recruitment and procurement are fair, unbiased and non-discriminatory, providing opportunities to all potential applicants, including marginalised or vulnerable groups, potentially helping to empower them;
- *Impacts related to influx* by reducing the appeal of the area to opportunistic migrants through the management of localising employment and procurement opportunities wherever possible.

4.2 MANAGEMENT DURING CONSTRUCTION

4.2.1 Impacts

The impacts during construction will be similar to those identified in *Section 4.1*.

The scale and extent of these impacts are likely to be larger than at any other time during the Mine's life-cycle. This is due to the establishment of recruitment and procurement systems and the amount of recruitment and procurement required to construct mine infrastructure. Reliance on third party contractors which is typical during construction will also increase the likelihood of these impacts occurring.

4.2.2 Objectives and Targets

Objectives

The objectives of the SRPMP in managing the identified impacts during construction are established in *Section 1.2*.

Table 7.1 identifies the specific targets and management measures associated with the identified impacts. Inclusive in the management measures is the identification of realistic targets, management actions and personnel responsible.

4.3 *MANAGEMENT DURING OPERATION*

4.3.1 *Impacts*

The impacts during operation will be similar to those identified in *Section 4.1*.

The scale and extent of these impacts are likely to be smaller than during the construction phase although some recruitment and on-going procurement will be required to operate the mine.

4.3.2 *Objectives*

The objectives of the SRPMP in managing the identified impacts during construction are established in *Section 1.2*.

Table 7.1 identifies the specific targets and management measures associated with the identified impacts. Inclusive in the management measures is the identification of realistic targets, management actions and personnel responsible.

4.4 *MANAGEMENT FOR DECOMMISSIONING AND CLOSURE*

4.4.1 *Impacts*

The decommissioning and closure of the mine will result in the termination of many procurement contracts and retrenchment of employees associated with operations.

This may cause positive impacts associated with income generating opportunities to cease. As a consequence of the loss of income conditions may return to baseline or worsen including reduced access to services and infrastructure, reduced standards of living and increased food insecurity and nutritional shortages.

In addition impacts associated with influx and conflict are anticipated to lessen.

4.4.2 *Objectives*

The objectives of the SRPMP in managing the identified impacts during decommissioning and closure include:

- Recognise and manage impacts of retrenchment through a relevant retrenchment management policies / plan;
- Recognise and manage impacts of decommissioning and closure on local and community suppliers and develop policies/plan to reduce these impacts as far as possible;
- Conduct early and on-going consultation and engagement with workforce and suppliers regarding retrenchment and the conclusion of supply contracts; and
- Provide support to retrenched workforce through training and capacity building (reskilling) or transfers.

Table 7.1 identifies the specific targets and management measures associated with the identified impacts. Inclusive in the management measures is the identification of realistic targets, management actions and personnel responsible.

In order to verify the management measures, Allana will require several monitoring systems as part of its overall Environmental and Social Management System (ESMS). These will include the following:

- **Human Resources Documentation Review System:** this will track the presence and update of Human Resources documentation including internal guidance, policies etc. through a document control, numbering and titling protocol. It will allow documents to be tracked, reviewed and updated as required.
- **Local Employee Plan:** this will track the current and future company roles within the organisation and the number that are held by local employees. Where non-Afar employees fulfil a position the plan will detail the training and coaching requirements for each non-Afar job role and a preliminary schedule for its implementation.
- **Human Resources Candidate Database:** this will track the name, contact details, skills, educational attainment, language capabilities, geographic origins, interests and availability of candidates who express an interest to work for Allana during periods where they are not actively hiring. The system should record when a candidate is hired or ceases their interest in employment with Allana.
- **Human Resources Employee Database:** this will track the data about employees working for Allana including wages, benefits, working hours, eligibility for overtime etc. The database will also record information on the origins of employees (home village in the local area, Afar, Ethiopian, expatriate), their respective positions, training received, annual appraisals, PPE given, and date of fitness to work health screening.
- **Contractor Database:** this will be used to record the range of primary and secondary contractors for the Project. The database will record a summary of their scope of work, business origins, the results of biannual auditing programmes, details of the origins of their employees (home village in the local area, Afar, Ethiopian, expatriate), their respective positions, training received, PPE given, and date of fitness to work health screening. The database will also identify any gaps that require addressing, and assess the success of previous actions to address gaps in the timeframes identified.
- **Supply Chain Database:** this will be used to monitor the primary supply chain and record results of risk assessments for incidents of child and / or forced labour and significant safety issues.

- **Worker Feedback System:** the worker feedback system will log all grievances, issues and concerns raised by workers during engagement sessions. The system will also include areas to record information on measures to address issues, timeframes, personnel responsible and any subsequent feedback that is required.
- **Stakeholder Engagement Database:** this will be used to track and record the dates, minutes and attendance at engagement activities.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

Allana will comply with Ethiopian regulations pertaining to reporting requirements relating to recruitment and procurement.

6.2 *LENDER REPORTING*

Performance reports will be prepared and submitted to the IFC (and other lenders) as required according to their reporting schedule.

6.3 *INTERNAL REPORTING*

Allana will report on recruitment and procurement activities through the compilation of annual reports.

A reporting programme will be developed and kept up to date to ensure all requirements are met. A report will be published at least annually.

Allana will also seek to provide internal reports to workforce as part of workforce engagement regarding on-going management of potential issues related to recruitment and procurement on a bi-annual basis.

6.4 *COMMUNITY REPORTING*

Allana will make all policies related to recruitment of workforce and procurement of goods and services public in local languages and in relevant places.

Prior to collective recruitment Allana will provide a number of 'recruitment clinics' to discuss required positions and the recruitment process.

Prior to the commencement of training activities Allana will publicise and disseminate attendance details. These will include specific attempts to manage the expectations for employment of attendees.

Allana will provide six-monthly updates to key villages on recruitment, training and procurement objectives and progress with attempts to increase the Afar contingent of the workforce.

SOURCING RECRUITMENT AND PROCUREMENT MANAGEMENT PLAN SUMMARY TABLE

Table 7.1 Management Measures for Construction, Operation, Decommissioning and Closure

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
RECRUITMENT							
✓	✓	✓	Develop and implement a recruitment policy	<p>Develop and implement a recruitment policy statement in line with national and international legislation and policy and good practice. This should include requirements associated with third party contractors. The policy should include a commitment to enhance local recruitment opportunities wherever possible.</p> <p>Develop protocols within policy to ensure that nepotism, extortion of 'recruitment fees' and the use of third party labour brokers are explicitly avoided.</p> <p>Policy includes requirement to engage marginalised and vulnerable groups during recruitment process. Specific outreach techniques will be developed when advertising positions.</p>	<ul style="list-style-type: none"> Recruitment Policy in place Review adherence and updating of policy for recruitment activities Positive (qualitative or quantitative) feedback from candidates and stakeholders gathered regarding hiring processes 	Completed by Q1 2013	HR Manager
					<ul style="list-style-type: none"> Target included within policy 	Completed by Q1 2013	HR Manager
					<ul style="list-style-type: none"> Marginalised and vulnerable people's statement included within policy 	Completed by Q1 2013	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				Policy includes statement of preferential hierarchy for employment: first from the Danakil Area (specifying villages as appropriate), then from Afar Region, nationally in Ethiopia, from the Ethiopian diaspora and finally from elsewhere in the World.	<ul style="list-style-type: none"> • Preferential hierarchy statement included within policy • Number / percentage of employees hired from Danakil, Afar Region 	Completed by Q1 2013	HR Manager
				Policy includes a commitment to advertise all positions within first the Danakil Area, then within the Afar Region, then nationally in Ethiopia and finally elsewhere in the World.	<ul style="list-style-type: none"> • Commitment included within policy 	Completed by Q1 2013 Annual monitoring against target	HR Manager
				Policy sets targets for percentage employees from within the Afar region and Ethiopia (as is practicable given the skill and experience requirements of different positions).	<ul style="list-style-type: none"> • Target included within policy • Achievement of target percentages 	Target included in policy by Q1 2013 Annual monitoring against target	HR Manager
				Policy forbids <i>ad hoc</i> hiring of temporary workforce from local villages, requires all recruitment to involve HR and establishes the process for application and recruitment for specific positions and for applicants expressing interest in future positions.	<ul style="list-style-type: none"> • Target included within policy 	Completed by Q1 2013	HR Manager
				Policy is reviewed and updated periodically.	<ul style="list-style-type: none"> • Presence of updated policy 	Annual monitoring of update and review	HR Manager
				Policy includes statement concerning applicability to Allana and all third parties.	<ul style="list-style-type: none"> • Target included within policy 	Completed by Q1 2013	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop and Implement a recruitment process within the wider Human Resources Management System	Develop and implement a recruitment process within the wider Human Resources system to manage recruitment and record and document applications and candidate origins.	<ul style="list-style-type: none"> Recruitment process in place Review use of system to manage recruitment activities Positive (qualitative or quantitative) feedback from candidates and stakeholders gathered regarding hiring processes 	Completed by Q1 2013 Review annually Reviewed monthly during construction, every six months thereafter	HR Manager
				Develop and implement system to check authenticity of applicants' claims to be from the area local to the Danakil through conversation with local traditional authority, ID card check, etc. Document process.	<ul style="list-style-type: none"> Percentage of applicants from Danakil area who have had their claims to be from the Danakil area checked 	Annually	
✓	✓	✓		Recruitment process to include requirements that stipulate that HR must be involved in all hiring of workforce including temporary workforce.	<ul style="list-style-type: none"> Recruitment process requirements in place Review numbers of staff hired without HR involvement 	Completed by Q1 2013 Review annually	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>Recruitment process to specify requirements for the methods, frequency, locations, notification periods and language for advertised jobs. This should include the specifics around how and when candidates can apply, the requirement for applications to be made in writing (in English, Afarigna or Amharic) in identified locations and provisions for applications to be made orally for local people. These requirements will be disseminated to all managers and third party contractors.</p>	<ul style="list-style-type: none"> Recruitment process requirements in place Review use of system to manage recruitment activities 	<p>Completed by Q1 2013</p> <p>Review annually</p>	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>Develop and implement a HR database to record skills and interest of applicants when there are no advertised positions available. This well include a template document that records the names, contact details, education and skills of interested candidates; records the eligibility of local Danakil origins or Afar ethnic status; and establishes the update schedule and process. Where possible the HR database should involve interaction with local traditional leaders, women’s and youth groups to gather candidates for the database. Where possible the database can be shared with other local mining projects and the GoE to enable greater mutual benefits to candidates and applicants.</p>	<ul style="list-style-type: none"> • Database developed • Review update and use of database for hiring of new employees • Percentage of candidates hired from local area that have registered interest on database 	<p>Completed by Q1 2013</p> <p>Review annually</p>	HR Manager
				<p>Develop and implement the criteria by which Allana departments/functions and contractors employing staff must demonstrate they have sought to identify Danakil, Afar and Ethiopian candidates prior to employing non-Afar Ethiopians or foreign nationals. This may include mandatory local advertised positions or requirements to interview a local or Ethiopian candidate.</p>	<ul style="list-style-type: none"> • Presence of guidance around hiring criteria confirmed • Percentage of candidates hired from local area, Afar Region and Ethiopia 	<p>Completed by Q1 2013</p> <p>Review annually</p>	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing/ Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>Develop individual targets for third party contractors for percentage employees from within the Afar region and Ethiopia (as is practicable given the skill and experience requirements of different positions).</p> <p>Develop, keep under review and update a Local Employment Plan that seeks to increase local and regional employment and transfer operational positions from non-Afar or expatriate staff to local Afar or Ethiopian nationals once the necessary skills and experience have been acquired. The Employment plan will include description of required training and coaching requirements for each non-Afar job role.</p>	<ul style="list-style-type: none"> • Target included within all third party contracts • Achievement of target percentages • Presence of Local Employment Plan • Review update and use of database for transitioning positions to Afars 	<p>Annual monitoring against target</p> <p>Completed by Q2 2013</p> <p>Six monthly review</p>	<p>HR Manager</p> <p>Third Party Contractor HR Manager</p> <p>HR Manager</p>
✓	✓		Education and Skills Development Programme	<p>Identify the skill and recruitment needs of the Project and to the extent possible, other developments planned/taking place in the area, and skills gaps in the local community. This will include consultation with local mining companies, and the Government of Ethiopia (GoE) in relation to other existing and potential future industrial developments in the area.</p>	<ul style="list-style-type: none"> • Skill and recruitment needs of the project and where possible other planned local developments identified and documented • Records of consultation with local government and other mining companies regarding education and skills development 	<p>Completed by Q2 2013</p>	<p>HR Manager</p> <p>ELCR Manager</p>

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>Develop and implement an education and skills training programme in the Project area. Attempts should be made to implement this prior to the beginning of hiring for construction with the aim of developing a pool of skilled local residents (further detail included under the CDP).</p>	<ul style="list-style-type: none"> • Education and skills training programme implemented • Number of people attending training courses • Number of employees hired from the Danakil area who have previously received training • Maintain records and auditing of financing provided to partner organizations 	<p>Completed by Q2 2013</p> <p>Review every month after implementation of training</p>	HR Manager ELCR Manager
				<p>Align training programmes to incorporate the needs of women, youth and other marginal groups (further detail included under the CDP).</p>	<ul style="list-style-type: none"> • Number of women and youth attending training courses • Number of employees hired from the Danakil area who have previously received training 		
				<p>Issue certificates to individuals upon successful completion of training and attainment of competency in new skills while employed with Allana (on-the-job training), or as part of an education and skills training programme.</p>	<ul style="list-style-type: none"> • Record training achievements and needs of Allana staff through annual appraisals • Percentage of employees who receive certification of training received 	<p>Review annually</p>	HR Manager
				<p>Provide all employees with a letter of reference upon leaving Allana stating work completed and skills they have acquired during their period of employment.</p>	<ul style="list-style-type: none"> • Number of reference letters issued • Percentage of employees leaving the company with reference letters 	<p>Review annually</p>	HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
SOURCING AND PROCUREMENT							
✓	✓	✓	Develop and Implement a Procurement Policy	Develop and implement a policy regarding procurement objectives in line with national and international legislation and good practice. This should include requirements associated with third party contractors.	<ul style="list-style-type: none"> Procurement Policy in place Review adherence and updating of policy for procurement activities 	Completed by Q2 2013 Adherence reviewed six-monthly	Procurement Manager
			Develop and Implement a Procurement System	Policy includes statement to favour applicants, businesses and service providers in a hierarchical manner favouring businesses, goods and services from the Danakil, then Afar Region, Ethiopia and finally foreign companies.	<ul style="list-style-type: none"> Target included within policy 	Completed by Q2 2013	Procurement Manager
				Policy includes targets for local, Afar and Ethiopian procurement over time.	<ul style="list-style-type: none"> Target included within policy Percentage of procurement contracts and spend on local and Afar and Ethiopian businesses 	Target included in policy by Q2 2013 Annual monitoring against target	Procurement Manager
				Policy is reviewed and updated periodically.	<ul style="list-style-type: none"> Presence of updated policy 	Annual monitoring of update and review	Procurement Manager
				Policy includes statement concerning applicability to Allana and all third parties.	<ul style="list-style-type: none"> Target included within policy 	Completed by Q2 2013	Procurement Manager
				Develop and implement a Procurement system to manage the procurement process and record and document contracts.	<ul style="list-style-type: none"> Procurement Management System in Place Review use of system to manage procurement activities 	Completed by Q2 2013 Review annually	Procurement Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				Carry out an audit of local businesses and their capacity to meet Project needs, including those businesses in the study area, and maintain a database of local business information.	<ul style="list-style-type: none"> Audit undertaken and updated 	<p>Completed by Q2 2013</p> <p>Review annually</p>	Procurement Manager ELCR Manager
				Develop and implement requirement (targeted at 30 days) to ensure reasonable speed of payments to local suppliers and contractors to improve cash flows.	<ul style="list-style-type: none"> Monitor days since invoiced payment made to Danakil and Afar businesses 	Review annually	Procurement Manager
				Adapt Project procurement documents to suit local businesses as far as possible through making tender forms and contracts available in Afarigna and Amharic as well as English.	<ul style="list-style-type: none"> Presence of Afarigna and Amharic contract templates 	Review annually	Procurement Manager
				Develop and implement procurement process requirements that dictate the methods, frequency, locations, notification periods and language for advertised contracts. This should include the specifics around how and when business can tender, the requirement for tenders to be made in identified locations and provisions for applications to be made orally for local people. These requirements will be disseminated to all managers and third party contractors.	<ul style="list-style-type: none"> Procurement process requirements in place Review use of system to manage procurement activities 	<p>Completed by Q2 2013</p> <p>Review annually</p>	Procurement Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				<p>Develop and implement the criteria by which a department/function must demonstrate they have sought to identify Danakil, Afar and Ethiopian businesses prior to contracting non-Afar Ethiopians or foreign companies. This may include mandatory local advertised positions or requirements to receive tender from an Ethiopian (recognising that the provision of some specialist equipment may be impossible).</p>	<ul style="list-style-type: none"> • Check presence of guidance around procurement criteria • Percentage of procurement contracts and spend on local and Afar and Ethiopian businesses 	<p>Completed by Q2 2013</p> <p>Review annually</p>	Procurement Manager
				<p>Develop individual targets for third party contractors for procurement from within the Afar region and Ethiopia (as is practicable given the skill and experience requirements for different contracts).</p>	<ul style="list-style-type: none"> • Target included within all third party contracts • Achievement of target percentages 	<p>Annual monitoring against target</p>	<p>Procurement Manager</p> <p>Third Party Contractor Procurement Manager</p>

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Provide access for local businesses to finance and advisory services to develop their capacity to competitively supply to the Project	Specific targets are outlined in the CDP but should include partnering with relevant organisations with expertise in the area, skills training, establishing market linkages, facilitation of micro-finance etc.	Refer to CDP	Refer to CDP	Refer to CDP
OVERARCHING							
✓	✓		Stakeholder Engagement regarding recruitment and employment	<p>Make all recruitment and employment policies and procedures publicly available in the Project area in local languages.</p> <p>Prior to recruitment of large number of employee conduct 'recruitment clinics' in key villages. These should include a discussion of the recruitment requirements and advertised positions and the recruitment process.</p> <p>Undertake engagement activities to publicise the training process and manage expectations that all those who receive training will not be guaranteed a job.</p>	<ul style="list-style-type: none"> • Presence of recruitment policy in local languages on local notice boards • Number of recruitment clinics held • Number of attendees at recruitment clinics • Number of training engagement activities undertaken and the villages where these have occurred 	<p>Completed by Q2 2013</p> <p>Review annually</p> <p>Review every six months during construction, annually during operations</p> <p>Review every six months during construction, annually during operations</p>	<p>HR Manager ELCR Manager</p> <p>HR Manager ELCR Manager</p> <p>HR Manager ELCR Manager</p>

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency	Responsibility
Construction	Operation	Decommissioning and Closure					
				Stakeholder engagement regarding procurement and recruitment to involve consultation with local, regional and / or national government to ensure the Project's alignment with local and regional development objectives and overall national development objectives.	<ul style="list-style-type: none"> Number of meetings and minutes documented 	Review every six months during construction, annually during operations	HR Manager ELCR Manager Procurement Manager
				Undertake sporadic engagement activities to reiterate the numbers of employees to be hired, plans for training and skill development etc. Ensure engagement with marginalised and vulnerable groups is considered.	<ul style="list-style-type: none"> Number of recruitment clinics held Number of attendees at recruitment clinics Number of community grievances concerning local hiring 	Review every six months during construction, annually during operations	HR Manager ELCR Manager
				Disseminate procurement opportunities as early as possible in relevant local languages, with clearly defined requirements for the goods or service to manage expectations.	<ul style="list-style-type: none"> Number of procurement and tender notifications listed in key local areas and with local government 	Review every six months during construction, annually during operations	Procurement Manager ELCR Manager

The National Employment Strategy and Policy of Ethiopia (2009)

<http://www.ilo.org/dyn/natlex/docs/ELECTRONIC/89584/102962/F1789074138/ETH89584.pdf>

Volume III Annex M

Stakeholder Engagement Strategy

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana for Review
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LIST OF ACRONYMS

Abbreviation	Full Definition
ANRS	Afar National Regional State
CDP	Community Development Plan
CLO	Community Liaison Officer
ESHIA	Environmental, Social and Health Impact Assessment
EP	Equator Principles
FDRE	Federal Democratic republic of Ethiopia
ICP	Informed Consultation and Participation
IFC	International Finance Corporation
ELCR	Environmental, Land and Community Relations
NGOs	Non-Governmental Organisations
SES	Stakeholder Engagement Strategy

This Stakeholder Engagement Strategy (SES) has been prepared for the Dallol Potash Project.

The SES serves as a framework document to guide Allana's approach to stakeholder engagement for the life of Mine following completion of the Environmental, Social and Health Impact Assessment (ESHIA), i.e. during pre-construction, construction, operations, and decommissioning and closure. It establishes the strategic goals, requirements and principles for on-going engagement activities and high level guidance on engagement requirements at each of the different phases in the Mine lifecycle (recognising that the scope and scale of the proposed Project may be subject to changes or expansions in the future).

The SES will ensure that a consistent, comprehensive, coordinated and culturally appropriate approach to consultation is undertaken.

1.1

BACKGROUND TO THE MINE

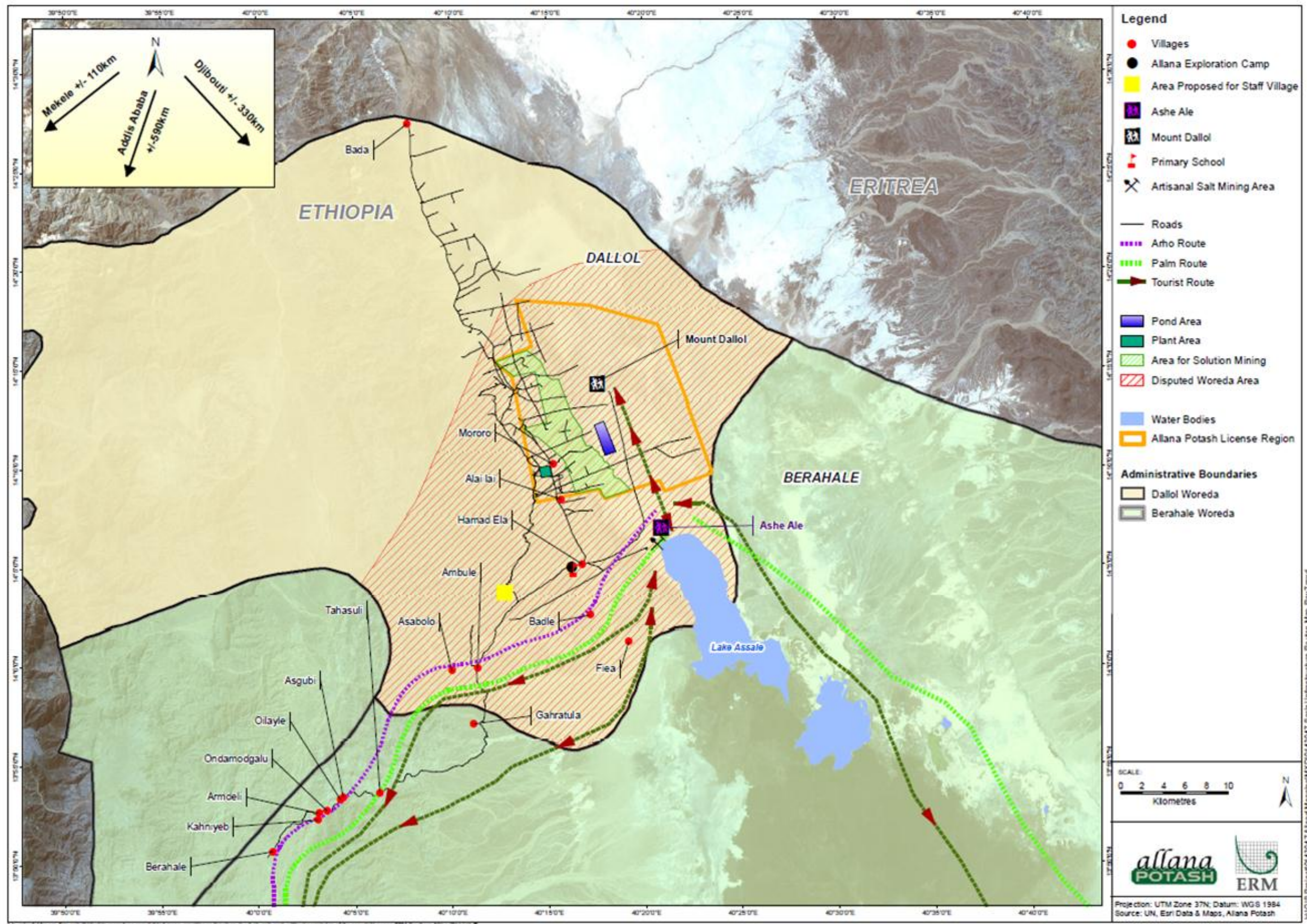
Allana Potash Corp. (Allana) holds one consolidated potash concession created from the amalgamation of their four original licenses (Exploration license Numbers - 2952-2954/2000, 2949-2951/2000, 2955-2957/2000 and 1878/2002 from the Ethiopian Ministry of Mines and Energy) in the Danakil Depression located in the Afar National Regional State (ANRS) in the *Woredas* of Dallol and Berahale, in north eastern Ethiopia. Allana plans to develop a potash mine, within their concession area.

1.1.1

Mine Context

Allana has been conducting exploration activities in the Danakil Depression since 2010, with a particular focus on commercially developing a part of their concession area as a first phase (indicated by the light green area in *Figure 1.1*).

Figure 1.1 Map of the Mine Area and Facilities



Please note that the village of Mororo is an amalgamation of several smaller villages along the road including Tahasuli, Asgubi, Oilayle, Ondamodgalu, Armdeli and Kahn'yeb.

The lifecycle for the development of the Mine can be characterised into the following phases:

- **Exploration and prospecting (complete):** The exploration and prospecting phase commenced in 2010 and was completed in 2012. This phase largely entailed field studies and testing of the mineral resources to determine the overall economic feasibility of the proposed Project. This phase was divided into three main activities, namely geological investigation, the establishment of infrastructure (including an exploration camp, road networks and drill pads) and the installation of test wells and associated evaporation ponds for pilot solution mining investigations. An ESHIA was also undertaken in parallel with the feasibility study.
- **Pre-Construction:** This phase will be undertaken following conclusion of the feasibility studies and in parallel with the granting of licenses to mine the area (i.e., approval of the ESHIA by the Ethiopian Ministry of Mines and Energy, and the Ethiopian Environmental Protection Authority). It includes the process of detailed planning required in preparation for construction as well as any resettlement action planning and implementation activities.
- **Construction:** On the assumption that the Mine will receive approval from the Ethiopian Authorities, it is anticipated that construction will commence in Quarter three of 2013. Construction will be undertaken by contractors who will live in contractor camps at the proposed location indicated in yellow on *Figure 1.1*. The construction will likely involve:
 - further access road construction to the mining drill hole sites;
 - establishment of a construction camp;
 - establishment of the permanent office and support facilities;
 - establishment of a Mine processing facility;
 - continuation of test facilities;
 - establishment of solution ponds;
 - equipment and facilities establishment; and
 - solution mining preparation.
- **Operations:** Once the construction phase of the Mine is complete, the Phase One Operational phase will commence. Given the nature of solution mining, as wells are mined out rehabilitation activities for each well will be undertaken in a continuous fashion.
- **Decommissioning and Closure:** Decommissioning and closure occurs at the end of the Mine life. An Integrated Mine Closure Plan was prepared as part of the ESHIA process and will be revised throughout the life of the Mine. Preliminary projections anticipate that the life of mine of Allana's current concession area could be in excess of 30 years. The first phase, for which this SES has been generated, is anticipated to have a life of mine of 19 to 30 years.

Ethiopia is one of the poorest countries in the world; its Human Development Index¹ (HDI) value (0.363) falls below both the average for countries in the low human development group (0.456), and the average value for Sub-Saharan African countries (0.463) (UNDP, 2011). However Ethiopia has witnessed rapid economic growth in recent years, with one of the highest performing economies in Sub-Saharan Africa. This growth is in part attributed to increased investment in sectors including agriculture, manufacturing and mining. As such, investments in the mining sector have been a focus for the Federal Democratic Republic of Ethiopia (FDRE) in their bid to support economic growth.

The Afar region of the country is one of the areas in which key mineral resources (e.g. gold and potash) have been discovered. This region has traditionally been an area dominated by pastoral activities, with approximately 90% of people depending on subsistence livestock production. However, livestock productivity is reported to be rapidly declining due to recurrent droughts and land degradation. People in this area have been placed under further pressure by the Ethiopian - Eritrean border conflict which has been on-going in the area since 1998 as well as by other natural resource conflict over resources such as water and salt.

It is into this context that a number of mining companies have begun exploration activities in Afar, and in the Danakil in particular. Mining exploration activities have already introduced considerable changes to the area and the people living there. This will be exponentially increased once projects move into construction and operations phases. Although the changes brought about by development will offer some opportunities to local people, there are also anticipated to be negative impacts which will be especially difficult for the local population to cope with given their vulnerability and the remoteness of the area.

Prior to the establishment of the FDRE in 1995, the Afar region fell outside of Ethiopian state administrative control. There remain contestations about whether the broader Afar region, including areas in Eritrea and Djibouti, should be a nation state of its own. The Federal Government has recognised the Afar region and defined the Afar as an ethno-cultural community. As such, the region has a constitutional right to ethnic self-determination and self-governance, while still remaining a region within the federal state. The ANRS has its own institutions and its own constitution which augment the Federal Constitution. Historically the interaction between Federal Government and the Afar Regional State has been limited, although mining in the Afar region has significantly changed this.

¹ The Human Development Index (HDI) is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalised indices measuring achievements in each dimension, 1 shows high human development whilst 0 shows low human development.

In addition to formal government structures, the area has been governed by a traditional system of authority (clans and elders for each village). This is particularly relevant in the Mine area, which has been an especially remote area in Afar with limited interaction with the outside world apart from immigration of highlanders involved in the artisanal salt trade. To date traditional governance has provided the strongest and most effective leadership structures at the community level.

This institutional/governance context can be challenging for mining companies to operate within the area. Although Federal Government has the right to grant prospecting and mining licences, the Afar people and political institutions do not necessarily recognise the legitimacy of Federal Government to make such land use decisions in the area. Furthermore, the increased involvement of the Federal Government in the area, following renewed conflict between Ethiopia and Eritrea, has exposed a set of tensions between local, regional and federal authorities.

The consultation undertaken as part of the ESHIA process for Allana's proposed development also identified the potential for tension to develop between Afar people and mining companies.

1.1.3 *Implications for Engagement*

Allana recognises the importance of consultation and participation. The constitution defines the government's commitment to democratic order and socio-economic development based on respecting fundamental human rights and ensuring appropriate engagement. This is further underscored by the culture of engagement important in Afar culture where, despite geographic and infrastructural constraints, there is an appreciation for the importance of information and an associated set of expectations around the need for engagement.

Allana also understands that the contextual analysis highlights the risk of operating in the Afar region and the Dallol area in particular, where this is heightened by a history of conflict in the area, complex institutional arrangements and the current local distrust of Federal authorities and mining companies. This context underscores the importance of engagement as a means of managing the risk of conflict through anticipating and resolving conflict as well as meeting expectations of stakeholders that their views be considered during decision making in the area. It is with this in mind that Allana commits to the principles of engagement highlighted in this SES.

1.2 *SCOPE/PURPOSE OF THE DOCUMENT*

The SES is designed to act as an umbrella framework for managing stakeholder engagement and related activity. It does not serve as a detailed implementation plan. Such detailed engagement plans will be generated and

implemented at each phase in the Mine lifecycle. These implementation plans will be in line with the high level guidance provided in the SES.

This SES governs engagement to be undertaken with relation to the Mine described in the January 2013 ESHIA (i.e. Allana's first phase of activity planned for the Mine area). Should Allana expand the scope of its activities into other parts of the existing concession area or into new concession areas, the SES will need to be updated. In particular, the updated SES will need to reflect changes to the stakeholder groups affected and the potential impacts of the activity.

Finally, it is important that this SES aligns to the measures included in the management plans developed as part of the ESHIA and licensing process for the Mine. It supports and bolsters the implementation of particular mitigation measures identified in the management plans.

2.1 WHY DO ENGAGEMENT?

Engagement is the key to Allana achieving its business targets for the Mine. Not only was the achievement of the formal license to operate dependant on a process of engagement during the ESHIA/feasibility phase, but also the social license to operate is reliant on the quality of relationships with stakeholders. The focus of engagement in pre-construction, construction, operations and decommissioning and closure phases will be to maintain the formal license to operate achieved following exploration and to achieve and secure a social license to operate.

A focus on the less tangible social license to operate is important in the context of the considerable contextual risks identified in *Section 1.1.3*. Identifying, understanding and addressing stakeholder issues, concerns and questions will be essential to support the successful implementation of the Mine.

2.2 ENGAGEMENT OBJECTIVES

The SES is designed to ensure a consistent, comprehensive and coordinated long-term approach that encourages open and transparent dialogue ⁽¹⁾ with a broad range of stakeholder groups.

The objectives of Allana's approach to engagement are:

- **To ensure understanding** by facilitating an open, culturally appropriate and inclusive approach to engagement that provides timely and accurate information in an accessible and transparent way to all stakeholders, regardless of their status;
- **To manage expectations and concerns** by providing a mechanism which not only provides stakeholders an opportunity to freely provide comment and feedback but also allows Allana to respond to this feedback, thereby addressing concerns;
- **To manage risks through building sustainable relationships.** Stakeholder risks are widely recognised to be one of the key challenges facing the mining industry worldwide. Communities expect more open and transparent dialogue and longer term social commitments from companies. Engagement will allow Allana to understand stakeholder interests and issues and work with stakeholders to find mutually acceptable ways to achieve or address these; and

1) Defined as a two-way process where stakeholders are not merely consulted or listened to, but also allowed to input into key decision making processes. Dialogue also represents a process that is on-going and not once-off.

- **To create value** where engagement allows for partnerships to be developed for the mutual benefit of both Allana and the stakeholders. This includes but is not restricted to corporate social investment activities. This relates also to seeking mutual benefit through design and operations by considering stakeholders and seeking their benefit in all Mine activities.

2.3 *ENGAGEMENT STANDARDS*

The SES has been designed to ensure compliance with both Ethiopian legislative requirements, as well as international good practice. This section presents a summary of the key Ethiopian and international requirements for engagement.

2.3.1 *International Good Practice*

Equator Principles

The Equator Principles (EPs) are a set of standards, adopted voluntarily by Equator Principle Financial Institutions (EPFIs) that seek to determine, assess and manage social and environmental risks in project financing.

Of the EPs Principles Five, Six and Ten contain engagement specific requirements. In particular, Principle Five dictates that an *informed consultation and participation process* be conducted with stakeholders, facilitating their informed participation in new developments and projects. In addition, Principle Six includes requirements for establishing a grievance mechanism, and all reporting and disclosure requirements are now included within Principle Ten.

The International Finance Corporation's Performance Standards on Environmental and Social Sustainability

The IFC Performance Standards (2012) require clients to engage with stakeholders in a manner commensurate with the risks and impacts of a development. In particular, the standards compel developers to engage affected communities through disclosure of relevant and accurate information as well as an Informed Consultation and Participation (ICP) process. ICP requires an in-depth exchange of views and information with affected communities and stakeholders. In addition, it requires that an organised and iterative consultation process be undertaken on, amongst other things, managing and mitigating negative impacts as well as sharing and capitalising on development benefits and opportunities.

The main requirements for consultation and disclosure are covered under Performance Standard 1, which aims to ensure that stakeholders are appropriately engaged on issues that could potentially affect them, and to build and maintain constructive relationships with stakeholders in addition to establishing a grievance mechanism.

The Performance Standards also outline requirements for engagement with vulnerable people which include identifying vulnerable individuals and groups and tailoring the engagement process to the needs of these groups. This may include applying differentiated measures to allow for the effective participation of vulnerable persons.

The IFC also provides further engagement guidance through its handbooks “Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets” (2007) and “Addressing Grievances from Project Affected Communities: Guidance for Projects and Companies on Designing Grievance Mechanisms” (2009).

2.3.2 *National Requirements*

The Constitution of the FDRE provides for the participation of communities in national developments, in particular stipulating that communities should be consulted with respect to policies and projects affecting them. *Article 92* of the Constitution also declares that people have the right to full consultation and expression of views.

In addition, given the location of the Mine in the Afar state and the constitutional right of the ANRS to self-determination and self-governance (*Article 39* of the Constitution), it is also important to consider regional requirements for engagement and involving stakeholders in decision making.

2.3.3 *Company Standards*

This SES will serve to set the framework for all future engagement related to Phase One of the Dallol Potash Project. It commits Allana to a pro-active and on-going dialogue with all stakeholders interested in or affected by its activities. No Allana corporate policies related to stakeholder engagement exist and this SES will therefore serve as the primary guideline for all future engagement activities.

3.1 STAKEHOLDER ANALYSIS

Allana will engage stakeholders at local, regional and national levels. *Table 3.1* presents the framework for how stakeholders will be categorised, where each of the identified stakeholder categories and groups is relevant for inclusion in future engagement activities.

Table 3.1 Stakeholder Categories and Groups (as of October 2012)

Stakeholder Categories	Stakeholder Groups
Government	Federal, regional and local government: Political
	Federal, regional and local government: Administrative and technical
	Government agencies
Affected Communities*	Customary authorities
	Voluntary community associations
	Community members, including men, women, youth, artisanal salt workers
Business	Mining companies in the northern Danakil
	Salt related businesses
	Tourism operators
Civil Society	Federal and regional environmental Non-Governmental Organisations (NGOs)
	Federal and regional social and health NGOs
	Academics and research institutes
Media	Federal, regional and local newspapers
	Federal and regional TV and radio

*This includes all communities from settlements in and near the concession areas and other affected areas/routes including Hamad Ela, Berahale Town, Alai Lai, Mororo, Morror, Ambule and Asabolo.

A detailed database is available, where the current database is appended to this document as *Appendix 1*. This database will be updated throughout the life of the Mine, as described further in *Section 5*.

While Allana will adopt an inclusive approach to engagement, it will focus particularly on tailoring engagement to meet the needs of local stakeholders and vulnerable groups.

Local stakeholders include all stakeholders that are located within or operate in the Dallol and Berahale *Woreda*. This includes:

- Local customary authorities, including clan and religious leaders and elders;
- Local government including political and administrative authorities;
- Community members and associations from affected villages, including

the directly affected villages of Mororo and Alai Lai and the neighbouring villages of Hamad Ela, Asabolo, Ambule, Morrora and Berahale town;

- Salt related businesses, including Berahale Salt Selling Association, Mekele Salt Buying Associations and subsidiary services (e.g., local restaurants, hotels, and accommodation in Berahale, Asabolo and Hamad Ela);
- Women involved in palm collection and processing in the Mine area including those involved in the Palm Association (*engwa mehaber*);
- Tourism operators who provide tours and operate tours in the Danakil Depression; and
- Local suppliers and employees.

From amongst the local stakeholders, the following have been identified to be potentially vulnerable through the social impact assessment undertaken as part of the ESHIA. Vulnerability relates either to the stakeholder being more adversely affected by the Mine than other stakeholders in their group, or to their having a limited ability to cope with changes and take advantage of the Mine's development benefits. Vulnerable groups include:

- Afar women;
- Female headed households;
- Elderly (in particular women);
- Households reliant on artisanal salt mining;
- Households reliant on livestock;
- People with physical / mental health illnesses and disabilities;
- Children;
- Sex Workers; and
- Internally Displaced Persons ⁽¹⁾.

Engagement with local and vulnerable groups will be undertaken through an on-going process whereby Community Liaison Officers (CLOs) will actively engage and ensure the participation of these groups in all phases of the Mine lifecycle.

Allana will develop a mechanism whereby the views of local and, in particular, vulnerable stakeholders can be fully considered in relevant decision-making. The objective of this mechanism will be to ensure that they are not only heard, but also able to influence the Mine's development where appropriate and practicable. This can include the establishment of 'working groups' that represent the interests of vulnerable parties who may not be able to speak out during standard engagement activities. Allana will also work closely with local experts, including the community liaison officers, to ensure

(1) IDPs as a result of the Ethiopian - Eritrean border conflict. The village of Mororo was identified to have moved due to the border conflict and a camp for IDPs exists in Berahale, it is reported 2,720 IDP both from Eritrea and Ethiopia live in Berahale - UNDP, 1999

that engagement activities are designed in such a way that they do not exacerbate inequalities or vulnerabilities. This is particularly important from a gender perspective as well as an intercultural perspective. Environmental, Land and Community Relations (ELCR) team members will be selected with gender and cultural sensitivities in mind and will receive gender and cultural awareness training, as described further in *Section 5*.

3.2 ISSUES ANALYSIS

Allana will maintain an Issues Log of material issues, where this is generated by reflecting on and tracking trends from amongst all comments, concerns and grievances raised by stakeholders through engagement throughout the Mine lifecycle. The table below presents a framework for the Issues Log based on the comments, concerns and grievances raised during the exploration phase.

Table 3.2 Issue Categories and Groups (as of October 2012)

Issue Category	Issue	Current Issues Raised
Negative Impacts	Anticipated Impacts	Roads and traffic
		Salt trading
		Palm resources
		Tourism
		Impact on sites of cultural significance
		Water
		Influx and associated cultural changes
		Wildlife and biodiversity
		Disturbance and pollution
		Health
		Pastoralism
		Land use and access
		Geological/seismic activity
		Tensions and conflict
	Resilience to adapt	
	Existing Impacts	Employment and labour issues
		Disturbance and pollution related to exploration activities
		Roads and traffic
Positive Impacts	Anticipated Benefits	Anticipated benefits
	Existing Benefits	Existing benefits
Process	Engagement	Engagement approach and methodology
	Planning	Alignment and co-ordination
Project	Project related	Information and communication requirements

Appendix 2 to this document includes more detail on these issues. It also identifies which stakeholders raised these issues, and shows these issues relate to the findings of the ESHIA (i.e., how the ESHIA team assessed the significance of the anticipated impact for those issues considered particularly important to stakeholders).

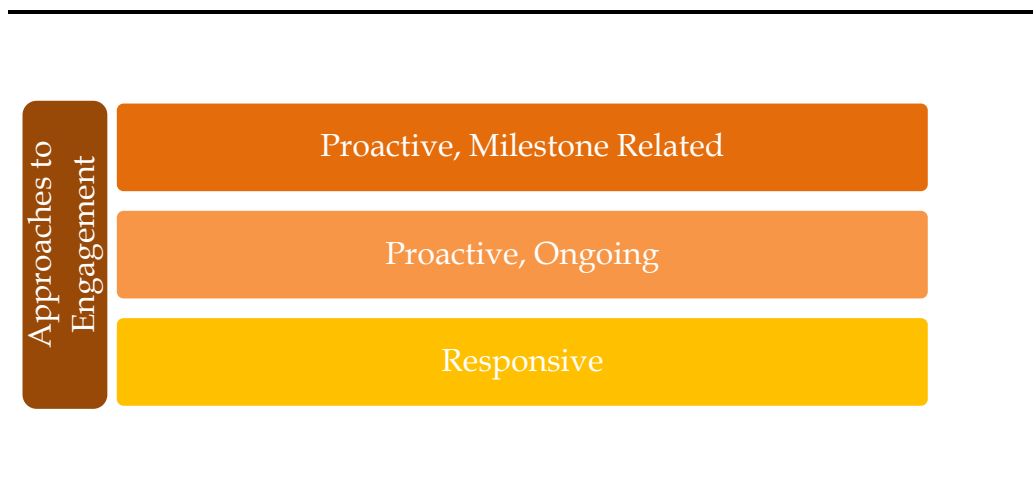
Allana will maintain and regularly update the issues log, as described in *Section 5*.

This section outlines the approach to engagement for the pre-construction, construction, operation, decommissioning and closure phases of the proposed Project. A three pronged approach to engagement will be adopted, namely:

- A proactive approach, engaging stakeholders at key milestones;
- A proactive, on-going approach to regular engagement and communication activities; and
- A responsive approach.

Figure 4.1 illustrates the key pillars for engagement that will be incorporated into the engagement process and strategy over the Mine life cycle.

Figure 4.1 *Pillars for Engagement*



4.1

PROACTIVE MILESTONE RELATED ENGAGEMENT

Engagement is required at key points in the Mine lifecycle both in anticipation of and in response to changes in the Mining activities and their associated positive and negative impacts. It is therefore important that engagement activities are designed both in anticipation of key milestones and during transition periods between the phases in the Mine lifecycle.

This section presents the key objectives of engagement at the pre-construction, construction, operations, decommissioning and closure phases of the Mine. It also presents the proposed approach to engagement at these phases and engagement considerations. Detailed engagement plans will need to be designed to identify the engagement activities at each phase of the Mine.

4.1.1

Pre-Construction

Allana has shifted its attention to a set of pre-construction activities following the completion of the feasibility study and the submission of the ESHIA to authorities for approval. The key objectives during pre-construction are:

- To augment Allana's understanding of key stakeholder groups through conducting a stakeholder profiling exercise as necessary to confirm their interests, mandates, awareness and level of support for the Mine as well as the risk and opportunity they present to the Project;
- To inform and engage with stakeholders on the finalisation of the Project design, taking stakeholder concerns into consideration where relevant;
- To inform stakeholders of Allana's plans and activities to be undertaken during both pre-construction and construction, including anticipated impacts, associated mitigation, contracting of workforce including security providers, procurement of goods and services etc.;
- To develop and design, in consultation with local stakeholders, a participatory monitoring forum that will affected communities to become involved in monitoring impacts alongside Allana;
- To engage stakeholders on implementation of management plans and mitigation activities identified in the ESHIA, and identify and address any issues that arise;
- To establish clear communication channels, which both allow Allana to make information readily available, particularly for local stakeholders, and allow stakeholders to raise queries, concerns or comments;
- To establish positive relationships with stakeholders; and
- To identify and develop opportunities for stakeholders to benefit during the construction phase.

Approach to Engagement

Table 4.1 presents a set of engagement activities that will be undertaken during pre-construction.

Table 4.1 *Approach to Engagement – Pre-Construction*

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Finalisation of Project design	<ul style="list-style-type: none"> • Inform and consult with stakeholders on Project design. 	<ul style="list-style-type: none"> • Project update meetings with government; • Community meetings; • Provide information on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> • Local stakeholders in particular local villages, and authorities (both formal and customary) • Government (federal and regional)
Procurement of goods and services for construction	<ul style="list-style-type: none"> • Identify capacity and opportunity for local procurement; • Establish terms and conditions for procurement. 	<ul style="list-style-type: none"> • Workshops and / or meetings with regional and local government; • Opportunities and constraints analysis through community workshops; • Workshop with potential partners to feed into CDP. 	<ul style="list-style-type: none"> • Local stakeholders including enterprises and business associations • Contractors • Suppliers
Establish and implement contracting with suppliers, contractors, employees etc.	<ul style="list-style-type: none"> • Inform stakeholders of groups to be contracted and associated timeframes. This will include informing stakeholders of the security providers that Allana contract, as well as Allana’s requirements for security provision and their policies and procedures on the management of security forces. 	<ul style="list-style-type: none"> • Community updates through proactive on-going engagement; • Provide information on contracting on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> • Local stakeholders including enterprises and business • Contractors • Suppliers • Employees
Land acquisition and zoning	<ul style="list-style-type: none"> • Inform and engage with stakeholders of construction activities, anticipated disturbance and reduced land access, as well proposed measures to mitigate this etc. 	<ul style="list-style-type: none"> • One-on-one meetings with community representatives; • Community meetings; • Provide information on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> • Local communities including Mororo, Alai Lai, Hamad Ela

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Resettlement Action Plan and Livelihood Restoration Plan	<ul style="list-style-type: none"> Engage on anticipated impacts and proposed mitigation both for resettlement and livelihood restoration; Engage and agree on process and mechanism for compensation. 	<ul style="list-style-type: none"> Government meetings; Community focus group discussions; One-on-one meetings with community representatives; Participatory livelihoods assessment; Establish participatory monitoring forum for key impacts relevant to livelihoods as identified in the ESHIA. 	<ul style="list-style-type: none"> Government at federal, regional and local level Stakeholders to be economically and / or physically resettled
Develop Action Plan for implementation of pre-construction management measures	<ul style="list-style-type: none"> Engage with stakeholders on content and implementation of management plans to ensure they are relevant and appropriate; Establish and announce key systems including grievance mechanism, issues log, commitments register etc. during this phase. 	<ul style="list-style-type: none"> Community meetings; Participatory monitoring forum; Provide information on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> Local stakeholders including communities, formal and customary authorities and associations
Continued development of Community Development Programme (CDP), identifying partners and projects, with a focus on meeting Mine contracting requirements by using local resources.	<ul style="list-style-type: none"> Identify partners to work with; Identify capacity and opportunity for local procurement. 	<ul style="list-style-type: none"> One-on-one meetings with partners including government; Opportunities and constraints analysis through community workshops. 	<ul style="list-style-type: none"> Local communities (recipients to be defined based on development of CDP Local formal and customary authorities Identified partners including government if relevant.

Considerations

Allana will focus attention on establishing effective communication channels during this phase and forming positive relationships with stakeholders. Together, this should ensure that Allana is able to maintain positive relationships and effective communication and engagement during the construction phase.

In addition from the outset Allana will identify and develop specific means to include vulnerable or marginalised groups into all engagement processes.

4.1.2

Construction

Objectives of Engagement

Many of the impacts associated with the Mine will be experienced or heightened during construction, in particular due to the large number of construction workers that will be in the area, as well as the large number of construction related activities that will be undertaken. The objectives for engagement during this phase thus include:

- To ensure that stakeholders are informed of the construction activities and associated impacts in anticipation of the impacts being experienced.
- To enable participatory monitoring that will involve stakeholders in monitoring and feeding back to Allana about the impacts experienced during construction as well as the effectiveness of the mitigation measures.
- To serve as a way of mitigating some of the anticipated impacts (e.g., erosion of traditional governance mechanisms, increased inter and intra community conflict and competition and increased physical disturbance, as per certain of the social management plans).
- To manage risk and establish and maintain sustainable relationships with stakeholders.
- To identify and develop opportunities with stakeholders for sustainable mutual benefit.

Approach to Engagement

Table 4.2 presents a set of engagement activities that will be undertaken during construction.

Table 4.2 Approach to Engagement – Construction

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Construction of mine and associated infrastructure	<ul style="list-style-type: none"> • Inform stakeholders of construction activities, anticipated disturbance and measures to mitigate this etc.; • Involve stakeholders in monitoring impacts of construction activities. 	<ul style="list-style-type: none"> • Meetings with community representatives; • One-on-one meetings with local government; • Provide information on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> • Communities, including leaders of Mororo, Alai Lai, Hamad Ela, Ambule and Asabolo • Local government
Construction of road (Mekele to site)	<ul style="list-style-type: none"> • Inform stakeholders of construction activities, anticipated disturbance and measures to mitigate this etc.; • Involve stakeholders in monitoring construction activities. 	<ul style="list-style-type: none"> • Meeting with communities including their representatives; • One-on-one meetings with local government; • Provide information on village notice boards and Mine engagement facilities. 	<ul style="list-style-type: none"> • Communities along the road located in Mine area • Local customary and formal authorities • Local businesses, cooperatives, associations etc.
Implement construction phase management measures	<ul style="list-style-type: none"> • Engage with stakeholders as a means of mitigating certain impacts included in the Sourcing, Recruitment and Procurement Management Plan, Community Development Plan and Community Health, Safety and Security Management Plan, Worker Management Plan etc.; • Engage with stakeholders on implementation; • Involve stakeholders in monitoring and evaluating effectiveness of mitigation activities. 	<ul style="list-style-type: none"> • Meeting with communities including their representatives; • One-on-one meetings with local and regional government; • Participatory monitoring and evaluation forum. 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Relevant regional government department
Identify and prioritise projects for implementation with relevant partners for the CDP.	<ul style="list-style-type: none"> • Engage stakeholders as a means of achieving sustainable development and mutual benefit; • Management of stakeholder expectations on delivery of projects and benefits. 	<ul style="list-style-type: none"> • Workshop / meeting with relevant government function; • Workshop with identified partners; • Project prioritisation and identification community workshop. 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Relevant partners • Relevant government departments

Considerations

Allana will ensure that contractors and sub-contractors are briefed and committed to adhering to Allana's policies and approaches to engaging with stakeholders. This will include training on the worker code of conduct which includes requirements on interaction with local stakeholders and respecting local tradition and culture. Strict contractor management in general and in relation to stakeholder interfacing activities in particular will be crucial to the effectiveness of Allana's approach to engagement during construction.

4.1.3

Operations

Objectives of Engagement

The transition from construction to operations will result in observable changes for stakeholders, in particular local stakeholders. One of the most noticeable changes will be the reduced labour force requirements. The objectives of engagement during the transition to operations include:

- To inform stakeholders of operational activities and likely changes to occur during the transition to operations.
- To manage expectations around employment in future phases.
- To allow stakeholders the opportunity to reflect on changes during construction and the effectiveness of both engagement and the implemented mitigation measures with a view to improving practices for the operations phase.
- To allow stakeholders to monitor changes during the operation phase.
- To continue to build relationships with local stakeholders, and identify partners to work with on community development initiatives.
- To allow stakeholders to comment on proposed community development initiatives and identify opportunities in the context of the local area and changes that are resulting.

Approach to Engagement

Table 4.3 outlines the approach to be adopted to engagement during the operational phase.

Table 4.3 Approach to Engagement – Operations

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Mining and processing	<ul style="list-style-type: none"> Update stakeholders on Mine activities and progress; Engage on measures for management of waste salt and water resources. 	<ul style="list-style-type: none"> Community meetings including their representatives; Updates provided through newsletters; Provide information on village noticeboards and Mine engagement facilities; Meetings with government and potential buyers. 	<ul style="list-style-type: none"> Local stakeholders including communities, customary and formal authorities and associations Potential salt buyers Government at all three levels
Continuous rehabilitation of wells and overburden stockpiles	<ul style="list-style-type: none"> Update stakeholders on mine activities and progress. 	<ul style="list-style-type: none"> Meetings with community representatives; Updates provided through newsletters; Update information on village noticeboards and Mine engagement facilities. 	<ul style="list-style-type: none"> Government at federal, regional and local level; Local stakeholders including communities, customary and formal authorities and associations
Transportation of potash	<ul style="list-style-type: none"> Inform local stakeholders of transportation routes, anticipated traffic volumes etc. 	<ul style="list-style-type: none"> Community meetings including their representatives; Provide information on village noticeboards and Mine engagement facilities; Participatory monitoring forum on impacts related to traffic. 	<ul style="list-style-type: none"> Stakeholders along the transport route (to be determined through further studies) Government at federal, regional and local level
Implementation of CDP projects	<ul style="list-style-type: none"> Engage and support stakeholders in implementation of nominated projects, and monitor efficacy of projects. 	<ul style="list-style-type: none"> Workshops with partners; Training and capacity building programmes with communities; Participatory monitoring forum for CDP projects. 	<ul style="list-style-type: none"> Local stakeholders including communities, customary and formal authorities and associations Relevant partners
Implementation of operational phase management measures	<ul style="list-style-type: none"> Engage with local stakeholders on measures in particular around retrenchment and associated socio-economic impacts of closure; Work with partners of the CDP to ensure projects implemented work to address impacts of closure. 	<ul style="list-style-type: none"> Meeting with communities including their representatives; One-on-one meetings with local and regional government; Workshop with partners. 	<ul style="list-style-type: none"> Local stakeholders including communities, customary and formal authorities and associations Partners including government where relevant

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Monitoring and evaluation of Project impacts	<ul style="list-style-type: none"> • Involve stakeholders in monitoring and evaluation of effectiveness of mitigation measures. 	<ul style="list-style-type: none"> • One-on-one meetings with community representatives; • Participatory monitoring and evaluation forum of key impacts. 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Other government where relevant

Considerations

It should be noted that the transition from construction to operations can affect stakeholder relations that Allana have developed, in particular if there are large retrenchment processes that will affect many local stakeholders. In addition, changes to the Mine team may further negatively affect stakeholder perceptions and relationships. Efforts will be made to increase engagement activities and information dissemination during this transition period. As far as possible, Allana will maintain or overlap Community Relations Staff between phases.

New contractors recruited for operations will be trained and monitored to ensure that they adhere to Allana's policy on stakeholder engagement. Allana's workforce will also receive training on the worker code of conduct which includes requirements on interaction with local stakeholders and respecting local tradition and culture.

Finally, as permanent camps are created for staff during operations, a sustainable approach to co-existing with local communities will need to be found.

4.1.4 Decommissioning and Closure

Objectives of Engagement

The key change during this phase will be the cessation of mining activities and closure which will result in a downsizing, redeployment or retrenchment of the workforce and associated knock-on effects to the local economy. In addition, there will be a focus on environmental rehabilitation and post-closure social activities. Specific engagement objectives for this phase will include:

- To inform stakeholders of decommissioning activities prior to commencement of the decommissioning phase, and involve stakeholders in planning for and monitoring rehabilitation and post-Mine activities;
- To engage on expectations and measures to address impacts such as retrenchment of the workforce and socio-economic impacts to the local area; and
- To engage and work with local stakeholder groups and elected partners to ensure identified community development initiatives are implemented sustainably and measures are put in place to allow for community ownership.

Approach to Engagement

Table 4.4 details the approach to be adopted to engagement during decommissioning and closure.

Table 4.4 *Approach to Engagement – Decommissioning and Closure*

Technical Activity	Engagement Objective	Engagement Activity	Stakeholder Group
Removal and handover of mining infrastructure	<ul style="list-style-type: none"> • Inform stakeholders of decommissioning and closure activities; • Engage with stakeholders to identify infrastructure that will be maintained. 	<ul style="list-style-type: none"> • Meetings with communities and their representatives; • Meetings with local and regional government. • Meetings with government to discuss the potential handover of infrastructure and community initiatives. 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Government at regional and local level
Implementation of rehabilitation and closure plan	<ul style="list-style-type: none"> • Engage with stakeholders on proposed rehabilitation plans to ensure that their concerns and opinions are considered. • Discuss management of social and environmental impacts related to decommissioning and closure 	<ul style="list-style-type: none"> • Meetings with communities and their representatives; • Meetings with local government; • Meetings with partners (if partners are identified that are relevant to rehabilitation activities). 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Relevant partners
On-going monitoring of closure activities	<ul style="list-style-type: none"> • Inform stakeholders of activities and involve them in the monitoring process of social and environmental impacts. 	<ul style="list-style-type: none"> • Participatory monitoring and evaluation • Meetings with government 	<ul style="list-style-type: none"> • Local stakeholders including communities, customary and formal authorities and associations • Local government
Implement exit strategy for CDP and hand over of infrastructure	<ul style="list-style-type: none"> • Engage stakeholders on timeframes for Allana exit strategy and infrastructure handover; • Ensure that systems / mechanisms are in place for sustainable continuation of projects. 	<ul style="list-style-type: none"> • Meetings with local partners; • Close out engagement sessions with local communities. 	<ul style="list-style-type: none"> • Partners • Local stakeholders including communities, customary and formal authorities and associations

Considerations

Thorough engagement will need to be conducted on impacts associated with redundancy, and cessation of mining activities. Allana must ensure that stakeholder expectations are managed, and the initiatives implemented as part of the CDP are appropriate and result in sustainable benefits beyond the Life of Mine (LoM).

4.2 PROACTIVE ON-GOING ENGAGEMENT

In addition to engaging at key milestones, Allana will conduct on-going engagement and communications activities with all stakeholder groups through all phases of the Project, as described in *Table 4.5*. The objective of this activity is to provide regular updates and feedback, thereby building sustainable relationships.

The approach to regular, on-going engagement and communication should be reviewed and regularly updated, including at the transition of the various phases of the Project and following the evaluations of the SES described in *Section 6*.

Table 4.5 Protocol for On-going Engagement

Stakeholder Category	Stakeholder Group	Frequency	Responsibility	Communication Channel
Government	Federal government: Political	Annually	Allana Senior Vice President - Business Development	<ul style="list-style-type: none"> • Social engagement • Written presentation on progress, if requested
	Federal government: Administrative and Technical	Biannually	ELCR Manager	<ul style="list-style-type: none"> • Meeting (where requested) • Written presentation on progress
	Federal Government Agencies	Biannually	ELCR Manager	<ul style="list-style-type: none"> • Meeting (where requested) • Written presentation on progress
	Federal Authorising Authorities	Quarterly	Allana Senior Vice President - Business Development	<ul style="list-style-type: none"> • Meetings • Regular progress reports
	Regional Government: Political	Annually	Allana Senior Vice President - Business Development	<ul style="list-style-type: none"> • Social engagement • Written presentation on progress
	Regional Government: Administrative and Technical	Quarterly	ELCR Manager	<ul style="list-style-type: none"> • Meeting (where requested) • Written presentation on progress
	Local Government: Political	Monthly	ELCR Manager	<ul style="list-style-type: none"> • Meetings • Regular progress reports
	Local Government: Administrative and Technical	Quarterly	ELCR Officer	<ul style="list-style-type: none"> • Meeting (where requested) • Written presentation on progress
Directly Affected Stakeholders	Customary Authorities	Monthly	ELCR Officer	<ul style="list-style-type: none"> • Meetings
	Community Associations	Quarterly	ELCR Officer	<ul style="list-style-type: none"> • Meetings

Stakeholder Category	Stakeholder Group	Frequency	Responsibility	Communication Channel
	Community members, including men, women, youth, artisanal salt workers	Monthly	ELCR Officer	<ul style="list-style-type: none"> • Meetings • Notices on community notice boards
Civil Society	Academics and Research Institutes	Annually	ELCR Officer	<ul style="list-style-type: none"> • Newsletter
	National NGOs (social, health and environmental)	Biannually	ELCR Officer	<ul style="list-style-type: none"> • Newsletter • Meetings (where requested)
	International NGOs (social, health and environmental)	Annually	ELCR Officer	<ul style="list-style-type: none"> • Newsletter
Business	Mining companies in north Danakil	Quarterly	ELCR Manager	<ul style="list-style-type: none"> • Multi-stakeholder forum
	Salt related businesses	Quarterly	ELCR Officer and team	<ul style="list-style-type: none"> • Meetings
	Tourism operators	Biannually	ELCR Officer	<ul style="list-style-type: none"> • Meetings with National Tourism Operators Association and Travel Agency (NTO) • Targeted written communication

4.3

RESPONSIVE ENGAGEMENT

Allana has an 'open door' policy in so far as it commits to engaging with stakeholders in response to concerns they raise, either formally or informally. The responsive approach provides stakeholders a mechanism through which to raise concerns, questions and issues and dictates a procedure for Allana to follow with regards to how such complaints or grievances will be addressed, described below.

Any issues may be raised through this mechanism, including concerns related to project activities, impacts, mitigation measures or the treatment of locals by Allana's staff, contractors or security providers.

4.3.1

Grievance Mechanism

Allana will establish and maintain a mechanism that is:

- Culturally appropriate;
- Clear, simple and understandable;
- Easily accessible, to all stakeholders including vulnerable groups, immobile and illiterate stakeholders, regardless of their language preference;
- Appropriately scaled to Mine impacts and risks;
- Transparent; and
- Responsive, ensuring timely and appropriate responses to grievances made.

Allana's grievance mechanism comprises four key steps:

- Registration of grievances;
- Review of grievances;
- Generation of responses; and
- Feedback and closure.

This is illustrated in more detail in *Figure 4.2*.

In terms of the registration of grievances, Allana will make both formal and informal channels available. Informal channels are necessary since Allana has found that the local stakeholders often do not make use of the formal grievance mechanism, even where they have concerns, queries or complaints.

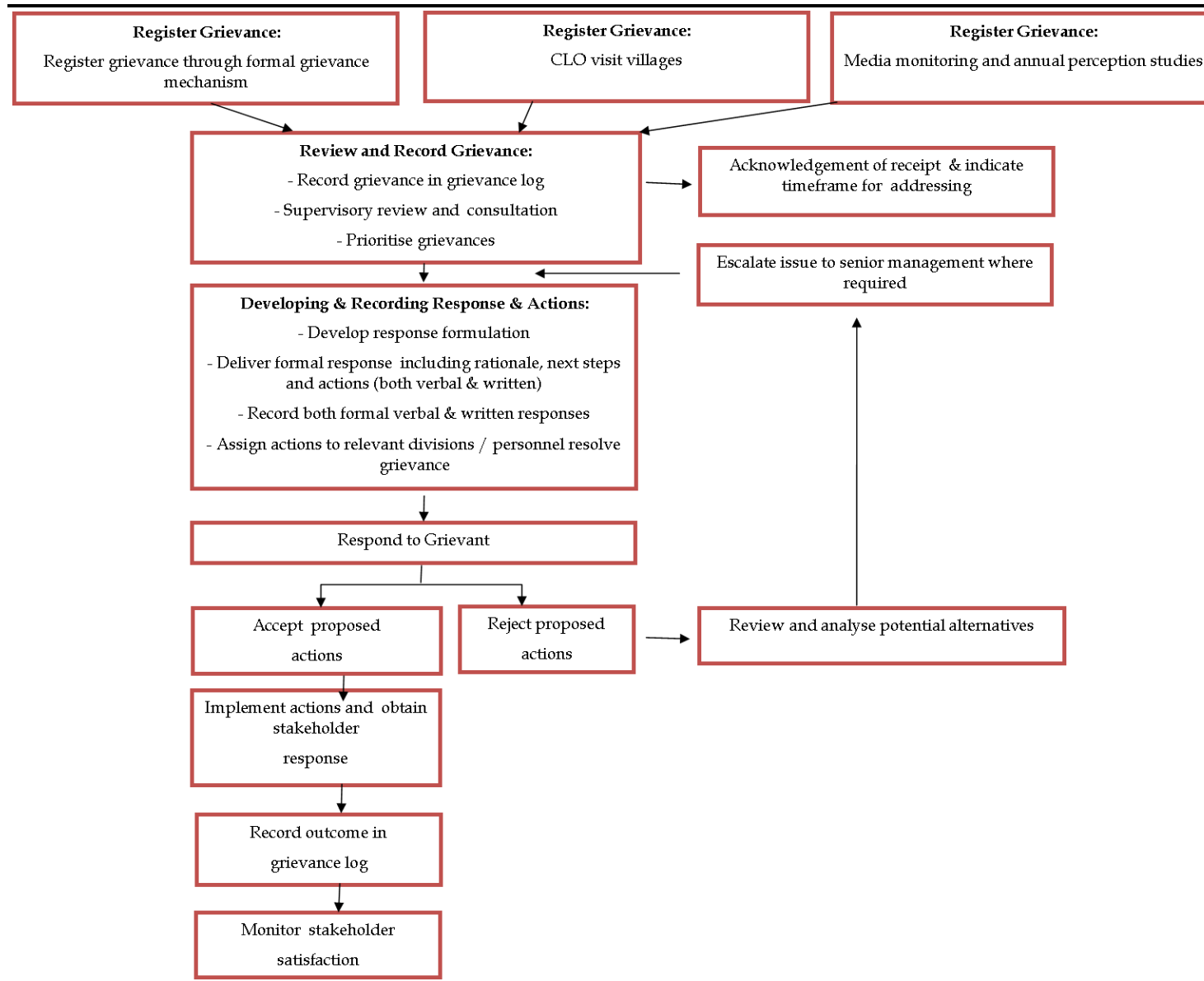
Therefore as identified in *Figure 4.2*, multiple channels will be made available to collect and capture concerns, complaints and grievances including:

- Lodging of formal grievances with the CLOs at key Mine engagement facilities (e.g., the Allana Berahale Office, the Hamad Ela Allana Office, or the Allana Construction/Operations camp);
- Monthly visits by the CLOs to the villages to meet with key stakeholders as well as a cross section of community members to gather feedback, concerns, grievances;
- Media monitoring to gather any media reports on either Allana or development in the Danakil Depression more generally;
- Annual perception studies of a cross section of national, regional and local stakeholders; and
- The whistle-blowers hotline, which is primarily aimed to allow stakeholders to report concerns of corruption but can also be used as a channel to identify grievances¹.

Both formal and informally lodged grievances will be recorded into the formal grievance mechanism and responded to accordingly. This will ensure that the grievance log contains a comprehensive record of all grievances raised, even where they were not formally lodged. This will also ensure that Allana responds appropriate to even issues raised informally.

¹ Given the increasing access and use of cellular telephones a toll-free hotline has been shown in other Project contexts to be a valid mechanism to facilitate stakeholder participation. Recognising that no one method will apply to all stakeholders a hotline may prove relevant and valid to some local stakeholders.

Figure 4.2 Addressing Grievances



The grievances registered will serve as a comments register. On a regular basis, Allana will review grievances and update the issues log accordingly, where trends and patterns can be identified in terms of who is raising grievances and how often grievances are being raised. The issues management system is described further in *Section 5*.

The aim of this section is to identify the internal capacity and governance requirements that are necessary for robust and relevant engagement to be conducted throughout the Mine lifecycle. The section will present on organisational structure, resourcing, planning and systems, tools and templates required to support the external engagement activities described in *Section 4*.

5.1 ORGANISATIONAL STRUCTURING

5.1.1 Core Engagement Team

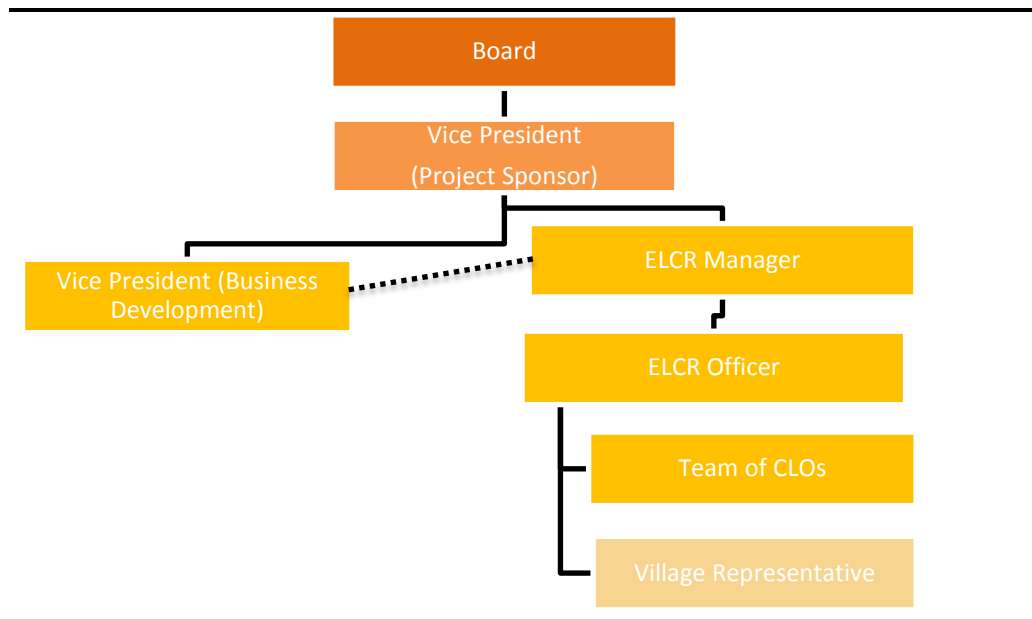
The core team that is responsible for all engagement activities for Allana are the ELCR team (illustrated in *Figure 5.1*, where the dark orange denotes the involvement of corporate role-players and the light orange denotes Project resources). The ELCR team is composed of the following personnel:

- The **Vice President** of Allana and Project Sponsor who is *accountable* to the board for the Project as well as the associated engagement programme;
- The **ELCR Manager** for the Mine who is *accountable* to Allana's Vice President for the effective implementation of all stakeholder engagement and community development activities;
- The **ELCR Officer** who is *responsible* for effective implementation of all stakeholder engagement activities and reports to the ELCR Manager; and
- A team of **CLOs** who will be involved in implementing the engagement programme, in particular at a local level.

In addition, Allana has employed two further individuals who feed into the engagement team, namely:

- A **Vice President (Business Development)** who is **responsible** for engagement activities with key Government stakeholders including political stakeholders at Federal and Regional levels as well the authorising authorities. This position has a dotted line to the ELCR Manager; and
- An **independent community resource** who is paid by Allana but who accounts to the community and serves as the representative of the community to Allana.

Figure 5.1 Governance Structure for Engagement Team



The structure of the team involved in engagement will be reviewed and additional capacity be introduced if necessary. This includes capacity at the local level, in terms of the CLO team, and at the federal and regional level with potential additional appointment of resources reporting to the ELCR Manager. This includes recruiting new members for the team or up-skilling existing members. Induction training on cultural sensitivity should be updated and all employees and contractors should be required to update their training on a regular basis.

Please refer to *Section 6* for more on how these respective positions are to report to one another as part of the monitoring procedure.

5.1.2 Alignment with Other Teams

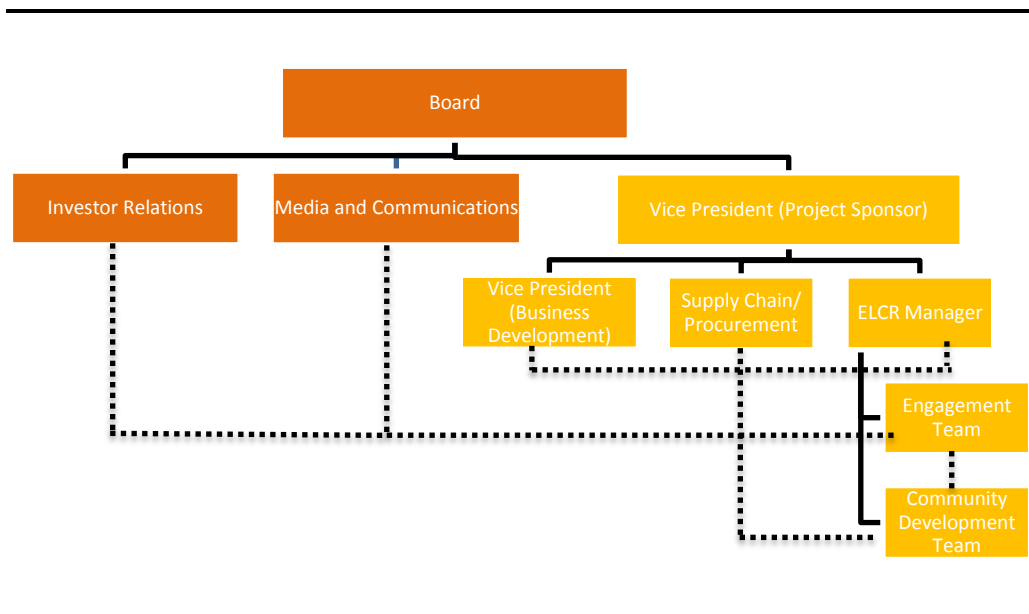
The core engagement team will closely link with and be supported by other functional divisions, in particular:

- **Corporate Social Responsibility (CSR) and Development.** This team will be responsible for the development and implementation of community development initiatives, which will involve identifying and working with partners who are likely to be Mine stakeholders. This team will also report to the ELCR Manager.
- **Media and Communications:** This team will be responsible for external communications with the public at large as well as media reporting. As such, they will work closely with both the Investor Relations and the Engagement teams.

- **Investor Relations:** This team will be responsible for establishing and maintaining a relationship with investors.
- **Supply Chain/ Procurement:** This team will be responsible for developing and contracting suppliers. This team will work closely with both the CSR team and the engagement team, supporting and guiding their activities to identify and develop local suppliers as part of their efforts to optimise the positive impacts of the Mine for locals and develop opportunities that are mutually beneficial.

Both the media and communications and the investor relations teams are corporate functions run out of Canada. *Figure 5.2* illustrates this broader governance arrangement, where the light blue denotes the involvement of corporate role-players and the dark blue denotes Project resources.

Figure 5.2 *Broader Governance Arrangement*



The Vice President (Project Sponsor) and the ELCR Manager will work with Corporate teams to ensure alignment and coordination between these teams to ensure consistency in messaging and risk management.

5.2 *RESOURCING*

For the successful implementation of the external engagement plan and for an effective engagement process in general, Allana recognises that the following resources and facilities need to be put in place:

- **Electronic Resources:** A website will be developed to provide the general public, including national and international stakeholders, information about the Project on a regular basis. This will be managed by the media and communications team in close co-ordination with the ELCR Manager.

- **National Resources:** The mandate of Allana’s office in Addis Ababa will be expanded to also include an engagement focus. This requires that existing staff be developed to provide stakeholders basic information and materials as well as to receive stakeholder comments or concerns and log these into the formal grievance mechanism, from where they will automatically be channelled to the ELCR team on site. In addition, this office will be a stakeholder interfacing facility that will have Mine information available for stakeholders.
- **Regional:** At the regional level, Allana’s Mekele office will continue to focus on working with supplier and contractors, where this may include local stakeholders in so far as local suppliers are identified and developed. It is not necessary for Allana to have an office in the regional capital, Semera, or the capital of Zone 2, Aba’ ala. Regular visits to these capitals are required, as indicated in *Section 4.2*.
- **Local:** Allana will develop and maintain offices in Berahale (existing) and Hamad Ela (to be constructed at the time of writing). The mandate of these offices will be to provide stakeholders with information, including answers to frequently asked questions and to enable them to log grievances either formally or informally. These offices will also be meeting areas for engagements with certain local stakeholders, where appropriate. All historical public information about the Mine (e.g., including records of engagements, the ESHIA, a commitments’ log) will be available for stakeholders at these offices. Allana will also erect village notice boards at villages in the Mine Area, with permission of the village elders and customary authorities. These will allow Allana to provide regular updates with information and key announcements. In addition, a team of CLOs will be appointed to operationalise Allana’s engagement programme. Allana commits to recruiting CLOs that are representative of the demographics of the area and Allana’s workforce. In other words, CLOs should be Afar but able to speak Amharic and / or Tigrigna and English. In addition, due to the requirements of Afar culture, where women are not given an equal platform in mixed meetings and thus customarily do not participate in village engagement, Allana also commits to recruiting at least one female CLO to conduct engagements with women specifically.

These resources will be put in place during pre-construction in order to ensure that Allana is able to engage effectively with stakeholders during construction and operations phases.

5.2.1 *Recruitment Considerations*

The capacity of staff managing engagement related facilities or involved in engagement activities needs to be strengthened so as to ensure that they are able to effectively implement Allana’s approach to engagement. This is particularly important from a gender perspective as well as an intercultural perspective. Allana will look to recruit ELCR team members taking into

account gender and cultural sensitivities and ensuring that ELCR team members recruited have the following attributes:

- **Approachable** and **available**, where they will need to be available and demonstrative of Allana’s open door policy;
- **Empathetic** and **representative** of local stakeholders but **independent** with no interests in local villages. CLOs need to facilitate relationships and therefore need to be able to deliver difficult messages to both stakeholders and Allana’s management. It is important that local stakeholders feel comfortable to provide CLOs feedback, concerns and grievances;
- **Comprehensive** and **thorough**, where they will be involved in documenting and monitoring all stakeholder activities, including facilitation of participatory monitoring; and
- **Honest** and **trustworthy**, where they will be tasked with creating and maintaining constructive relationships between Allana and the local stakeholders, including villages, customary authorities and local government.

5.2.2 *Skills Development and Training*

Upon recruitment Allana will ensure that team members *receive* training on fundamental skills required to be part of the ELCR team. Training will be provided in a series of areas including:

- **Allana’s Systems:** team members will receive training on using Allana’s issues management system (*Section 5.4.1*) and their grievance mechanism, issues log and commitments register, all of which are closely to the issues management system.
- **Engagement Skills:** training will be provided on basic engagement skills including facilitation of meetings according to stakeholder groups and context, responding to stakeholders and expectation management. Training will also be provided on conflict management, and identification and management of potential human rights abuse.
- **Awareness Training:** given the distinct Afar culture team members will be trained on gender and cultural considerations of working in the area.

5.3 *PLANNING*

5.3.1 *Stakeholder Engagement Plans*

To ensure that the approach described in the strategy is implemented, Allana commits to developing a Stakeholder Engagement Plan for each phase in the Mine lifecycle. This will identify a set of engagement activities that will

achieve the objectives contained within the strategy, as well as associated timeframes and responsibilities for the achievement of these activities.

The Stakeholder Engagement Plans will include the following content:

- **Introduction**, where this will outline the purpose, scope and structure of the document and will also cross reference the strategy. This section will also briefly reflect on the socio-economic context and the regulatory context, in particular if there are any changes. It should also document the existing and anticipated impacts for the next phase of the Project;
- **Project Stakeholders**, where this section will review the stakeholder database and issues logs and augment, where appropriate. This section should also include updates to the stakeholder profiles as well as stakeholder analysis to allow for prioritisation of stakeholder groups and issues, if relevant.
- **External Action Plan**, where this section will present an action plan in tabular format, showing how the proactive, milestone related and on-going engagement approaches, as well as the responsive approach including the grievance mechanism will be implemented;
- **Internal Action Plan**, where this section will present an action plan in tabular format, identifying the activities required to build internal capacity to support the achievement of the external action plan; and
- **Monitoring Evaluation and Reporting**, where this section will describe the monitoring and evaluation activities to be undertaken to enable both monitoring of the implementation of the plan and evaluation of both the plan and the strategy. Reporting of activities including timeframes and personnel responsible will also be included.

The plan can also serve as a tool by which to document engagement activities.

5.3.2 *Alignment with Other Plans*

Allana will ensure that the Stakeholder Engagement Plan aligns with a suite of other plans that will be developed, including:

- Media and communications plans;
- Community development plans;
- Investor relations plans; and
- Sourcing, procurement and recruitment plans.

5.4 SYSTEMS, TOOLS AND TEMPLATES

5.4.1 Systems

Allana will develop a system supported by a set of tools and templates which will support the implementation and management of the engagement programme. This system will also serve as an information management system, a monitoring system and an issues management system.

In particular, the issues management system will be put in place during pre-construction. This will be closely linked to the grievance mechanism which collects the views, concerns and grievances of stakeholders and records these. A Log of Issues will be compiled and regularly updated, based on a review and analysis of the Grievance Log. This review will reflect on the trends in what grievances are raised, how often and by whom. This will inform whether a grievance is considered an issue and what priority it will receive. A set of material issues will also be identified based on the significance of the impact anticipated or experienced related to the grievance as per the ESHIA impact significance assessment.

The issues management system will also review the responses provided to identified issues through the grievance mechanism and evaluate whether these were acceptable and sufficient. Where an issue is perceived to be or potentially be a Mine risk, these will be also channelled into a broader Mine Risk Management system.

The Commitments Register will record any commitments that are made in response to addressing issues or grievances, or made as part of management or mitigation measures. It will include information on commitments made, activities they relate to, responsible personnel and timeframes for delivery. The commitments register will therefore be closely linked to the issues management system.

In early phases, the engagement systems will be managed manually. Allana will investigate whether an electronic system is viable, where the existing SHE software could be adapted to also include engagement and issues management components.

5.4.2 Tools and Templates

Allana will maintain the following tools and templates on a regular basis, at least once every three months:

- The stakeholder database and associated profiling and analysis, as described in *Section 3.1*;
- The Issues Log, as described above;
- The Grievance Log and associated mechanism, as described in *Section 4.3*;
- A Commitments Register, as described above; and

- A set of responses to frequently asked questions, where these should be generated together with the Media and Communications team.

6.1 MONITORING

It is important to monitor engagement activities to ensure that the guidance contained within the SES is being implemented effectively through the SEPs and associated engagement activities. Monitoring allows Allana to adjust the approach as necessary to ensure that the objectives of the SES are being achieved through the engagement activities being undertaken. Allana will also monitor stakeholder engagement efforts as a way in which to record efforts made in this regard. The outcomes of monitoring will be reported in the following ways throughout the Mine lifecycle (*Table 6.1*):

Table 6.1 *Internal Monitoring Requirements*

Report	Recipient	Frequency	Content
ELCR Officer's report	ELCR Manager	Weekly	<ul style="list-style-type: none"> • Activities undertaken • Progress against the outputs/indicators in the relevant SEP • Stakeholder issues raised / requests made • Proposed next steps and actions
ELCR Manager's report	Vice President	Monthly	<ul style="list-style-type: none"> • Activities undertaken • Progress against the indicators/outputs in the relevant SEP • Key issues and opportunities • Key risks and proposed mitigation • Next steps in the engagement process
Vice President's report	Board of Directors	Quarterly	<ul style="list-style-type: none"> • Key stakeholder, activities, risks and opportunities
Board of Directors Annual Report	Shareholders and IFC	Annual	<ul style="list-style-type: none"> • Key Stakeholder activities, risks and opportunities included as part of the Annual Report

A template will be set up for each of these reports, which will identify what content is required within each of these reports. This will include a simple set of indicators against which monitoring activities will be undertaken (e.g., outputs as identified in the SEPs).

The development of these reports will be included as a Key Performance Indicator for the relevant responsible personnel, where the timely delivery of

the report, amongst other things, will be considered in performance reviews of staff.

6.2 EVALUATION

In addition to monitoring the way in which the SES is being applied through SEPs and engagement activities, there is also a need to evaluate whether the SES remains appropriate. There is a need to question whether the guidance in the SES is effective in achieving the intended objectives stipulated in the SES as well as whether these objectives remain relevant. Allana will adopt the following approach to evaluating the SES (*Table 6.2*).

Table 6.2 Evaluation Requirements

Evaluation	Responsible for Generation	Recipient	Scope
Evaluation undertaken during the transition phases of the Mine	ELCR Manager's report	Vice President	<ul style="list-style-type: none"> Progress in delivering upon the SES Effectiveness of the SES in achieving objectives and strategy Appropriateness of the objectives and strategy
Annual Evaluation	ELCR Manager's report	Vice President	
Two yearly independent evaluation	Independent Third Party	Vice President	

The approach to monitoring and evaluation will be reviewed at the beginning of each Mine phase. This includes the reporting procedure as well as the templates and indicators being reported against. These indicators will be generated based on the outputs described in the SEPs that are generated for each new phase in the Mine lifecycle.

Appendix A

Project Stakeholder Groups

Version 1

December 2012

Table 1.3 Stakeholder Groups

Level	Stakeholder Group	Stakeholder
Government	Federal, Regional and Local Government: Political	<ul style="list-style-type: none"> • Prime Minister of Ethiopia • President of Ethiopia • President of Afar • Afar Regional State Council • Zone 2 Administrator • <i>Woreda</i> administrators for Dallol and Berahale • <i>Kebele</i> leaders for Sabana Demale, Berahale and Bada Admerug
	Federal, Regional and Local Government: Administrative and Technical	<ul style="list-style-type: none"> • Ministries at Federal level (including Heads of Ministries and technical support) • Bureaus at Regional level • Bureaus in Zone 2 • Bureaus at <i>Woreda</i> level
	Government Agencies	<ul style="list-style-type: none"> • Ethiopian Roads Transport Authority • Ethiopian Wildlife Conservation Authority • Ethiopian Road Construction Corporation • Sustainable Development of the Protected Area System of Ethiopia (SPDASE)
Directly Affected Stakeholders (settlements in and near the concession areas and other affected areas/routes)	Customary Authorities (per village)	<ul style="list-style-type: none"> • Clan and religious leaders • Elders
	Community Associations (per village)	<ul style="list-style-type: none"> • Women’s Federation • Youth Groups • Palm Association (<i>engwa mehaber</i>)
	Community members, including men, women, youth, artisanal salt workers	<ul style="list-style-type: none"> • Alai Lai • Mororo • Hamad Ela • Asabolo • Ambule • Badle • Fiea • Morrora • Berahale town
Business	Mining companies in the northern Danakil	<ul style="list-style-type: none"> • Yara/ Sainik • Stratex International • Ethiopian Potash Corporation

Level	Stakeholder Group	Stakeholder
	Salt related businesses	<ul style="list-style-type: none"> • Berahale Salt Selling • Mekele Salt Buying Associations • Afdera Salt Production Share Company • Subsidiary services including local restaurants, hotels, accommodation etc. in Berahale, Asabolo, Hamad Ela
	Tourism operators	<ul style="list-style-type: none"> • Operators based in Addis Ababa • Operators based in Mekele • National Tourism Operator and Travel Agency (NTO)
Media	Federal, regional and local newspapers	<ul style="list-style-type: none"> • Addis Zemen • Ethiopian Herald
	Federal and regional TV and radio	<ul style="list-style-type: none"> • Ethiopian Radio and Television Agency (ERTA) • Ethiopian Television • Panos Ethiopia Radio programme
Civil Society	Federal and Regional Environmental NGOs	<ul style="list-style-type: none"> • Forum for the Environment
	Federal and Regional Social and Health NGOs	<ul style="list-style-type: none"> • MELCA • TARGET • International Training & Education Centre for Health (ITECH) • Afar Pastoralist Development Association • AMREF
	Academics and Research Institutes	<ul style="list-style-type: none"> • Authority for Research and Conservation of Cultural Heritage • Addis Ababa University, Department of Archaeology and Heritage Management • Ethiopian Archaeology and Palaeontology Association • Semera University

Appendix B

Key Stakeholder Issues

Version 1

December 2012

Table 1.4 Identifying Key Stakeholder Issues (as of October 2012)

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
Negative Impacts	Anticipated impacts	Roads and traffic	<ul style="list-style-type: none"> • There are concerns about traffic going forward particularly regarding the extent to which traffic is anticipated to increase; • Concerns raised regarding the impact roads will have on the salt both with respect to where roads are located in relation to the salt flats and how roads into the area will impact the use of camels and donkeys. 	<ul style="list-style-type: none"> • Directly affected communities; • Salt trade stakeholders; • Customary Authorities; and • Local Government. 	<ul style="list-style-type: none"> • Moderate negative impact (increased injury and mortality from traffic accidents). 	<ul style="list-style-type: none"> • All villages.
		The salt trade	<ul style="list-style-type: none"> • Mining in the area should not be allowed to negatively impact on the artisanal salt trade; • The industry is considered to be the lifeblood of all communities in the area as well as people all the way to Mekele; • The salt trade is the backbone of the local economy; and • The salt trade has important cultural significance. 	<ul style="list-style-type: none"> • Customary authorities; • Local government; • Directly affected communities; • Federal, regional and local government; • Tourism operators; and • Academics. 	<ul style="list-style-type: none"> • Moderate negative impact to the reduction in income generating opportunities related to artisanal salt mining. 	<ul style="list-style-type: none"> • Directly affected communities (in particular the Afar); • Artisanal salt trade workers; • Berahale Salt Selling Association; • Mekele Salt Buying Association ; and • Subsidiary services (salt trade).

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Palm resources	<ul style="list-style-type: none"> Palms are both economically and culturally significant for the local Afar; Palm processing is a source of cultural identity for Afar women; and Vehicles moving on and around the Project site have reportedly already caused an impact to palm collection. 	<ul style="list-style-type: none"> Customary Authorities; and Women. 	<ul style="list-style-type: none"> Major negative impact (reduction in income generating opportunities related to palm collection and processing). ⁽¹⁾ 	<ul style="list-style-type: none"> Women; and Salt trade workers.
		Tourism	<ul style="list-style-type: none"> Both positive and negative impacts of mining on tourism were recognised; and Tourism proposition should not be compromised, not only because the site has national and even international significance but also because locals benefit significantly from this industry. 	<ul style="list-style-type: none"> Federal, Regional and Local government; Tourism operators; and Directly affected communities. 	<ul style="list-style-type: none"> Minor negative impact (reduced income generating opportunities from tourism). 	<ul style="list-style-type: none"> Directly affected communities, in particular youth.

(1) Residual impacts to be determined following development of Livelihood Restoration Plan.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Cultural heritage	<ul style="list-style-type: none"> Graves are of high cultural significance to the local Afar; Removal or disturbance is culturally forbidden; Some stakeholders indicated that the Project design needs to take into account disturbance to graves; and Sites such as Mount Dallol, Erte Ale and Mount Assale are culturally significant and should not be affected and remain accessible to people. 	<ul style="list-style-type: none"> Local government; Customary Authorities; Tourism experts; Academics; and Directly affected communities. 	<ul style="list-style-type: none"> Negligible-Moderate negative impact (limited access to cultural heritage and archaeological sites); Negligible to major negative impact (disturbance / damage to cultural heritage and archaeological sites due to groundwork); and Negligible to moderate negative impact (disturbance / damage from increased access of non-locals). 	<p>In particular:</p> <ul style="list-style-type: none"> Mororo; Hamad Ela; Alai Lai; and Other villages in the Project who access sites.
		Water	<ul style="list-style-type: none"> Identified a clear need to conduct a Water Study to identify where Allana would get its water and how this would impact people in the area as well as salt production; and It was suggested that the study also considers how the mine's use of water would impact animals, both livestock and wild animals in the area. 	<ul style="list-style-type: none"> Federal, Regional and local Government; Academics; NGOs; Directly affected communities; and Salt-related stakeholders. 	<ul style="list-style-type: none"> Negative impact (lowering of groundwater table and impacts to aquatic habitats); Negative impact (decreased availability of water resources for local consumers). ⁽¹⁾ 	<ul style="list-style-type: none"> Villages across Project area and aquatic habitats close to villages of Mororo, Alai Lai and Asabolo.

(1) Rating of impacts and residual impacts to be determined following output of groundwater studies.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Influx	<ul style="list-style-type: none"> Some local participants suggested that there may be some benefits associated with influx to the area (e.g. more business opportunities, a larger market for their products and improved development); Others feel that there is a need to protect the local culture and thus worry about the impacts of influx; and There are already perceptions that foreigners to the area (including Ethiopians from other parts of the country and international workers) are benefiting more than Afar are from the proposed Project. 	<ul style="list-style-type: none"> Directly affected communities; Federal and local government; Regional salt stakeholders; and Tourism operators. 	<ul style="list-style-type: none"> Induced positive impact (increased income generating opportunities from influx); Minor negative impact (increased cost of living due to localised inflation); Minor-moderate negative impact (erosion of traditional governance mechanism associated in part with influx); and Moderate negative impact (increased intra and inter community competition and conflict). 	<ul style="list-style-type: none"> Directly affected communities with focus on potential vulnerable groups; and Village of Hamad Ela and Berahale Town identified as high probability areas for influx.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Wildlife and biodiversity	<ul style="list-style-type: none"> The area has been found to be important from a wildlife perspective. In particular, it is home to the endangered African Wild Ass; and It is also an important corridor for migratory birds. 	<ul style="list-style-type: none"> Government Agency. 	<ul style="list-style-type: none"> Major - moderate negative impact (habitat loss and fragmentation within the salt pan fringe habitat) ⁽¹⁾; Major negative impact (loss of critical aquatic habitats including for the Killifish species) ⁽²⁾; Minor negative impact (alluvial fan habitat loss and fragmentation key for the Dorcas Gazelle, its predators and for pasture areas); Moderate negative impact (loss of terrestrial red data species - Egyptian vulture, striped hyena, African Wild Ass); Moderate negative impact (reduced water quality of aquatic systems and impacts to species including Killifish). 	<ul style="list-style-type: none"> Across the Project area with identified sensitive habitats (ranging between sensitive - highly sensitive) close to Mororo, Alai Lai, Hamad Ela and Sabah River.

(1) Pre-mitigation impacts, residual impacts to be finalised following input from geohydrology studies.

(2) Pre-mitigation impacts, residual impacts to be finalised following input from geohydrology studies.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Disturbance and pollution	<ul style="list-style-type: none"> Dust, air pollution and solid waste are already reported to be significant problems locally. Stakeholders anticipated that this will be magnified and exacerbated by noise pollution and liquid waste discharge. 	<ul style="list-style-type: none"> Directly affected communities; and Federal, Regional and Local Government. 	<ul style="list-style-type: none"> Moderate negative impact (dust and particulate matter); Moderate negative impact (emissions from fossil fuel generators); and Moderate negative impact (noise impact at Mororo night time). 	<ul style="list-style-type: none"> Villages in the Project area in particular Mororo and Alai Lai that will be impacted by higher noise levels.
		Health	<ul style="list-style-type: none"> It was noted that there is prostitution in the area, so STIs must be considered; Concerns were raised about the health impact of the operation, e.g. about whether any chemicals emitted may have an impact, any impacts associated with drilling etc.; and It was recommended that the scope of the health assessment also include animals. 	<ul style="list-style-type: none"> Directly affected communities; and Regional and Local Government. 	<ul style="list-style-type: none"> Moderate negative impact (spills, emissions and contamination); and Minor negative impact (vector borne and communicable disease). 	<p>Villages in close proximity to Project in particular:</p> <ul style="list-style-type: none"> Hamad Ela; Mororo; and Alai Lai.
		Pastoralism	<ul style="list-style-type: none"> The ESHIA should consider the impact of the Project on livestock grazing. 	<ul style="list-style-type: none"> Academics; Regional NGOs; and Directly affected communities. 	<ul style="list-style-type: none"> Minor negative impact (reduced productivity of livestock related to decline in productivity in pasture). 	<ul style="list-style-type: none"> Households reliant on livestock.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Land use and access	<ul style="list-style-type: none"> Several concerns were raised about the extent of land required by mining and the monopoly this creates in the area; Tourist operators are worried about their access to the area; and Locals are concerned about their access and mobility through, across and in the area for their pastoralist practices and livestock grazing. 	<ul style="list-style-type: none"> Directly affected communities; Tourism operators; and Local government. 	<ul style="list-style-type: none"> Minor negative impact (reduced productivity of livestock related to decline in productivity in pasture) Major negative impact (resettlement of Mororo and Alai Lai). ⁽¹⁾ 	<ul style="list-style-type: none"> Villages in the Project area; Mororo and Alai Lai.
		Geological / seismic activity	<ul style="list-style-type: none"> There were questions about whether mining would affect the geology and geo-thermal/seismic activity in the area; and It was also recommended that the geology be considered in the feasibility study, with a focus on whether this activity may impact on mining. 	<ul style="list-style-type: none"> Federal government 	Not assessed within the Social Impact Assessment.	
		Tension and conflict	<ul style="list-style-type: none"> Concerns were raised that the Project may result in increased conflict, e.g. between newcomers and existing residents, and between villages in the area especially in so far as mobility and resources are affected. 	<ul style="list-style-type: none"> Local government; Customary Authorities; and Local Government. 	<ul style="list-style-type: none"> Moderate negative impact (increased completion and conflict). 	<ul style="list-style-type: none"> All villages; In particular Hamad Ela and Berahale (high probability and medium-high social risk area for influx); Vulnerable groups.

(1) Impacts identified pre-mitigation. Residual impact to be determined following completion of the Resettlement Action Plan.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Resilience to adapt	<ul style="list-style-type: none"> A concern was raised, however, that people may not be able to adjust to this change fast enough both socially and culturally. This may pose a risk to the mine. 	<ul style="list-style-type: none"> Tourism; Regional salt stakeholders; Directly affected communities; and Regional government. 	<p>Most relevant include:</p> <ul style="list-style-type: none"> Minor negative impact (loss of sense of place); and Minor negative impact (decreased social and cultural cohesion) <p>In addition the SIA has identified income generating opportunities from influx and contracting however local Afar people may not currently have the capacity to adapt and harness these opportunities.</p>	<p>All villages in particular:</p> <ul style="list-style-type: none"> The elderly, sick or those unable to secure employment; and Local Afar residents.
	Existing Impacts	Employment and labour issues	<ul style="list-style-type: none"> Many issues raised by local communities related to Allana's labour practices (real or perceived) including equal pay, working hours, payment for overtime, disciplinary practices etc. 	<ul style="list-style-type: none"> Directly affected communities; Customary Authorities; and Local Government. 	<ul style="list-style-type: none"> Minor negative impact (exposure of workforce to insufficient health and safety standards and labour and accommodation standards). 	<ul style="list-style-type: none"> Employees recruited at local, regional and national levels.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
		Disturbance and pollution related to exploration activities	<ul style="list-style-type: none"> • Pollution (dust and noise) was already reported to be a significant problem locally; and • Disturbance and pollution were identified to have increased without means to address these issues. 	<ul style="list-style-type: none"> • Directly affected communities; • Customary authorities; and • Federal, Regional and Local Government. 	<ul style="list-style-type: none"> • Moderate negative impact (dust and particulate matter); • Moderate negative impact (emissions from fossil fuel generators); and • Moderate negative impact (noise impact at Mororo night time). 	<ul style="list-style-type: none"> • Mororo; • Hamad Ela; • Alai Lai; • Salt trade workers; and • Ambule.
		Roads and traffic	<ul style="list-style-type: none"> • Vehicles moving on and around the Project site have reportedly had livelihoods impacts, e.g., vehicles driving over grazing areas and hitting animals, areas for palm harvesting, and on salt collection (in particular local collection of 'black' salt used by locals and animals) without being addressed by Allana. 	<ul style="list-style-type: none"> • Directly affected communities; • Salt trade stakeholders; • Customary Authorities; and • Local Government. 	<ul style="list-style-type: none"> • Moderate negative impact (increased injury and mortality from traffic accidents). 	<ul style="list-style-type: none"> • All villages in the Project area.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
Positive Impacts		Anticipated benefits	<ul style="list-style-type: none"> Locals have expectations of significant benefits from Allana with the expectation that these will be shared with them or created for them; and There is high expectation from local stakeholders that if they are not employed by Allana they will receive other benefits including provision of potable water, development of schools and health posts, development of income generating activities, tax to the local area, and provision of transport. 	<ul style="list-style-type: none"> Directly affected communities; Customary Authorities; and Local Government. 	<ul style="list-style-type: none"> Direct positive impact (from community development initiatives). 	<ul style="list-style-type: none"> Directly affected communities; and Wider Project Area.
		Existing benefits	<ul style="list-style-type: none"> Several local stakeholders recognised that there had already been some benefits experienced, in particular in Berahale (e.g., computers at schools, provision of teachers, use of medical facilities and employment).; and As the Mine goes into operations phase, there are expectations that the benefits will also scale up and extend to other villages. 	<ul style="list-style-type: none"> Directly affected communities; and Local and regional government 	<ul style="list-style-type: none"> Assessed as benefits to be derived from the Mine (see line item above). 	<ul style="list-style-type: none"> Local villages in particular Hamad Ela and Berahale

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
Process	Engagement	Engagement approach and methodology	<ul style="list-style-type: none"> Stakeholders called for more extensive engagement both through the ESHIA and in general, with several stakeholders noting the Scoping phase of the ESHIA was the first time they had been engaged; and Several stakeholders advised that special attention be given to engaging locals, and in particular traditional leaders. 	<ul style="list-style-type: none"> Directly affected communities; Customary Authorities; and Federal, regional and local government. 	<ul style="list-style-type: none"> Minor-Moderate negative impact (erosion of traditional governance mechanisms). 	<ul style="list-style-type: none"> Customary authorities; and Directly affected communities.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
	Planning	Alignment and co-ordination	<ul style="list-style-type: none"> • Several government stakeholders expressed the hope that Allana's plans would consider and align with federal and regional government strategies and plans; • Regional government expressed a hope that the three tiers of government would work together, where they felt there was an opportunity for more consultation with federal government and more integration with local government, and collaboration between regions, in particular between Afar and Tigray; • There was a request from regional and federal government stakeholders that mining companies work together to both address negative impacts and work toward positive benefits and development in the area. It was suggested that there may also be opportunities to reduce negative impact by sharing resources, and their studies with each other. 	<ul style="list-style-type: none"> • Federal, regional and local government. 	<p>The SIA has identified the following potential cumulative impacts from other actual or proposed development in the area:</p> <ul style="list-style-type: none"> • Increased income generating opportunities; • Decline in desirability of area as a tourist attraction, and reduction in income for local villages; • Impacts to livelihoods and health due to changes in water resources; • Damage or disturbance to cultural heritage or archaeology sites; • Impacts related to influx including increased traffic and accidents, localised inflation, community competition and conflict, increased communicable and vector borne disease and pressure on social and physical infrastructure. 	Extensive across the wider Project area.

Issue Category	Issue	Current Issues Raised	Stakeholder Views on the Issue	Stakeholder Raised By	Impact Significance (Post mitigation)	Extent of the Impact
Project	Project Related	Information and communication requirements	<ul style="list-style-type: none"> • There is general lack of understanding of the Project; and • Stakeholders expressed their dissatisfaction that they continue not to be engaged with regards to exploration activities occurring. 	<ul style="list-style-type: none"> • Directly affected communities; • Customary Authorities; and • Local and regional government. 	<ul style="list-style-type: none"> • Not assessed within the Social Impact Assessment. 	

Volume III Annex N

Worker Management Plan

Version 2.0

December 2012

Document Ref.	Prepared By	Reviewed By	Date Submitted to Allana for Review
WkMP_0143047_V2.0	Nomsa Fulbrook- Bhembe and Alastair Gow-Smith	Philippa Spence	December 2012

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LIST OF ACRONYMS

Abbreviation	Full Definition
AfDB	African Development Bank
BOLSA	Bureau of Labour and Social Affairs
CDP	Community Development Plan
CHSSP	Community Health, Safety and Security Plan
EBRD	European Bank for Reconstruction and Development
EPA	Environmental Protection Agency
EPC	Engineering, Procurement and Construction
ESMP	Environmental and Social Management Plan
HIV / AIDS	Human Immuno-deficiency Virus / Acquired Immune Deficiency Syndrome
OHS	Occupational Health and Safety
QHSSE	Quality Health, Safety, Security and Environmental
HR	Human Resources
IMCP	Integrated Mine Closure Plan
IFC	International Finance Corporation
ILO	International Labour Organization
ELCR	Land and Community Relations
MOLSA	Ministry of Labour and Social Affairs
MoM	Ministry of Mines
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
SPRP	Sourcing, Procurement and Recruitment Plan
WkMP	Worker Management Plan

DEFINITIONS

Decommissioning: is the process by which options for the final status of structures at the end of their working life are assessed for their dismantling, physical removal, disposal or modification (if beneficial usage of existing Project infrastructure is a component of the closure scheme).

Employer: The organisation Allana Potash Corp., which utilises the services of someone for remuneration or compensation in return.

Employee: Any person, excluding an independent contractor, who works for another person and who receives, or is entitled to receive, remuneration and refers to any other person who in any manner assists in carrying out or conducting the business of an employer and the term “employer” has a corresponding meaning.

Post-Closure: is the phase after decommissioning and closure where activities are reduced to monitoring and maintaining specific areas to ensure that environmental and health and safety risks are controlled and minimized.

Recruitment: the process of advertising, selecting and appointing a suitable candidate for a vacant position.

Third Party Contractors: contractors supplying a service to Allana Potash for any activity associated with the construction, operation or decommissioning phases of the proposed Project.

1 INTRODUCTION

This document is the Worker Management Plan (WkMP) for the Dallol Potash Project. It seeks to provide detail regarding the implementation of avoidance, mitigation and management measures for impacts related to the Allana Potash Corp. (hereafter referred to as Allana) workforce.

1.1 POLICY STATEMENT

1.1.1 Policy Statement

Allana is committed to protecting employee health and wellbeing in the workplace, thereby achieving a healthy and productive workforce through the identification and management of safety and occupational health risks, and the provision of fair and appropriate working conditions. Allana commits to upholding the rights and dignity of their employees throughout all stages of the proposed Project in accordance with Ethiopian and International Labour laws and standards.

1.2 OBJECTIVES

This Management Plan has been developed taking into account the requirements of Ethiopian labour law, International Finance Corporation (IFC) Performance Standard 2 and the International Labour Organisation's (ILO) core conventions, and seeks to:

- Support the health, safety and wellbeing of Allana's workforce.
- Create an environment favourable to the development of healthy worker-management relationships.
- Ensure that employees understand their labour rights.
- Allow employees to exercise their right to freedom of association and collective bargaining.
- Provide employees and third party workers with a feedback mechanism to raise grievances and have these appropriately addressed.
- Minimise the risk of discrimination (including for any migrant workers) and promote equal opportunities.
- Manage risks associated with housing for the workforce including construction workers.
- Manage any retrenchment of workers as relevant.

- Manage the wellbeing of any workers engaged by third parties.
- Consider the risks of child or forced labour, or significant safety issues within the supply chain and consider steps to remedy these risks.
- Avoid child or forced labour.
- Ensure fair working hours and conditions of employment.

1.3 *PURPOSE AND SCOPE*

The WkMP has been developed with the purpose of protecting the health, safety and wellbeing of Allana’s workforce, whilst also working to promote equal opportunity and non-discrimination in Allana and its contractor’s workforce management. This will be done within the context of meeting national requirements and standards, and the requirements of the IFC Performance Standards (IFC PS), as set out in *Section 2*.

The WkMP is applicable across the entire workforce at all skills levels, and deals with all aspects relating to Allana’s employees including recruitment, labour and accommodation conditions, management of worker relationships and occupational health and safety (OHS). In addition to Allana employees, the WkMP includes measures related to the management of workers engaged by third parties, and also the management of workforce-related risks within the supply chain.

1.4 *LINKAGE TO OTHER ENVIRONMENTAL AND SOCIAL PLANS*

The management measures identified in the WkMP relate to the Community Development Plan (CDP), Community Health, Safety and Security Plan (CHSSP) Plan, Sourcing, Procurement and Recruitment Plan (SPRP) and the Integrated Mine Closure Plan (IMCP), as shown in *Table 1.1*

Table 1.1 *Linkage to other Management Plans*

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL MANAGEMENT PLANS	
Community Development Plan (CDP)	An element of the CDP is aimed at improving literacy and upskilling local communities. This will work to improve the potential for local people to work for Allana, and to improve understanding of the mining industry, and OHS and labour standards. The CDP focuses on creating long-term initiatives post decommissioning that will work to address economic opportunities in the Study Area, which is relevant to labour issues associated with decommissioning including worker redundancy.

Management Plan	Overlap of this Plan with Content of Other Plans
SOCIAL MANAGEMENT PLANS	
Community Health, Safety and Security Plan (CHSSP)	The worker Code of Conduct addressed in the WkMP is of relevance for how workers will interact with neighbouring communities, and for the management of impacts where workers interact with non-Allana employees and neighbouring communities.
Sourcing, Procurement and Recruitment Plan (SPRP)	The measures recommended in the WkMP include the screening and auditing of suppliers and contractors to meet OHS and labour standards. Therefore measures identified in the SPRP should work to complement those in the WkMP, and ensure that suppliers and contractors comply with Project requirements.
CLOSURE PLANS	
Integrated Mine Closure Plan (IMCP)	The IMCP will include measures that are relevant for the downscaling of the workforce and potential impacts related to worker redundancy.

A summary of the legal requirements and standards relevant to the WkMP are presented in this section. The legal requirements included in this summary may not be comprehensive.

2.1 NATIONAL LEGISLATION AND POLICY

The national legislation and policy relevant to the WkMP are discussed in the following sections below.

2.1.1 *The Ethiopian Constitution*

The Ethiopia Constitution covers the 'Rights of Labour', including the rights of workers "to form associations to improve their conditions of employment and economic well-being.

The general principles of labour rights in the Ethiopian Constitution include:

- The right of the security of the person (Article 16);
- The prohibition against inhuman treatment and forced and compulsory labour (Article 18);
- Freedom of association (Article 31);
- The right to express grievances (Article 42 (1) b);
- Equality of women in the labour force (Article 35); and
- Prevention of exploitative practices with regards to child labour, and prohibition of child entering into hazardous or harmful practices to his or her education, health or well-being (Article 36).

2.1.2 *Labour Proclamation (Amended n^o 494/2006)*

The Labour Proclamation is the principal national legislation on labour issues. It covers all establishments with one or more workers and addresses a wide range of issues, such as employment relations and contracts, obligations of employers and workers, wages and working time, working conditions and occupational safety and health, occupational injuries, labour disputes and conciliation.

The Proclamation also sets out provisions for the labour inspection service, giving inspectors wide-ranging duties and enforcement powers and prohibiting obstruction of inspectors in performing their duties. The

Proclamation was amended in 2006 to give workers the right to severance pay where their employment contracts are terminated because of HIV/AIDS.

2.1.3 *Occupational Health and Safety Directive (2008)*

This Directive has made both general and specific provisions regarding to:

- Health and safety;
- Arrangements in the workplace;
- Ambient working conditions;
- Hazardous jobs or undertakings; and
- Specific occupations and processes and requirements (machinery and process guards).

The Directive also identifies general duties of employers, and the duties and rights of workers including organizational measures such as a safety and health policy and arrangements, and for personal protective equipment (PPE). The Directive also includes measures for controlling a wide range of risks, including chemicals, noise and machinery and makes specific provisions for the recording and notifying of occupational accidents and diseases. The Ethiopia Health Policy (1993) also included OHS promotion in its priorities.

2.1.4 *Institutional Framework*

The Ministry of Labour and Social Affairs (MOLSA) is responsible for developing and promoting peaceful industrial relations by ensuring successful management of labour conditions and health and safety in the working environment, both at the national and regional level.

The regional Bureaus of Labour and Social Affairs (BOLSA) are responsible for conducting inspections on labour standards for private enterprises within each region.

2.2 *IFC STANDARDS*

The WkMP has been guided by international good practice regarding workforce management and OHS.

Allana have committed to meeting the International Finance Corporation Environmental and Social Performance Standards (*IFC Performance Standards*). In practical terms, this means that Allana and its contractors will satisfy the requirements of IFC PS 2.

IFC PS 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by the protection of the fundamental rights of workers.

The IFC General and Project Specific Environmental, Health, and Safety (EHS) Standards are also of relevance to the WkMP and the relevant requirements have been incorporated herein.

2.3

AFRICAN DEVELOPMENT BANK STANDARDS AND POLICIES

The procedures and guidelines that are relevant to the proposed Project are the Environmental and Social Assessment Procedures for AfDB's Public Sector Operation and the Integrated Environmental and Social Impact Assessment Guidelines.

The AfDB procedures require that projects that necessitate the development of an Environmental and Social Management Plan (ESMP) must ensure that the number and complexity of measures required are proportional so as to ensure the proposed Project's environmental and social sustainability.

2.4

INTERNATIONAL LABOUR ORGANISATION

Ethiopia has ratified several of the International Labour Organisation's (ILO) conventions. Of relevance are the following:

- Forced Labour Convention, 1930 (No. 29).
- Freedom of Association and Protection of the Right to Organise Convention, 1949 (No. 87).
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98).
- Equal Remuneration Convention, 1951 (No. 100).
- Abolition of Forced Labour Convention, 1957 (No. 105).
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111).
- Minimum Age Convention, 1973, (No. 138).
- Occupational Safety and Health Convention, 1991 (No. 155); and
- Worst Forms of Child Labour Convention, 2003 (No. 182).

The Quality, Health and Safety (QHS) Manager will be responsible for the implementation and management of all measures in relation to OHS inclusive in the WkMP.

The Human Resources (HR) Department is responsible for the development and implementation of procedures and protocols relating to labour and working conditions.

All employees including contractors (and their employees) will be required to adhere to the requirements of the WkMP.

Contractors will be required to take a level of responsibility for ensuring the application of this plan to their staff. This will be the responsibility of contractor Quality Health, Safety, Security and Environmental (QHS) managers.

4.1 SUMMARY OF IMPACTS TO BE MANAGED

The WkMP arises from the need to manage, mitigate or optimise a number of impacts that may result from the Dallol Potash Project. The plan seeks to address potential impacts related to inadequate:

- Labour conditions;
- Accommodation conditions; and
- Occupational Health and Safety (OHS).

The WkMP also relates to impacts associated with interaction between the workforce and local communities namely the:

- Transmission of HIV/AIDS and other STI related vector borne and communicable diseases;
- Conflict between communities and employees and contractors;
- Localised inflation driven by increased demand for products and services as a result of the presence of the Allana workforce in the area; and
- Health and safety accidents including accidents associated with Project activities, traffic accidents etc.

4.2 MANAGEMENT DURING CONSTRUCTION**4.2.1 Impacts**

The impacts during construction will be similar to those identified in *Section 4.1*. The impacts during construction relevant to the WkMP are:

- Exposure of workforce (including third-party sub-contractors) to insufficient labour standards related to working hours, wages, retrenchment, representation and discrimination.
- Exposure of the workforce (including third-party sub-contractors) to insufficient accommodation standards (both in design and operation).
- Exposure of workforce (including third-party sub-contractors) to insufficient OHS standards.
- Impacts associated with interaction between the workforce (including third-party sub-contractors) and local communities.

The scale and extent of these impacts are likely to be larger during construction than at any other time during the Mine's life-cycle due to the size of the total workforce required to construct mine infrastructure. Reliance on third party contractors which is typical during construction will also increase the likelihood of these impacts in the absence of the measures detailed in the WkMP.

4.2.2 *Objectives and Targets*

The objective of the WkMP during construction will be consistent with those established in *Section 1.2*.

Table 7.1 identifies the specific targets required to ensure proper management of impacts.

4.2.3 *Management Actions*

During construction the management of impacts related to labour and accommodation conditions and OHS for the Allana workforce (including contractors and supply chain) will focus on the establishment of relevant policies and monitoring systems. These will include:

- The development of an OHS management system and OHS monitoring and surveillance programme.
- Fitness-for-work health screening.
- The development of a worker health awareness programme.
- The development of worker engagement procedures.
- Development of a worker feedback mechanism.
- The development of relevant HR policies and procedures.
- The development of auditing programme for contractors and supply chain; and
- The development of a worker code of conduct.

Specific details surrounding the management actions required are included within *Table 7.1*.

Contractor Control System

Allana will develop a contractor control system that establish clear accountabilities, ensure active engagement of contractors, and provide a consistent process to avoid, eliminate, reduce, minimize or offset environmental, labour and community impacts and risks to the project.

The contractor control system will provide a set of detailed requirements based on industry good practice and the results of the ESHIA for the contractor to understand and take into consideration during the tender process, and will be required to implement and meet following the awarding of the contract.

This system will recognise that risks vary from contractor to contractor depending on the scope of work, the activities involved and the sensitive receptors and resources that may be impacted in the area of work. A risk based approach is therefore essential in determining which control measures are most important for the contractor to implement and manage. The risk based approach is utilised at three stages:

- Applicability of management plans to individual scopes of work (internal review and assessment);
- Tender review of control measures; and
- Pre commencement-work review

Allana will consider during the qualification and selection process contractor ability to understand and meet the requirements of the ESHIA Management Plans. As part of the qualification and selection process contractors will be provided with the relevant management plans and will be evaluated according to their responses to environmental, labour, health and safety and community relations requests included in tender documents.

During contract award, Allana will conduct a commence-work review to refine, clarify, prioritise and focus the key legislation, standards, activities, impacts, mitigation measures and commitments as relevant to contractor's scope of work and previously during the tender process. New control measures identified will be discussed and agreed for inclusion into the relevant plans.

Implementation protocols and plans will be developed in coordination with Allana to document the specific measures required to implement management and mitigation commitments made in the EHSIA. This may include training, KPIs, monitoring and auditing schedules, reporting requirements, management reviews etc.

4.2.4

Responsibility

Responsibility for the management of these actions will be for the QHS and HR managers of both Allana and any third party contractors they use. Specific details are included within *Table 7.1*.

4.3 *MANAGEMENT DURING OPERATION*

4.3.1 *Impacts*

The impacts during operation are likely to be similar to those identified in *Section 4.2.1* however the nature of the impacts may vary due to changes in labour requirements. The extent and scale of these impacts will be less than during construction due to a reduction in the size of the workforce and a more limited use of contractors. Impacts will include:

- Exposure of workforce (including third-party sub-contractors) to insufficient labour standards related to working hours, wages, retrenchment, representation and discrimination;
- Exposure of the workforce (including third-party sub-contractors) to insufficient accommodation standards (both in design and operation);
- Exposure of workforce (including third-party sub-contractors) to insufficient OHS standards; and
- Impacts associated with interaction between the workforce (including third-party sub-contractors) and local communities.

4.3.2 *Objectives and Targets*

The objectives during operation will be to maintain the achievement of objectives identified at the start of this document (*Section 1.2*) and to prepare for Project phase transition from construction to operations. Although the majority of the construction workforce will be on short-term contracts, it is anticipated that a significant number will be recruited from the local area. Therefore downscaling of the workforce and subsequent impacts particularly at the local level will need to be managed in line with the criteria outlined in IFC PS 2 on retrenchment (please refer to *Table 7.1* for further detail).

In addition to the objectives mentioned in *Section 1.2*, the following should be achieved:

- Management of impacts associated with downscaling of the workforce.
- Continuation of procedures and systems implemented during construction, and tailored to meet workforce requirements and changes during the operations phase; and
- Ensure that all new workers and contractors are provided with or have developed policies and procedures on labour and working conditions and OHS standards.

Table 7.1 identifies relevant targets for impact management during operations.

4.3.3 *Management Actions*

During operations the management of impacts related to labour and accommodation conditions and OHS for the Allana workforce (including contractors and supply chain) will focus on the maintaining and monitoring the implementation of relevant policies. Specifically these will include:

- The maintenance of the OHS management system and OHS monitoring and surveillance programme.
- On-going and regular fitness-for-work health screening.
- The maintenance of a worker health awareness programme.
- The maintenance of worker engagement procedures.
- Maintenance of a worker feedback mechanism.
- The maintenance and where necessary, updating of relevant HR policies and procedures.
- The maintenance of auditing programmes for contractors and supply chain.
- The maintenance of behaviour in accordance with the requirements of a worker code of conduct.

Specific details surrounding the management actions required are included within *Table 7.1*

4.3.4 *Responsibility*

Responsibility for the management of these actions will lie with the QHS and HR managers. Specific details are included within *Table 7.1*.

4.4 *MANAGEMENT FOR DECOMMISSIONING AND CLOSURE*

4.4.1 *Impacts*

The cessation of mining activities during decommissioning and closure will result in a significant downsizing of the workforce and issues associated with redundancy and accompanying economic impacts locally will be significant. In addition to workforce wellbeing impacts including exposure of the workforce to poor labour and accommodation standards and impacts associated with interaction with local communities, impacts will include reduced income and quality of life associated with loss of income through retrenchment.

4.4.2 Objectives and Targets

The objectives during decommissioning will be to continue to maintain those previously identified (*Section 1.2*). Given that job losses will occur, objectives and targets will focus on the appropriate management of retrenchment. In addition to the objectives mentioned in *Section 1.2*, the following should be achieved:

- To develop a retrenchment plan well in advance of potential lay-offs which identifies the negative impacts of retrenchment and identifies mitigation measures to address these as far as is practicable (further details on the development of a retrenchment plan are included in *Table 7.1*).

Table 7.1 identifies relevant targets for impact management during decommissioning and closure.

4.4.3 Management Actions

During closure the management of impacts related to labour and accommodation conditions and OHS for the Allana workforce (including contractors and supply chain) will focus on the maintaining and monitoring relevant policies while planning for retrenchment. The management actions will be similar to those during construction and discussed in *Section 4.3.3* but will also include:

- Development of a retrenchment plan in advance of decommissioning and closure; and
- Engagement with workers and local communities well in advance of planned decommissioning and closure activities.

Specific details surrounding the management actions required are included within *Table 7.1*

4.4.4 Responsibility

Responsibility for the management of these actions will be for the QHS and HR managers. Specific details are included within *Table 7.1*

In order to verify the management measures, Allana will require several monitoring systems as part of its overall Environmental and Social Management System (ESMS). These will include the following:

- **Human Resources Employee Database:** this will track the data about employees working for Allana including wages, benefits, working hours, eligibility for overtime etc. The database will also record information on the origins of employees (home village in the local area, Afar, Ethiopian, expatriate), their respective positions, training received, PPE given, and date of fitness to work health screening.
- **Contractor Database:** this will be used to record the range of primary and secondary contractors for the Project. The database will record a summary of their scope of work, the results of biannual auditing programmes, details of the origins of their employees (home village in the local area, Afar, Ethiopian, expatriate), their respective positions, training received, PPE given, and date of fitness to work health screening. The database will also identify any gaps that require addressing, and assess the success of previous actions to address gaps in the timeframes identified.
- **Supply Chain Database:** this will be used to monitor the primary supply chain and record results of risk assessments for incidents of child and / or forced labour and significant safety issues.
- **Worker Feedback System:** the worker feedback system will log all grievances, issues and concerns raised by workers during engagement sessions. The system will also include areas to record information on measures to address issues, timeframes, personnel responsible and any subsequent feedback that is required.
- **OHS Surveillance and Monitoring System:** used to record number and type of accidents occurring in the workplace, actions required to address incidents, and the re-occurrence of type of incidents. In addition the system should identify personnel responsible for addressing incidents.
- **Health Surveillance and Monitoring System:** this system will be used to record health details of the workforce, identifying actions or follow-up where necessary, and the type of healthcare workers are seeking. This information can be used to tailor health awareness and training programmes put in place. Records will be kept strictly confidential.

6 *REPORTING AND DOCUMENTATION*

6.1 *GOVERNMENT/AUTHORITY REPORTING*

Allana will comply with Ethiopian regulations pertaining to reporting requirements on their performance on maintaining OHS and labour and working conditions.

The provision of health data to the regional Bureau of Health has previously been requested, and will help to ensure that HIV and other health issues are monitored at a broader level.

6.2 *LENDER REPORTING*

Performance reports on OHS and labour and working conditions will also be submitted to the IFC as required for the reporting schedule.

6.3 *INTERNAL REPORTING*

Allana will report on OHS and labour and working conditions activities in a variety of ways including:

- Regular (weekly, monthly) reporting to operational management of Allana of OHS incidents and other worker-related issues (e.g. grievances).
- Directly reporting to Project Management and Board; and
- The compilation of annual reports.

A Reporting programme will be developed and kept up to date to ensure all requirements are met. A report will be published at least annually on the OHS and labour and working conditions performance of the proposed Project.

Allana will also seek to provide internal reports to workforce as part of workforce engagement regarding on-going management of potential issues related to labour, accommodation and OHS standards on a bi-annual basis.

6.4 *COMMUNITY REPORTING*

The WkMP details measures relevant to promoting and maintaining worker health, safety and wellbeing and therefore community reporting is not relevant or necessary in this instance.

7 WORKER MANAGEMENT PLAN SUMMARY TABLE

Table 7.1 Management Measures for Construction, Operation and Decommissioning

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
OCCUPATIONAL HEALTH AND SAFETY							
✓	✓	✓	Develop and implement a comprehensive OHS Management System which aligns with the requirements of IFC PS 2.	Review existing OHS Management System against international good practice standards and national requirements and address gaps identified. This should include requirements associated with the protection of third party contractors.	<ul style="list-style-type: none"> Comprehensive OHS Management System and operating procedures developed Identified gaps addressed 	<ul style="list-style-type: none"> Completed by Q1 2013 Review bi-annually (construction) and annually thereafter 	<ul style="list-style-type: none"> QHS Manager (construction and operations)
✓	✓	✓		Review existing OHS operating procedures (which form part of the OHS Management System) to ensure that they are comprehensive and meet the necessary national and international requirements. Develop additional operating procedures as required.			
✓	✓	✓		Develop a systematic and consistent Organisational Hazard Identification and Risk Assessment procedure, to analyse and manage OHS risks using a common approach, and develop Action Plans to address OHS risks.	<ul style="list-style-type: none"> Organisational Hazard Identification and Risk Assessment Procedure developed 	<ul style="list-style-type: none"> By Q1 2013 	<ul style="list-style-type: none"> QHS Manager (construction and operations) Contractor QHS Manager (operations)

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Implement OHS programme	Recruitment procedures to include assessment of OHS capabilities to guide training requirements.	<ul style="list-style-type: none"> Percentage of workers that receive OHS training 	Bi-annually	<ul style="list-style-type: none"> HR Manager QHS Manager (construction and operations) Contractor QHS Manager (operations) Engineering, Procurement and Construction (EPC) Manager QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓		Provide OHS training to all workers.			
✓	✓	✓		Develop role specific OHS risk assessment identifying OHS training requirements according to different employment positions.			

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓		Deliver specific OHS training for workers assigned to tasks associated with specific OHS risks (this may include safe storage and handling etc.).	<ul style="list-style-type: none"> Percentage of workers that have completed training 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓		Provide Personal Protective Equipment (PPE) for workforce and training on how to use it.	<ul style="list-style-type: none"> Percentage of workers that receive PPE Percentage of workers that receive training in use of PPE Appropriate use of PPE (assessed through regular monthly audits by QHS Manager) 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓		Visual safety warning signs in place, including those for electrical and mechanical equipment, and chemical hazards.	<ul style="list-style-type: none"> Appropriate warning signs erected (assessed through third party OHS audit) Number of incidents reported 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations)
	✓	✓		Routine safety checks carried out on construction sites (construction) and plant and facilities (operation), and decommissioning sites (decommissioning and closure) in line with standard safety procedures.	<ul style="list-style-type: none"> Number of safety checks conducted 	<ul style="list-style-type: none"> Daily, weekly, monthly as appropriate once OHS Management System has been completed 	<ul style="list-style-type: none"> QHS Manager (construction) Contractor QHS Manager (operations)

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓		Develop and implement OHS monitoring and surveillance programme to be implemented throughout the mine lifecycle.	<ul style="list-style-type: none"> Implementation of OHS monitoring and surveillance programme Number of OHS events recorded Number of OHS events closed out 	<ul style="list-style-type: none"> By Q1 2013 Review bi-annually 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓		Ensure continuous improvement of OHS and worker wellbeing through effective monitoring and response to incidents and trends identified.	<ul style="list-style-type: none"> Number of incidents Number of treated incidents Number of recurrent incidents 	<ul style="list-style-type: none"> Quarterly (construction) Bi-annually (operation) 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations) Camp medic
✓	✓	✓	Develop pre-employment worker fitness for work health screening protocol	Ensure all Project personnel (and contractors) undertake fitness for work screening prior to employment.	<ul style="list-style-type: none"> Percentage of workers and third party contractors who have undergone screening 	<ul style="list-style-type: none"> Upon recruitment Monthly reviews 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations) HR Manager
✓	✓	✓	Develop worker health screening and monitoring programme	Implement annual health and fitness monitoring programme where workers (including long-term contractors) have routine annual check-ups.	<ul style="list-style-type: none"> Percentage of relevant workers that complete annual check-ups 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> QHS Manager Camp medic

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop and implement worker health awareness programme	Provide basic hygiene and sanitation training, including training on food hygiene standards.	<ul style="list-style-type: none"> Percentage of workers that receive hygiene and sanitation training 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations) HR Manager Camp medic
✓	✓	✓		Provide specific sexual health training including HIV/AIDS awareness and prevention program, which will include voluntary testing, the provision of condoms in suitable locations etc.	<ul style="list-style-type: none"> Percentage of workers that receive sexual health training 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> EPC Manager (construction) QHS Manager (construction and operations) Contractor QHS Manager (operations) HR Manager Camp medic
✓	✓	✓	Develop and implement HIV / AIDS policy (based on voluntary testing, non-discrimination, no stigma and support)	Establish procedures for addressing HIV/AIDS issues in the workplace.	<ul style="list-style-type: none"> Percentage of workers that receive counselling 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> QHS Manager (construction and operations) HR Manager Camp medic
✓	✓	✓		Provide support and counselling for workers and their families living with HIV / AIDS.	<ul style="list-style-type: none"> Percentage of workers voluntarily tested 		
✓	✓	✓		Implement a voluntary testing programme.	<ul style="list-style-type: none"> Percentage of HIV positive workers that receive treatment 		
✓	✓	✓		Prevention and protection of workers living with HIV against harassment.			

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop and implement safe driving standards	Provide training to employees on safe driving standards including driving speeds, hours and policies regarding unauthorised stopping.	<ul style="list-style-type: none"> Percentage of vehicles containing speed monitoring using GPS systems Percentage compliance with driver call in procedures (derived from move-con compliance reporting logs) Percentage compliance with driver sign-in, sign-out protocols 	Monthly	<ul style="list-style-type: none"> QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓		Provide worker fatigue and stress management programme for long haul truck drivers	<ul style="list-style-type: none"> Implementation of programme 	By Q1 2013	<ul style="list-style-type: none"> QHS Manager (construction and operations) Contractor QHS Manager (operations)
✓	✓	✓	Develop worker engagement procedure	Supervisors responsible to implement tailored toolbox talks on daily basis to address common OHS risks.	<ul style="list-style-type: none"> Daily toolbox talks held with all workers 	Monthly	<ul style="list-style-type: none"> Team Supervisors EPC Manager (construction and operations) QHS Manager (construction and operation) Contractor QHS Manager (operations)

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓		Develop worker feedback mechanism to enable workers to raise issues, grievances and make suggestions.	<ul style="list-style-type: none"> Worker feedback mechanism developed Number of issues received and addressed 	<ul style="list-style-type: none"> Q1 2013 Monthly reporting on incidents and their resolution 	<ul style="list-style-type: none"> QHS Manager (construction and operations) HR Manager
✓	✓	✓		Establish monthly internal communications through Project meetings to discuss OHS performance.	<ul style="list-style-type: none"> Meetings held monthly Number of incidents reported Number of incidents closed out 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> QHS Manager (construction) Contractor QHS Manager (operations)
LABOUR							

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓			Review labour policies to ensure that all Ethiopian legal requirements are addressed in policy, as well as the requirements of IFC PS2. Some but not necessarily all policies proposed to be developed are below	Develop any additional policies required (please see below).	<ul style="list-style-type: none"> Additional policies required have been identified and developed. 	<ul style="list-style-type: none"> Q1 FY13 	<ul style="list-style-type: none"> HR Manager
✓	✓	✓	Develop policies on working hours and leave	Implement limits on working hours and overtime in adherence with Ethiopian legislation and industry good practice (as appropriate to different job categories).	<ul style="list-style-type: none"> Average man hours for key worker categories Average hours of overtime (in particular jobs where overtime poses a risk) (1) Worker check-in and out procedure to monitor working hours in place 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> QHS Manager (construction and operations) Contractor QHS Manager (operations) HR Manager
✓	✓	✓	Develop policies on wages and benefits	Ensure that contracts are developed which detail wages and benefits in line with Ethiopian labour legislation.	<ul style="list-style-type: none"> Contracts comprehensive in terms of Ethiopian labour legislation. 	<ul style="list-style-type: none"> Monthly (construction and decommissioning) Bi-annually (operation) 	<ul style="list-style-type: none"> HR Manager
				Ensure that workers understand the contents of their contracts.	<ul style="list-style-type: none"> Mechanism (training or one-on-one explanations) consistently provided to workers explaining the contents of their contracts 	<ul style="list-style-type: none"> Monthly Bi-annually 	<ul style="list-style-type: none"> HR Manager

(1) Guards working outside with no cover or shade, lone working, operation of machinery

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility	
Construction	Operation	Decommissioning and Closure						
✓	✓	✓		Ensure timely payment of wages and benefits and provide payslips to all workers.	<ul style="list-style-type: none"> Percentage of workers to receive payslips 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> HR Manager 	
✓	✓	✓		Avoid the use of daily workers as far as practicable.	<ul style="list-style-type: none"> Number of day workers hired and percentage of total Allana workforce 	<ul style="list-style-type: none"> Quarterly during construction Biannually during operation 	<ul style="list-style-type: none"> HR Manager 	
✓	✓	✓		Develop a mechanism for periodic review of wages in consultation with workers' representatives and based on a series of objective criteria.	<ul style="list-style-type: none"> Annual review held Number of grievances received related to wages 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> HR Manager 	
✓	✓	✓	Implement HR policies and protocols	Ensure that all policies and protocols are explained to employees upon recruitment	<ul style="list-style-type: none"> Number of workers that receive induction on HR and HR policies 	<ul style="list-style-type: none"> Upon recruitment 	<ul style="list-style-type: none"> HR Manager 	
✓	✓	✓		Annex policies to workers contracts of employment.				
✓	✓	✓		Train workforce on labour standards.	<ul style="list-style-type: none"> Percentage of workers that receive training 			<ul style="list-style-type: none"> HR Manager QHS Manager (construction and operations) Contractor QHS Manager (Operations)
✓	✓	✓		Enable the creation of worker forum (including representation of local Afar employees) to negotiate on their behalf and ensure their workplace concerns can be raised.	<ul style="list-style-type: none"> Creation of a worker forum Number of meetings held (worker forum) Number of issues raised 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> HR Manager 	
✓	✓	✓		Enable the establishment of trade unions if this is requested by staff.	<ul style="list-style-type: none"> Establishment of trade unions (if requested by staff) 	<ul style="list-style-type: none"> Annual 	<ul style="list-style-type: none"> HR Manager 	

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓		✓	Develop retrenchment policies	In the event of large-scale retrenchment being required, develop and apply a retrenchment plan based on IFC PS 2, including: seeking alternatives to retrenchment, consultation with workers, non-discrimination, compliance with national law and collective bargaining agreements, and ensuring that all relevant payments are made to workers.	<ul style="list-style-type: none"> Presence of updated Retrenchment Plan in advance of planned retrenchment (6 months ahead of planned retrenchment or as close to this time-frame as is practicable) 	<ul style="list-style-type: none"> To be defined in the event of retrenchment 	<ul style="list-style-type: none"> HR Manager
✓		✓		Provide HR staff suitable adequate information and training to manage the retrenchment correctly.	<ul style="list-style-type: none"> Demonstrable liaison with worker representatives and forums regarding planned retrenchment 	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> HR Manager
✓		✓		Develop and implement communication timetables to inform employees as the Project progress and implications for direct, indirect, and induced employment.	<ul style="list-style-type: none"> Percentage of HR staff receiving relevant training 	<ul style="list-style-type: none"> When required, and will be more frequent during decommissioning 	<ul style="list-style-type: none"> HR Manager Site Manager / Project Director
		✓	Develop a sustainable decommissioning and closure process (refer to IMCP for further detail)	Develop a plan to support local workers to diversify and develop alternative and sustainable livelihoods following mine closure. This should be included in the IMCP.	<ul style="list-style-type: none"> IMCP includes plan for development of alternative and sustainable livelihoods for workers post closure 	<ul style="list-style-type: none"> Assessed from late operations and plan updated annually 	<ul style="list-style-type: none"> HR Manager Site Manager / Project Director
		✓		Determine the post mining land use that affects the closure design (note this overlaps with measures recommended in the CDP).	<ul style="list-style-type: none"> Above-mentioned plan is updated annually Number of workers to secure alternate employment post decommissioning 		<ul style="list-style-type: none"> Land and Community Relations (ELCR) Manager
ACCOMMODATION							
✓	✓	✓	Develop clear, non-discriminatory accommodation policies	Develop accommodation policies for both Allana employees and third party contractors.	<ul style="list-style-type: none"> Accommodation rules and policies developed 	<ul style="list-style-type: none"> Policies and rules developed by Q1 2013 	<ul style="list-style-type: none"> HR Manager

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
			and practices which adhere to IFC PS 2, and the IFC and EBRD Guidance Note on Worker's Accommodation.	Develop accommodation rules that are followed by employees to ensure that standards are maintained in line with policy.			
				Ensure that policies are explained to all relevant workers upon recruitment and they are made aware of their rights and obligations.	<ul style="list-style-type: none"> Percentage of workers to receive induction/training on accommodation rules 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> QHS Manager (construction and operation) Contractor QHS Manager (operations)
✓	✓	✓		Conduct regular (monthly) inspections of Allana workforce accommodation to ensure adherence to protocols.	<ul style="list-style-type: none"> Number of accommodation inspections Number of non-conformances identified related to accommodation Number of non-conformances addressed 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> QHS Manager (construction and operation) Contractor QHS Manager (operations)
✓	✓	✓		Upgrade existing accommodation and develop further accommodation as required.	<ul style="list-style-type: none"> Accommodation developed or upgraded to appropriate standard 	<ul style="list-style-type: none"> Annual review and upgrade as and when required 	<ul style="list-style-type: none"> HR Manager QHS Manager (construction and operation) Contractor QHS Manager (operations)

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓		Implement employee feedback mechanism (e.g. worker forum) or employee accommodation committee.	<ul style="list-style-type: none"> Number of issues raised with regards to accommodation 	<ul style="list-style-type: none"> Bi-annually 	<ul style="list-style-type: none"> QHS Manager (construction and operation) Contractor QHS Manager (operations)
✓	✓	✓	Implement accommodation policies and rules in adherence to IFC PS 2 and the IFC and EBRD Worker's Accommodation Guidance Note.	Training of relevant workers on the implementation and monitoring of accommodation standards.	<ul style="list-style-type: none"> Number of workers trained Number of accommodation inspections Number of gaps in accommodation identified Number of gaps reported and addressed 	<ul style="list-style-type: none"> Monthly 	<ul style="list-style-type: none"> QHS Manager (construction and operation) Contractor QHS Manager (operations)
✓	✓	✓		For workers and third party contractors ensure that all accommodation has adequate ventilation, air conditioning and light systems.			
✓	✓	✓		Establish and maintain adequate occupation density for different types of accommodation, and ensure that this is the case for third party contractors.			
✓	✓	✓		Ensure access to adequate and convenient supply of potable water.			
✓	✓	✓		Accommodation regularly cleaned and kept clear of refuse.			
✓	✓	✓		Provision of social collective spaces and adequate recreational areas for workers living on site.			
✓	✓	✓		Ensure that both workers living onsite, and day workers are provided with places for religious observance taking into account gender considerations and the different faiths practiced.			
✓	✓	✓		Provision of adequate sanitary and laundry facilities.			

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
GENERAL							
✓	✓	✓	Develop pre-qualification screening procedure for all contractors and suppliers	Screening of all contractors and suppliers to assess whether their management of worker OHS and well-being is appropriate.	<ul style="list-style-type: none"> • Number of screenings undertaken of total number of contractors hired • Number of contractors rejected due to failure to meet worker OHS and well-being standards 	• Bi-annually	<ul style="list-style-type: none"> • QHS Manager (construction and operation) • Contractor QHS Manager (Operations) • EPC Manager (construction) • Procurement Manager (operation)
✓	✓	✓	Develop and implement auditing programme for contractors and primary suppliers	Conduct risk assessment of contractors and primary suppliers for child labour, forced labour and safety concerns.	<ul style="list-style-type: none"> • Number of risk assessments completed 	• Bi-annually	<ul style="list-style-type: none"> • QHS Manager (construction and operation) • Contractor QHS Manager (Operations) • EPC Manager (construction) • Procurement Manager (operation)
✓	✓	✓		Audit third party contractors for adherence to OHS, labour and accommodation standards.	<ul style="list-style-type: none"> • Number of audits undertaken of total contractors • Number of gaps identified • Number of gaps addressed 		

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Implement culturally appropriate worker feedback mechanism/s. If no equivalent mechanism exists for third party contractors, this should be made available to their staff as well	Ensure that the feedback mechanism is adequately communicated to workers at the time of recruitment and periodically thereafter.	<ul style="list-style-type: none"> • Worker feedback mechanism in place • Number of issues raised • Number of issues addressed • Percentage of relevant personnel that receive training 	<ul style="list-style-type: none"> • By Q1 2013 • Bi-annually 	<ul style="list-style-type: none"> • ELCR Manager • QHS Manager (construction and operation) • Contractor QHS Manager (Operations)
✓	✓	✓		Ensure that relevant personnel are trained to receive complaints.		<ul style="list-style-type: none"> • Bi-annually 	
✓	✓	✓	Develop and implement Worker Code of Conduct	Work with local communities and worker representatives to develop a Worker Code of Conduct. This should include but not be limited to standards relating to interaction with local communities; discipline and behaviour within and outside of the camp; alcohol consumption; disciplinary procedures for non-conformance.	<ul style="list-style-type: none"> • Evidence of consultation with local communities and worker representatives and the inclusion of their preferences as far as is practicable and appropriate. 	<ul style="list-style-type: none"> • Consultation undertaken ahead of development of Code of Conduct and on draft ahead of finalisation 	<ul style="list-style-type: none"> • HR Manager
✓	✓	✓		Ensure all workers are briefed upon recruitment of requirements and code of conduct for worker-worker interactions, and worker community interactions, with periodic updates thereafter as required.	<ul style="list-style-type: none"> • Number of workers that receive induction on code of conduct and thereafter as required • Number of incidents reported • Number of incidents addressed 	<ul style="list-style-type: none"> • Monthly incident reporting 	<ul style="list-style-type: none"> • ECR Manager • QHS Manager (construction) • Contractor QHS Manager (Operations) • EPC Manager
✓	✓	✓		Implement and monitor adherence to Code of Conduct.			

Phase			Management Action	Target	KPI Monitoring	Timing / Frequency of Monitoring	Responsibility
Construction	Operation	Decommissioning and Closure					
✓	✓	✓	Develop Contractor Control System	Allana will develop an agreed Contractor Control Plan to distribute to tendering companies that outlines the process for contractor management	<ul style="list-style-type: none"> Plan developed and distributed Percentage of tendering organisations receiving Contractor Control Plan 	<ul style="list-style-type: none"> Q2 2012 Review six monthly 	<ul style="list-style-type: none"> QHS Manager HR Manager ELCR Manager
				Allana will include detailed requirements (using a risk based approach) within tender documentation regarding environment, labour, health and safety and community relations performance.	<ul style="list-style-type: none"> Percentage of tender documents including relevant requirements 		
				Tendering contractors will be assessed according to responses to environment, labour, health and safety and community relations performance and planned activities.	<ul style="list-style-type: none"> Criteria for award of contracts agreed and documented 		
				Allana and contractors will perform commencement reviews to develop implementation protocols and plans for contractor environment, labour, health and safety and community relations management.	<ul style="list-style-type: none"> Percentage of contractors with implementation protocols and plans agreed with Allana 		